July 2022

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

CHE workshop returns to in-person experience

Steve Carpenter awarded the Blue Planet Prize
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Students join national community science program
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Register today for Rendezvous on the Terrace
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CHE students walking at Upham Woods Outdoor Learning Center. Photo by Anna Andrzejewski

UW Scientist Wins Blue Planet Prize

Photo credit: Jeff Miller

Steve Carpenter (pictured above and page 3), one of the world's foremost lake ecologists, Nelson Institute affiliate and professor emeritus at the University of Wisconsin–Madison, has been awarded the Blue Planet Prize.

The Blue Planet Prize has been awarded annually by the Asahi Glass Foundation since 1992 to two individuals or organizations in recognition of outstanding achievements in and application of scientific research that have helped provide solutions to global environmental problems. The name is a reference to cosmonaut Yuri Gagarin's first eyewitness description of our planet from space — "the Earth is blue."

The other recipient of the 31st Blue Planet Prize is Jigme Singye Wangchuck (pictured right), the king of Bhutan. The pair will accept their awards and deliver commemorative lectures at ceremonies in October at the University of Tokyo and Kyoto University.

Photo credit: The Asahi Glass Foundation

"I deeply believe in the mission of the prize 'to repair and preserve the ecosystems that keep us and the multitude of other species with whom we share the Earth alive and well.' This mission is the greatest challenge of our time, and we all have much work ahead."

–Steve Carpenter

Photo credit: The Asahi Glass Foundation

Carpenter, a member of the UW–Madison Center for Limnology faculty since 1989 and its director from 2009 to 2017, received the award in recognition of more than 40 years of study and description of lake ecosystems.

"Through his research on lake eutrophication, from nutrients such as phosphorus and nitrogen, he studied the resilience of lakes using mathematical models, providing a new perspective on social-ecological systems," the foundation's citation says. "He also worked on environmental pollution from phosphorus and nitrogen through land use, showing the critical state of the global phosphorus cycle and the need to review human activity from a broad geochemical viewpoint."

The award includes 50 million Japanese yen and a crystal glass trophy designed this year on a water and atmosphere theme by Japanese glass craftsman Kyoichiro Kawakami to evoke an image of a clean planet where humanity lives harmoniously.

"I am challenged and humbled by the Blue Planet Prize," Carpenter says. "I deeply believe in the mission of the prize 'to repair and preserve the ecosystems that keep us and the multitude of other species with whom we share the Earth alive and well.' This mission is the greatest challenge of our time, and we all have much work ahead."

Blue Planet Prize

Balancing both human and ecological needs for food and freshwater will be a vital part of that mission. The Blue Planet Prize will help, Carpenter says, to "continue my work to build resilience of nature in working landscapes, improve the flow and quality of freshwater, and engage science and the public in the search for transformations that support both life on Earth and human well-being."

Read more about the Blue Planet Prize.

A version of this story was originally published by UW–Madison.

CHE Place-Based Workshop Covers the History and Culture of Nearby Land

By Anica Graney

Place-Based Workshop participants ride on a boat at Upham Woods Outdoor Learning Center. Photo credit: Tricia Gorby

Faculty and graduate students with the Nelson Institute's Center for Culture, History, and Environment (CHE) participated in the annual Place-Based Workshop (PBW) where they spent two days immersing themselves in the history and culture of the region north and west of Madison. The two-day workshop held in mid-May included a bus tour that visited Springfield Hill, the Badger Lands and Yellow Thunder Memorial in Sauk County, and an experiential workshop on Blackhawk Island, part of the Upham Woods Outdoor Learning Center.

Held annually since CHE's inception in 2007, but interrupted by the pandemic, the PBW hosts graduate students and CHE faculty associates on a field trip to explore the tangled relationships between nature and culture. The workshop's goal is to offer inspiration for faculty and graduate student projects and dissertations as well as to stimulate conversation and collaboration within the CHE community.

"I'm so pleased that we were able to gather this year after having to postpone the PBW for the last two years," shared Anna Andrzejewski, CHE director. "It is at the core of what CHE folks do: understand the complicated relationships of people and place."

This year's workshop focused on how the landscape between the UW campus and Upham Woods has been shaped by geological forces and human communities over millennia. Students and faculty began the workshop in the afternoon of May 15 at Holy Wisdom Monastery in Middleton, Wisconsin, where graduate students in the CHE Methods class presented their research on Blackhawk Island and Curt Meine gave a keynote presentation.

Meine, a conservation biologist, environmental historian, writer, and adjunct professor at the University of Wisconsin–Madison, relayed the cultural history of the land, telling stories about the landscape corridor from the UW to Upham Woods. In particular, Meine explored the many connections between culture and conservation that have played out in this dynamic landscape.

The following day began with taking a bus to Springfield Hill, between Madison and the Wisconsin River. Participants learned about bedrock and glacial geology, the Black Hawk War, and Aldo Leopold's "Prairie Birthday" essay. As the tour moved north to Sauk Prairie, Eric Carson, geologist with the Wisconsin Geological and Natural History Survey, discussed the complicated history of the Wisconsin River from the Wisconsin Dells to the point where it enters the Driftless region.

"It's a great area geologically [speaking]," Carson shared. "From a landscape perspective, you go from some of the youngest landscapes in Wisconsin to some of the oldest."

Next, the workshop stopped by Mąą Wakącąk (Sacred Earth), the portion of the former Badger Army Ammunition Plant now reclaimed by the Ho-Chunk Nation. There, the group visited with Melanie Tallmadge Sainz, a Ho-Chunk artist and founding director of the Little Eagle Arts Foundation. Meine presented on the critical and long-term history of the Ho-Chunk Nation, Euro-settlement, and U.S. military presence in the area. "It's a place of transformation. In just one century it went from tallgrass prairie to agriculture to industrial use. Now, it is a place devoted to restoration and reconciliation," Meine explained.

"It's a place of transformation. In just one century it went from tallgrass prairie to agriculture to industrial use. Now, it is a place devoted to restoration and reconciliation."

–Curt Meine

The third stop was the memorial to Chief Yellow Thunder (Wakąjazi), an important leader of the Ho-Chunk Nation in the 1800s. "Yellow Thunder was a critical figure in the history of the Nation's removal and reclaiming of their ancestral homelands," Meine said. "We were fortunate to have Kristin WhiteEagle give our visit to the memorial site the dignity that it deserves." WhiteEagle, a Ho-Chunk Nation tribal legislator and member of the Sauk County Board of Supervisors, joined the PBW at the Yellow Thunder Memorial.

The tour ended at Blackhawk Island in Upham Woods, a residential outdoor learning center managed by the UW–Madison Division of Extension. Here, workshop participants split into groups, explored the area using a 1961 trail guide, and sat in nature while taking into account some of the knowledge they had gained from the bus tour and student presentations.

"One of the coolest things that we did once we got to Upham Woods, having heard all these stories, was we went to Blackhawk Island, and we all sat quietly for 10–15 minutes," said graduate student Rudy Molinek. "That moment was great to have all these connections and thoughts swirling around in your head and then having quiet time on this island to think it through."

Top: Melanie Tallmadge Sainz and PBW participants at the Badger Lands in Sauk County. Bottom: Eric Carson speaks on the geology of the driftless region. Photo credits: Anna Andrzejewski

Meine recapped the workshop with a reminder that history "involves not only what we humans create, but the world that we inhabit, care for, and find our place in. The Place-Based Workshops help us appreciate that rich history by drawing upon all these different ways of understanding, knowing, and being in the world."

Learn more about CHE graduate programs and how you can support the program.

Nelson Institute Students Inspired to Join National Community Science Effort

By Abby Becker

Raj Pandya

"The state-based approach is important because it allows fellows and scientists to spend time in the communities they are working with, because it supports community-to-community connections, and because a state-based network is a great bridge between local solutions and national or even global impact."

–Raj Pandya, Thriving Earth Exchange Director

Localities in Wisconsin and across the United States are benefitting from the skills and passion of two Nelson Institute for Environmental Studies graduates and one current PhD student.

Teaching students how to address challenges like flooding, natural resource conservation, and water quality while also navigating communities' interests and concerns can't be fully accomplished in a lecture hall.

That's why at the Nelson Institute for Environmental Studies students join interdisciplinary teams and tackle real-world environmental challenges in partnership with communities. These traits align with the goals of Thriving Earth Exchange — an American Geophysical Union program that advances local solutions to scientific problems — and inspired three people affiliated with the Nelson Institute to join cohorts of community science projects.

Lindsey Taylor and Andrew Aslesen, are part of the inaugural state-focused cohort launched by Thriving Earth Exchange and supported by UniverCity Alliance and Educational Partnerships for Innovation in Communities Network (EPIC-N).

"I was drawn to apply to this particular cycle because I thought that the opportunity to be part of a Wisconsin-based project with other Wisconsin fellows and Wisconsin communities was just too special to pass up," said Taylor, who is working with the City of Ashland as a community science fellow.

Aslesen, a source water specialist with the Wisconsin Rural Water Association, will be a community leader for the City of Abbotsford.

"When we're working with communities on protecting their drinking water, we're always looking for innovative and creative ways to get meaningful action on the ground," said Aslesen, who received a master's of science degree in water resources management with an emphasis in hydrogeology.

Over the next year, 14 Wisconsin communities, including the Cities of Ashland and Abbotsford, will work with volunteer project managers (also called community science fellows) based across Wisconsin.

One aspect of the community science fellow role is to connect the community's project with technical experts on community-identified challenges related to natural resources, climate change, and natural hazards. Those who are interested in volunteering as a technical expert can view available projects on Thriving Earth Exchange's website.

The Wisconsin cohort illustrates Thriving Earth Exchange's commitment to being a scientific ally to local communities.

"The state-based approach is important because it allows fellows and scientists to spend time in the communities they are working with, because it supports community-to-community connections, and because a state-based network is a great bridge between local solutions and national or even global impact," Thriving Earth Exchange Director Raj Pandya said.

Pandya said the organization is eager to work with and learn from UW–Madison and perhaps use this first state-based cohort as a model for working with other universities. He said the Nelson Institute understands the "power of community and collaboration" and is "committed to working across boundaries."

Nathan Schulfer, director of international and professional programs for the Nelson Institute, said Nelson "emphasizes people in all its work, from degree programs to community outreach." This includes courses that partner with communities through UniverCity Alliance, which is a program on campus that connects Wisconsin local governments with resources to solve community-identified challenges.

"By extending coursework outside of the classroom, working on real-world problems, it gives our students the experiences they need to succeed in these spaces once they graduate," Schulfer said.

Schulfer said it is not surprising that the Thriving Earth Exchange is working with Wisconsin for the first state-based cohort.

"For thousands of years, people living on the land we now call Wisconsin have cared deeply about our environment," Schulfer said. "In our professional master's of science programs alone we've graduated many dedicated and thoughtful conservation students from Wisconsin who recognize that meaningful change most often starts right here at home."

Interdisciplinary Approach

In a separate cohort that launched in February, current Nelson PhD student Ciaran Gallagher is working as a community science fellow. Gallagher is studying the intersection of climate change, air quality, public health, and environmental justice.

"I wanted to engage with communities in a really meaningful way," said Gallagher, who is paired with a volunteer advocacy coalition focused on ending lead poisoning in Cleveland, Ohio, called Cleveland Lead Advocates for Safe Housing (CLASH).

Gallagher, Taylor, and Aslesen were drawn to the Nelson Institute's programs, in part, for the institute's dedication to interdisciplinary learning and scholarship that aim to address societal problems related to the environment and sustainability.

This trait makes Nelson Institute students, both graduates and current scholars, a natural fit for the Thriving Earth Exchange Program. Paul Robbins, the dean of the Nelson Institute, said students want to solve problems for communities.

"I've never seen a generation so committed to solving challenges," Robbins said. "Nelson students — all double-majors — are required to graduate with a capstone experience about the planet's future. They are naturally drawn to local problems and to public service in Wisconsin."

"It's at their core already," Robbins said.

Taylor, who works as a conservation programs coordinator at the Natural Resources Foundation of Wisconsin, said she was drawn to the environmental conservation master's program because it is not a thesis or a research-based program and focuses on interdisciplinary learning, professional development, and leadership.

Learning skills like project management, facilitation, and active listening during her degree's required capstone project translated well into her work with the Natural Resources Foundation and with Thriving Earth Exchange.

"My program has fully prepared me to engage with partners, successfully facilitate meetings, and guide the project toward success," Taylor said.

For Gallagher, pursuing a program that is positioned to impart transferable skills to work on environmental programs was important because she knows she wants to pursue jobs outside of academia. Gallagher was primarily drawn to the Nelson Institute for the mentorship opportunities under Professor Tracey Holloway and the energy analysis and policy (EAP) graduate certificate program in the Nelson Institute.

Gallagher said the Nelson Institute has cemented her position as an interdisciplinary thinker, which has helped her as a community science fellow. For example, though the project she is paired with through Thriving Earth Exchange requires qualitative skills outside of her expertise, Gallagher is able to connect across disciplines.

"Despite that lack of practitioner expertise, I'm able to engage on the scientific questions, figure out what type of scientists we need and what type of questions we want to ask alongside the community," Gallagher said. "Since I'm also not just a hard scientist who only knows how to talk about science, I like to think that I am able to be an effective communicator."

Aslesen emphasized the value of the Nelson Institute connecting different scientific disciplines and people across a variety of fields to consider solutions to problems.

"That's a really important way of doing science," Aslesen said, "having people with different perspectives and different scientific expertise coming together. That's definitely something we learned at the Nelson Institute."

What Does "Community Science" Mean to You?

I think "community science" when I hear of having the community be involved and take some ownership in the project. I don't necessarily want to be the one to go into the community and say, 'This is what you need to do to fix it.' We're there to help provide technical expertise and guidance and help measure and monitor. In community science, you have the community coming up with the solution.

—Andrew Aslesen

For me, "community science" begins with community priorities ... to begin with community priorities and then end with community impact. Figuring out what is the deliverable and how is this project going to make a change in their community that's meaningful. It's working together with members of the community, even them driving the questions that are being asked.

—Ciaran Gallagher

"Community science" is important because it is directly engaging anyone who wants to be involved in science, so it's not limited to researchers at institutions. It has a special place in my heart — I really care about science, but I didn't have the desire to be the scientist. Seeing examples and opportunities for community members to be participating in science projects — even if they don't have a scientific background — is really powerful.

—Lindsey Taylor

Nelson Institute Key Player in College of the Menominee Nation Student Transfer Partnership

Students of the College of Menominee Nation have a direct transfer path the UW–Madison, thanks in part to the Nelson Institute.

Liberal studies students attending College of Menominee Nation (CMN) will continue to have an easy path to transfer to the University of Wisconsin–Madison thanks to a renewed agreement between the two institutions.

On June 3, UW–Madison leaders traveled to CMN to meet with President Christopher Caldwell, Interim Dean of Letters & Science Lucy Fenzl, and other CMN leadership and tour the college located on the Menominee Indian Reservation. During the visit, Interim Chancellor Karl Scholz joined President Caldwell for the signing of the latest iteration of the transfer agreement.

"We look forward to a robust partnership at CMN. I wish to extent my gratitude to President Caldwell and his colleagues for their outstanding work at CMN and for our partnership to create mutually beneficial opportunities for the students we serve," says Interim Chancellor Scholz.

UW-Madison Interim Chancellor Scholz and College of Menominee Nation President Christopher Caldwell sign the third iteration of the transfer agreement.

Caldwell, a UW–Madison alumnus and current Nelson Institute graduate student, was one of the first transfer students from CMN on the first articulation agreement with the university's College of Agricultural and Life Sciences in 2002.

The contract allows a qualified students to begin postsecondary education as a freshman at CMN and be guaranteed admission as a transfer student at UW–Madison after completing three academic years, or 60 transferable credits.

The renewal marks the third time the historic contract has been signed between CMN and UW–Madison, with the first campus-to-campus agreement taking place in 2007.

CMN is one of 32 tribally controlled community colleges in the United States and is known as a national leader in sustainable development. In 2020 and 2021, UW–Madison and CMN also partnered together alongside Lac Courte Oreilles Ojibwe College on a first-ever triple partnership between the three institutions for a USDA NIFA New Beginnings for Tribal Students grant to create educational pathways to the three land grant institutions.

The Nelson Institute for Environmental Studies has played an instrumental role in building the collaborative partnership with CMN. Leaders used the visit as an opportunity to discuss how the two institutions can work together to build sustained collaborative programming for both Madison and CMN students and, in future, to provide steady pathways for native students to UW–Madison, where they will feel included and welcome. "Only by building meaningful, shared curricula and instructional opportunities, for both CMN and UW students, can we make real progress in bringing these remarkable institutions together," says Dean Paul Robbins of the partnership. "I am proud of the hard work Nelson faculty, staff, and students have done to help make this possible."

A long-term goal of the partnership is to develop collaborative education opportunities. With a particular goal to bolster STEM fields, the UW cohort — which included Francisco Pelegrí, chair of the UW's genetics department— toured CMN's lab facilities and met with several staff and instructors. The visit also included stops at the CMN Sustainable Development Institute, weekly farmer's market, and the library's special collections, which houses original papers for the Determination of Rights and Unity for Menominee Stockholders (DRUMS) organization that worked to successfully end Termination and Assimilation as federal Indian Policy in the U.S. and re-established Menominee Nation as a federally recognized American Indian Nation.

An earlier version of this story was originally published by UW–Madison.

Flooding and Bluff Erosion from Extreme Storms are Impacting Wisconsin's Great Lakes Coastlines

By Dea Larsen Converse

Windy Lake Michigan, 2015 Great Lakes Photo Contest. Photo credit: Eve Schrank

Coastal communities and businesses will need to adapt to more volatile lake level fluctuations, with frequent fluctuations between extreme high and low lake levels, as the climate continues to warm."

–Adam Bechle, WICCI

Coastal Resilience Co-Chair

A focus on climate impacts to Wisconsin's Great Lakes coastal communities in the most recent assessment from the Wisconsin Initiative on Climate Change Impacts (WICCI) shows that large fluctuations in Great Lakes water levels along with flooding and bluff erosion from extreme storms are impacting the areas along Wisconsin's Lake Michigan and Lake Superior coastlines and causing uncertainty for coastal communities. The last two decades have been the warmest on record in Wisconsin, and the past decade has been the wettest.

All of Wisconsin's Lake Michigan and Lake Superior coasts experienced extreme lake level fluctuations in the past decade. Along Lake Michigan, record high water levels in 2020 followed record low water levels in 2013. At low water levels, coastal-dependent industries are at risk for insufficient water depths for navigation. At high water levels, concerns include increased erosion, flooding, bluff failure, and infrastructure damage. Both high and low water level extremes are anticipated under a changing climate along the Great Lakes coastline. This could include potentially higher highs, lower lows, and more rapid fluctuations than seen in the historical record. The high variability in water levels combined with bigger waves and storm surge from extreme storms will continue to increase erosion and decrease the stability of coastal bluffs.

Wave energy reaching Great Lakes coasts is expected to increase in the future, in part due to anticipated decreases in ice cover extent and duration. Ice cover on the Great Lakes is declining as air temperatures rise. Nine of the top 10 lowest ice cover years have occurred since 2002. Projections show that ice cover duration on Lake Superior will decrease by one to two months by the end of the century as the climate continues to warm. Greater wave energy reaching the coast will lead to increased erosion and flooding of the shoreline. During times of higher water levels, these large waves will be able to reach further inland and cause greater coastline erosion and flooding. In some coastal communities, the areas with the highest risk of coastal flooding are also home to low income and other vulnerable populations.

To adapt to a changing coast, communities can explore approaches to build resilience and seek to incorporate nature-based solutions. The WICCI Coastal Resilience Working Group has resources to help. There is hope for the future but it's up to us.

Support WICCI

Gifts to the Wisconsin Initiative on Climate Change Impacts (WICCI) Program Fund provide general, discretionary program support 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.

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.

This article is part of a series highlighting the contribution from each WICCI Working Group for the 2021 WICCI Assessment Report. Next month: Great Lakes Working Group.

A Half Century of Environmental Cooperation: The U.S.-Canada Great Lakes Water Quality Agreement

A session at the 2022 Earth Day Learning Event marked the 50th anniversary of the Great Lakes Water Quality Agreement between the United States and Canada. It explored the history of the agreement with a panel who shared U.S., Canadian, and Indigenous perspectives and provided recommendations for protecting Great Lakes water quality in the future and discussed lessons learned from this agreement that may apply to other shared natural resources. Speakers included Mike Goffin, director of water policy, Environment and Climate Change Canada; Sumudu Atapattu, director of research centers, University of Wisconsin–Madison Law School; Mic Isham, executive administrator, Great Lakes Indian Fish & Wildlife Commission; Chris Korleski, director, Great Lakes National Program Office, U.S. Environmental Protection Agency (EPA); Lana Pollack, former U.S. co-chair, International Joint Commission; and Susan Hedman, visiting scholar, University of Wisconsin–Madison. The session was hosted by the UW–Madison Law School and Laurie Carlson Progressive Ideas Forum. If you missed the program, you can view the recording here.

Coastal Erosion

Bluff erosion in Ozaukee County

Record-high Lake Superior water levels causing erosion on Wisconsin Point in Superior

Village of Fox Point Beach Drive protection

Meeting the New WICCI Co-Director, Ann Kipper

By Dea Larsen Converse

Ann Kipper, Wisconsin Department of Natural Resources's (WDNR) deputy administrator for external services, joins the Wisconsin Initiative on Climate Change Impacts (WICCI) as the Intergovernmental Panel on Climate Change is calling for drastic action to reduce greenhouse gas emissions worldwide to address climate change. The WICCI network documented the impacts of climate change and recommended solutions in the recently released 2021 Assessment Report.

Ann Kipper

Kipper has over 30 years of experience in the environmental and natural resources fields. She is a scientist and has held diverse leadership positions during her career. When asked what she can bring to the role of WICCI co-director, Kipper talks about her talents for listening and bringing together disparate and diverse views to solve complex problems.

"With varying views on climate change, it is important to focus on areas of agreement. Climate variability is one area. Storms are increasing in frequency and severity, and the consequences have been seen and felt locally and statewide. Let's problem-solve collaboratively and proactively to improve resiliency and adaptation to these changing weather patterns."

Kipper's interest in natural resources goes back to her time growing up in the Oneida County Forest park. The area includes the Buck Lake shoreline, a unique bog wetland, and 40 acres of forest donated by naturalist Dr. Lois Almon. She describes Buck Lake Bog as her touchstone. Her family moved there when she was in fourth grade. She remembers how exciting it was to see pitcher plants and to walk the two miles of nature trails that ran through the bog and the Buck Lake shore. Her experiences there are the reason that she chose a career in natural resources. Those experiences still inform her work today in her leadership position at the WDNR.

"In addition to her extensive administrative experience, Ann brings an important perspective and vision to WDNR leadership and WICCI as someone living and working in the northern part of the state and who brings experience managing a 300-acre family forest." Dave Siebert, administrator, WDNR External Services Division.

Kipper also serves as a mentor for youth in her community and emerging leaders in state government. Mentoring young women in natural resources leadership roles is really important to her. She also led the development of a supervisor and leadership program, a three-day program for emerging leaders.

Ann Kipper showing off one of her touchstones, the Buck Lake bog in Oneida County where she grew up. Photo courtesy of Ann Kipper.

"We are excited have Ann be a leader of WICCI as we engage more people in Wisconsin to address climate issues, impacts, and solutions." Steve Vavrus, WICCI co-director.

Kipper is honored to be co-director of WICCI. She has hope for the future and looks forward to engaging and mentoring future climate leaders, especially from the younger generation. Her goal at WICCI is to find the message in the middle that everyone can hear and consider. Finding that message will give people hope that we really can do something about climate impacts in Wisconsin.

Patz and Vavrus Contribute Expertise in WPR Interview on Record-Setting Heat

Even prior to the official start of summer on June 21, Wisconsin has experienced several heat advisory days. Jonathan Patz, Vilas Distinguished Professor in the Nelson Institute for Environmental Studies and Population Health Sciences, and Steve Vavrus, Nelson Institute Center for Climatic Research senior scientist and co-director of the Wisconsin Initiative on Climate Change Impacts (WICCI), discussed the health and climate perspectives of increased temperatures in the recent story "Heatwave leaves much of Wisconsin sweltering Monday and Tuesday" on Wisconsin Public Radio.

WISCONSIN PUBLIC RADIO

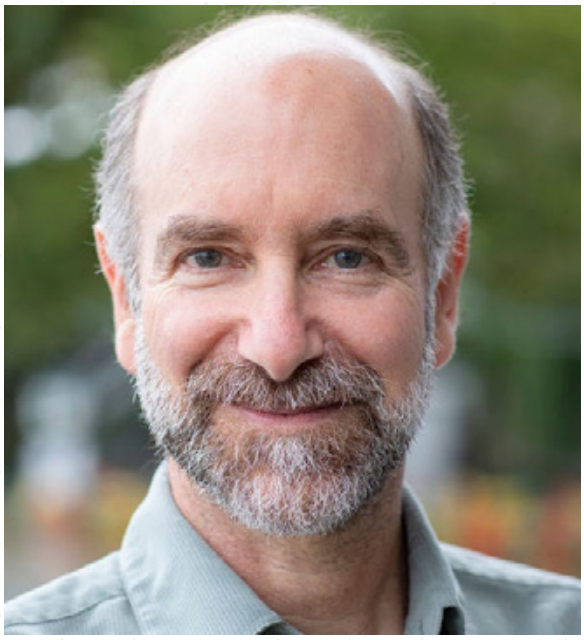
The article addresses the unusual occurrence of the extreme temperatures in the state, under reporting of heat-related deaths, and longer and more frequent heat waves in the future due to climate change.

Patz shared that heat-related deaths are often underreported and cited recent research that shows a link between extreme heat and redlined communities. Vavrus explained that the state is experiencing more extreme heat at night, equating it to "putting a heavier blanket on us at night, and so we can't cool off."

In the summer, the number of days hotter than 90 degrees is likely to triple in Wisconsin by mid-century. Read more

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.



Jonathan Patz

Steve Vavrus

NSF Grant Supports Internships at the Welty Environment Center

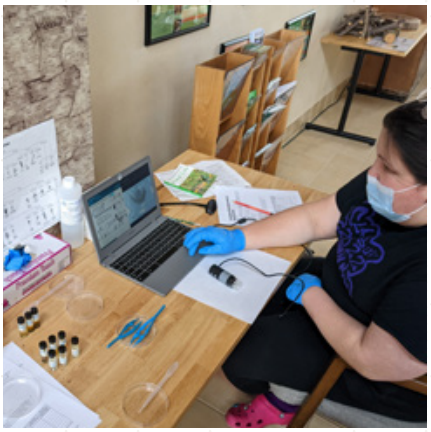
Bennett Donovan, Darien Becker and Liam Flanagan.

By Anica Graney
Photos by Welty staff

Through the efforts of Nelson Institute Center for Climatic Research's interim director, Michael Notaro, and Wisconsin Educational Leadership for Community Outreach and Mentoring for the Environment (WELCOME), with funding provided by a National Science Foundation (NSF) GEOPAths grant, three Beloit Memorial High School students participated in a one-of-a-kind internship program at the Welty Environment Center (WEC). "The NSF GEOPaths grant is aimed at expanding science, technology, engineering, and math (STEM) opportunities in the diverse Beloit community," Notaro said.

Seniors Bennett Donovan, Liam Flanagan, and Raven Regenold spent their last semester of high school working on various projects related to environmental conservation at the WEC, an environmental educational center located in Beloit, Wisconsin. The center offers hands-on encounters with biological, physical, and chemical elements of nature to both children and adults in order to garner appreciation for environmental, ecological, and related social concerns.

"The NSF funding allowed us to tighten partnerships with our local partners and the school district of Beloit," said WEC program director Aaron Wilson. "Because there is grant money involved, everyone was able to dream big and provide opportunities that otherwise might have been passed over in favor of revenue producing programming."



Raven Regenold working on her macroinvertebrate research project.

"It was a really cool way of incorporating that mentorship aspect by working with high school students who had never done real research before, and then getting them introduced into the scientific method in a more mature setting."

–Darien Becker,

WEC Environmental Educator

The funds also helped expand WEC environmental educator Darien Becker's position to full time. Becker worked closely with the interns and guided them through their internships that culminated in research presentations. Additionally, the three interns worked on school programming, curriculum development, land management, citizen science, animal husbandry, and social media during their daily two-hour time slots at the WEC.

Liam Flanagan collecting soil samples.

Raven Regenold was not afraid to get her hands dirty while collecting samples in the Rock River Watershed.

"It was a really cool way of incorporating that mentorship aspect by working with high school students who had never done real research before, and then getting them introduced into the scientific method in a more mature setting," Becker said.

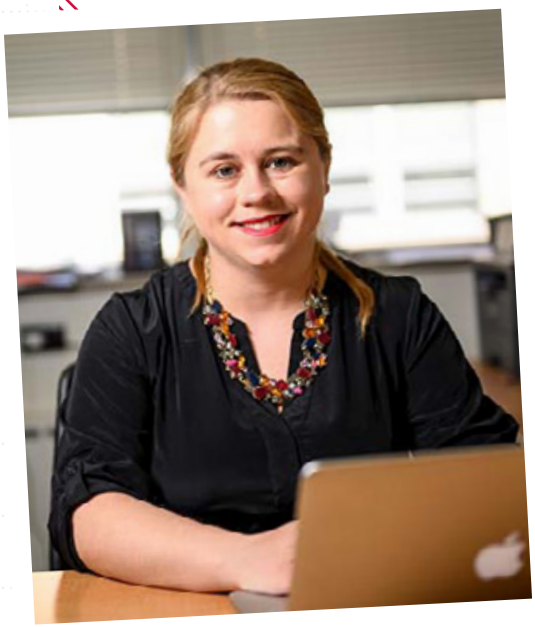
The students participated in projects that implemented some of NASA's Global Learning and Observation to Benefit the Environment (GLOBE) protocols and studied the local environment at Big Hill Park. Each intern had unique environmental conservation interests. Donovan compared how elevation influenced soil temperature that ultimately determined types of growth in an area, Flanagan surveyed areas around the WEC to compare the types of soil particles found at different depths, and Regenold studied macroinvertebrate communities found in different nitrate levels across the Rock River Watershed.

"These kids were out there getting dirty, analyzing in respect to their research question, and getting really good results and deliverable products that they worked hard on throughout the semester," Becker continued.

Learn more about the interns and the WELCOME collaborative.

Bennett Donovan helping a student on a class field trip.

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

The Science of Sustainability

This week I am spending my time in rural Maine at the Gordon Research Conference on Industrial Ecology. Industrial ecology is often termed "the science of sustainability," and it is inspiring to spend time with thought leaders in this area, as well as important to acknowledge the challenges and how far we have to go. Discussions this week have focused on the circular economy, which in essence means closing resource and material loops, in the context of human and planetary wellbeing. We have covered quantitative approaches to understanding the impacts and implications of circularity, such as life cycle assessment, material flow analysis, and input-output modeling. More specifically, plastics and their future have been a central topic this week. Personally, I've had the opportunity to highlight the importance of teaching about sustainability in a meaningful manner to engineering students.

Although campus may be a bit quieter over the summer, here at the UW–Madison Office of Sustainability we are hard at work planning for the coming academic year. We recently welcomed our new cohort of over 20 undergraduate sustainability interns at the Office of Sustainability, who will collaborate on campus-based sustainability projects. Our Green Fund is busily supporting new projects across all three paradigms of sustainability on our campus. As always, we are continuing our efforts to bring together the campus sustainability community. If you are in Madison this summer, we invite you to join us for our informal Sustainability Chats on the Memorial Union Terrace (or inside the Rathskeller in case of rain), Wednesdays from 4:30–6 p.m., running through August 31. You can find more information and RSVP here if you wish, or just show up.

We are also planning an exciting new event for the fall. On October 26, 2022, we will be holding the UW–Madison Sustainability Symposium, where we will gather together the campus sustainability community to highlight all of the excellent work going on at our university. This event is open to students, faculty, and staff working in sustainability. The afternoon event will consist of an invited keynote speaker, lightning talks, and a poster session. A call for abstracts will be sent out early in the fall 2022 semester (i.e., September), and will also be posted on our website.

We invite you to join us this summer and fall as we seek to engage and amplify the sustainability interest and expertise on our campus to improve the UW–Madison community.

Thomas Leffler Receives 2022 GHI Graduate Student Research Award

By Ann Grauvogl

Thomas Leffler, MPH, a Nelson Institute environment and resources doctoral student is among those who received a graduate student research award from the Global Health Institute (GHI). The award supports Leffler's attendance to the International Institute of Applied Systems Analysis in Vienna, Austria. Using land cover data from the National Oceanic and Atmospheric Administration and information from United States Agency for International Development's Demographic and Health Survey, he will look for associations between the loss of forests and children's health. He'll look specifically at dehydration, respiratory diseases, digestive-system diseases, and malaria.

> ***"The still ongoing pandemic has shown the importance of connecting across the planet to study the factors that drive these outbreaks and negatively impact global health."***
>
> –Jorge Osorio,
>
> GHI Incoming Director

"Deforestation has been occurring at alarmingly high rates throughout the world, with profound ecological, biological, and geochemical impacts for affected ecosystems," he says. "At the same time, humans increasingly inhabit the human-wildlife interface among deforested areas, creating novel biotic interactions, opportunities for infectious disease transmission, and changes in ecosystem dynamics."

The initial work could lead to more field research, he says, and the potential to clearly identify deforestation as a cause of child illness.

Thomas Leffler

Recipients from across campus received four seed grants, five graduate student research awards, one visiting scholar award and one Henry Anderson III Graduate Student Award in Environmental and Occupational Public Health. Their projects show the diversity and complexity of global health challenges in Wisconsin and around the world.

"The still ongoing pandemic has shown the importance of connecting across the planet to study the factors that drive these outbreaks and negatively impact global health," says Jorge Osorio, GHI's incoming director. "GHI is very excited to fund these grants that will encourage multicultural, international research and collaborations that will bring equity and diversity to our campus, provide opportunities for UW students and researchers to work together and enhance the reputation and reach of UW science throughout the world."

The 2022 recipients include faculty, staff and graduate students from the School of Nursing, College of Letters & Science, College of Agricultural and Life Sciences, School of Veterinary Medicine, School of Medicine and Public Health, and the Nelson Institute for Environmental Studies. Their work covers topics from food insecurity to improving anesthesia care to the effects of deforestation on health. The annual grants and awards range from $3,000 to $20,000 to support global health projects.
Read more

From California to Wisconsin to Costa Rica, Environmental Studies Certificate Student Pushes the Boundaries of Her Comfort Zone

By Anica Graney

Naughton while studying abroad in Costa Rica. Photo courtesy of Claire Naughton.

For undergraduate student Claire Naughton, getting outside of her comfort zone is an experience she strives for. Originally from San Francisco, Naughton chose to attend the University of Wisconsin–Madison as an environmental science major with certificates in environmental studies, energy, and global health.

Without any family living in Wisconsin, Naughton's decision to attend UW–Madison was a challenge that developed her resourcefulness. "Being able to leave my comfort zone pushed me to be a more adventurous and adaptable person," Naughton said.

In spring 2022, her junior year, Naughton began another adventure far from home by studying abroad in Costa Rica. While at the School of Field Studies in Atenas, Costa Rica, Naughton said the experience gave her the hands-on training she was looking for. "I wanted to be able to go out into the field and do hands-on learning. Especially because we were online for a long time," Naughton said.

"A really important part of that class is the field aspect — you can learn a lot in the classroom, but you have to go out into the field to really understand what is going on."

–Claire Naughton

The study abroad experience was fulfilling for Naughton in that she was able to add to her skillset while also helping the city of Atenas develop conservation plans. "It feels good to come here and know that what I'm doing is directly helping the local people," Naughton said. "I've been able to work on both my research and writing abilities as well as appreciate the natural beauty of the environment."

Naughton encourages all students with an interest in the environment to study abroad. "It will definitely benefit in the long run," Naughton said. "I was a little intimidated because I've never done field work before, but I just decided to take the leap and go for it, and I definitely enjoyed it and learned a lot."

The hands-on skills Naughton developed in Costa Rica contribute to the knowledge she has gained from her major and certificates back in Madison. Like two sides of a coin, Naughton shared that her environmental science major focuses on scientific systems while her environmental studies certificate narrows in on the social and interpersonal aspects of today's environmental issues.

The environmental studies certificate is a 15-credit program that offers a unique opportunity for undergraduate students to learn about society's environmental challenges, study environmental science, policy, and humanities and take part in environmental research, fieldwork and case studies.

For Naughton, the environmental studies certificate allows her to explore more areas of interest as well as interact with others who are interested in the same topics as her. "I really like environmental studies because it focuses on problem solving," Naughton said. "A lot of environmental issues right now, we don't have answers for them, and so a huge chunk of what we'll be doing in the future is problem solving."

Naughton recommends anyone who is interested in environmental topics take Principles of Environmental Science. Taught by Nelson Institute Professor Tim Lindstrom, the class gave Naughton a look into the environmental challenges the UW–Madison campus faces.

"A really important part of that class is the field aspect," Naughton said. "You can learn a lot in the classroom, but you have to go out into the field to really understand what is going on. So, in that class you get to go on a lot of field trips." Field trips that include visiting the Charter Street Heating & Cooling Plan, the Lakeshore Nature Preserve, and separating trash and recycling from the UW dorms.

Another class Naughton enjoyed was Climate Change Governance with Nelson Institute Assistant Professor Leah Horowitz, as it focused on social aspects, international law, and the different ways to promote environmental problems. "A really cool part of the class was that it was discussion based with a lot of group work, so I was able to talk to a lot of different people and gain their different perspectives," Naughton said.

Along with her classes, Naughton stays active outside of school where she is the Global Health Alliance (GHA) club's forum co-coordinator. Each week, Naughton writes and occasionally presents on different global health topics to GHA members, an opportunity that she says is a great way to inform others about what she's interested in.

During the summer of 2022, Naughton started training as a sustainability intern through the Office of Sustainability at UW–Madison. The year-long internship works closely with campus offices, departments and auxiliary units in which student teams raise awareness of sustainable practices, influence consumer behavior and train partners across campus in sustainability strategies.

Learn more about the environmental studies certificate and how you can support the program.

Leopard cubs playing on the Massai Mara National Reserve. Left: Grace Cheptoo.

EOI Student Works to Preserve Wildlife at Home in Kenya

By Rachel Carrier
Photos by Grace Cheptoo

Graduate student Grace Cheptoo moved across the world to begin the Environmental Observation and Informatics (EOI) program at the Nelson Institute in May of 2021. Her journey to the Nelson Institute, though, was nothing short of a "wild" ride.

Before making the move to Madison, Cheptoo worked for Kenya Wildlife Trust, a Kenya-based organization focused on protecting predator species and reducing human-wildlife conflict in Kenya. Though initially appointed for a four-month internship program, Cheptoo accepted a full-time position monitoring lions and cheetahs for the organization.

Cheptoo's workdays began well before sunrise in attempts to observe the wildlife in their most active periods. The animals Cheptoo were tasked with observing — mainly cheetahs and leopards — avoid the sun, making the best time for observation in the early morning and evening. The observation data she collected was used to help approximate population density and understand movement patterns of each species.

Despite growing up in Laikipia, Kenya, a county with a dense wildlife population, Cheptoo found herself uncomfortable in certain situations with the animals. She recalled when driving alone in the field one day, she passed a herd of buffalo and noticed one following her truck.

"I was lucky enough to not run into any issues being followed by the buffalo, but I always prayed I would never be stuck and unable to reach anyone when driving in the bushes" she said. "It was scary at times, but it was always enjoyable seeing all the animals."

As land in Kenya has become more privatized, it has been harder for groups like the Kenya Wildlife Trust to obtain solid data on animal population and movement as access to land decreases. Landowners put up fencing in attempts to keep animals and observers off their property, but this can be harmful to wildlife. Cheptoo noted that cheetahs, for example, are particularly vulnerable and commonly get trapped in the fences intended to keep them off the property. Part of Kenya Wildlife Trust's mission is to aid animals in situations like these and other human-animal conflicts.

"I loved my work with [Kenya Wildlife Trust]," Cheptoo said. "It was really a good job because they not only did research to help predators, but also did work to help the local communities."

Moving abroad to pursue a master's degree has been an incredibly fulfilling experience for Cheptoo. With an undergraduate degree focused on geography and geographic information systems and a strong passion for conservation, Cheptoo was excited to begin the Environmental Observation and Informatics program.

"The program is incredibly well packaged and I'm so grateful for the opportunity to participate in it," Cheptoo said. "I can't express it enough, it's such a great program and a great fit for me."

"The EOI program is structured in an accelerated format to get students to and through in just 15 months but offers flexibility to go deeper in the areas they're most interested in," shares Meghan Kautzer, EOI program manager. "We work very hard as staff to ensure the program is the right 'fit' for each student that joins us. Their passion and expertise are needed in every area of environmental problem solving!"

"Moving here was so exciting, and it's still exciting. It was always my dream since I was a young girl to study abroad, so I am really happy to be here," Cheptoo recalled. "I still can't believe I'm here."

"EOI is an action-oriented master's degree," said Kautzer. "We provide the in-demand skills that allow graduates to make real change happen in their communities and more broadly. It's inspiring to see the unique and powerful ways EOI graduates apply their training in environmental informatics."

Alongside her studies, Cheptoo works at the UW Center for Health Disparities Research at the UW School of Medicine and Public Health with a focus on looking at how physical environment and social conditions intersect to affect the health of individuals. By looking at neighborhood data, Cheptoo's work seeks to discover health-related disparities that exist at the state and national level.

"This is a field I never thought I would work in and I'm still learning what it really entails, but so far so good. I'm learning a lot and enjoying it so far."

Scarface, the oldest lion found on the Massai Mara National Reserve, who passed away in 2021.

Cheptoo hopes to work for a non-profit organization after graduating in August and hopes to use her conservation and observation informatics skills to impact the community in a positive way and solve environmental problems.

As Cheptoo completes her graduate studies at the Nelson Institute, she is extremely appreciative for the opportunity to move abroad to pursue her educational and professional goals. Inspiring young girls, especially in Kenya, is a goal she carries with her throughout all her work.

"I hope to be a role model for young girls especially in Kenya to help them pursue their dreams." she said. "I know most people are not afforded this opportunity to come study, so my aspiration is to mentor girls and help them reach their goals."

Learn more about the Environmental Observation and Informatics MS and how you can support the program.

Environmental Conservation MS Student Hopes to Create Change Through a Career in Policy

McCoy while hiking in White River National Forest, Colorado. Photo courtesy of Mary Kate McCoy

By Anica Graney

Starting her career by writing about environmental issues, Mary Kate McCoy found herself wanting to do more to support conservation efforts. "Personally, I had reached a point where I wanted to work more directly with finding solutions to the problems instead of just writing about them all the time," McCoy said.

After graduating from the University of Wisconsin–Madison with her undergraduate degree in journalism, McCoy began working for Wisconsin Public Radio where she wrote a series on how climate change has impacted some of Wisconsin's staple foods. "Cheese, beer, cranberries, that type of thing," McCoy said. "That was a real turning point where I was like, this needs to be the focus of my career."

The series dives into some of the real struggles local farmers are currently facing, from how increasing temperatures cause cows to decrease milk production to how intense rainfall increases cranberry rot. Additional topics that McCoy addressed in the series included how potatoes, wild rice, walleye, and breweries are combating climate change.

McCoy's drive for implementing change turned her to the Nelson Institute's environmental conservation (EC) program, a 15-month degree that teaches students how to apply practical interdisciplinary skillsets to a broad range of careers in conservation. "It felt like a really good way to meld my interest in the environment with my love and experience with storytelling," McCoy said. "I had the communications background and was looking for more of a science background."

During the first summer session of the program, McCoy took Land Use Policy and Planning, which she said was exactly the kind of course she was looking for when she joined the program. "It gave me a lot of really good practical skills and knowledge and was taught by some really excellent professors who have years of hands-on professional experience," McCoy said.

The course was taught by Paul Kent, environmental lawyer at Stafford Rosenbaum LLP, and Kathleen Falk, former assistant attorney general of Wisconsin. "The Land Use course was fun to teach because it required the integration of theory and practice," Kent said. Students were tasked with finding a real-world problem, developing a plan to affect change then presenting their plan to the class.

> ***"The thing that I like about policy is that it is pretty similar to investigative journalism, which is why I'm drawn toward it."***
>
> –Mary Kate McCoy

Kent explained that the course required students to know how government systems worked at a local, state, and national level. "The challenge is how to select the right potential tools out of that box to reach your policy objective," Kent said. "It was exciting to see the policy makers of the future in action."

McCoy's background and time at the Nelson Institute has focused her interests on the world of policy. "The thing that I like about policy is that it is pretty similar to investigative journalism, which is why I'm drawn toward it," McCoy said. "Policy is where change happens most of the time. I wouldn't be doing this program if I wasn't thinking about how I can actually make a difference."

Mary Kate McCoy. Photo credit: Keni Rosales

McCoy also took Agroecosystems and Global Change taught by Chris Kucharik, professor of agronomy and environmental studies, during her fall semester, which she said was both challenging and rewarding. "I have a particular interest in agriculture and how it can better work with the environment rather than just extracting from it and how the two can co-exist," McCoy said. "I found that class to be really fascinating."

McCoy while hiking in Zion National Park. Photo courtesy of Mary Kate McCoy

As McCoy enters the second summer portion of the MS degree, she plans to work with Catherine Macdonald, North America Natural Climate Solutions director at the Nature Conservancy, and the U.S. Climate Alliance. There, McCoy will research avoided conversion and urban sprawl for climate mitigation policies in the Upper Midwest and Western states.

Looking back at the past year, McCoy said that her time in the environmental conservation program was spent surrounded by people with vastly different experiences than her. "I come from a journalism background. Science is not my thing, but I'm working with people all the time who did research or were teachers," McCoy said. "There's a whole variety of backgrounds, and I think there's a lot of value and strength in those different experiences."

Learn more about the Environmental Conservation MS and how you can support the program.

EPP Leadership Seminar Roadtrip

As part of their initiatory leadership seminar, graduate students of the environmental professional programs returned to Mąą Wakąçąk Ho-Chunk "sacred land" and site of the Former Badger Army Ammunition Plant near Baraboo, Wisconsin.

This experience exposed students to the challenges and conflict that arise in multi-stakeholder conservation work; it also offered hope in the possibility of creating a shared vision for multi-use land reclamation.

With a deep and complex history, the site specifically housed over 1,400 outbuildings, extensive railways, and manufactured propellants from 1942–1975 before beginning its "Reuse" journey in 2000 after many years of advocacy. Demolition and land remediation are ongoing, with the more than 7,000 acres managed as a whole among diverse property owners for uses in conservation, restoration, education, agriculture, and recreation.

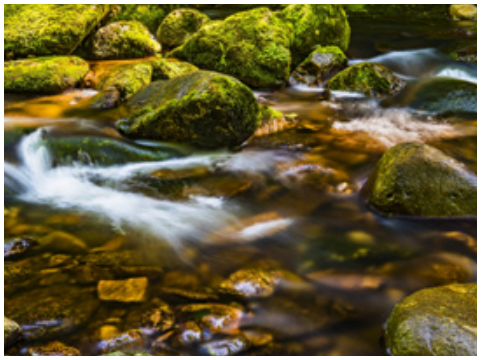
Ho-Chunk artist Melanie Tallmadge Sainz discusses her ceramic mural *Earth, Sky, Water* with new Environmental Conservation and Environmental Observation and Informatics students. The mural is installed along the Great Sauk State Trail, a bike path that runs through the former Badger Ammunition Plant land. It uses ceramic tiles designed by several Ho-Chunk families to illustrate their connection to *Earth, Sky, and Water*, and particularly to *Mąą Wakąçąk*, the "sacred land" of the Former Badger Ammunition Plant that is now being restored to prairie after being returned to the Ho-Chunk.

Alison Duff, research ecologist with the USDA Dairy Forage Research Center (and a Nelson Institute alum) talks to EC and EOI students during their field trip to the site of the former Badger Ammunition Plant near Sauk City, WI. Duff's research seeks to understand the ways forage crops and dairy farm practices can contribute to solving climate change problems. Her talk emphasized the importance of listening to farmers to better understand their needs and perspectives. Without that active understanding, it will be impossible to develop workable solutions to climate challenges.

The ceramic mural *Earth, Sky, Water*. It is installed on a decaying concrete structure that may have once supported a nitroglycerin tank at the Badger Ammunition Plant. The artist explained that her father worked with nitroglycerin at Badger Ammunition, as did many Ho-Chunk tribal members.

Training Environmental Leaders to Take Action

Pressing environmental challenges need *your* skills and perspective. Take action through the Environmental Observation & Informatics or Environmental Conservation Professional Master of Science degrees at the Nelson Institute. **Applications now open for a summer 2023 start!** You can find more on what is needed for your application on our "How to Apply" webpage.



Questions? Our staff are ready to support you!

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!

2022 Rendezvous on the Terrace
Friday, September 23, 2022
Alumni Lounge, Pyle Center,
Madison

Registration now open

We invite you to stay connected by updating your contact information, by joining Badger Bridge, or making simple updates here.

Release of Earth Day Learning Event Videos

Thank you to everyone who helped to make the 2022 Earth Day learning event a success.
If you missed the event or a particular session, the Nelson Institute is pleased to share these videos:

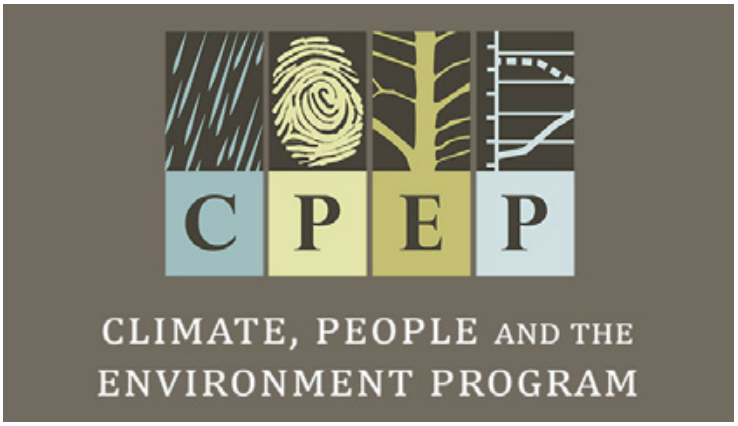
- A Half Century of Environmental Cooperation: The U.S.-Canada Great Lakes Water Quality Agreement
- Climate Resilience in the Electricity-Water Nexus
- Community Partnerships for the Yahara Watershed
- Land-Water Connections and the Ecological Impacts of Water Pollution
- Mountains and Three or Four Rios (Rivers)
- Reimagining our Relationship with Water

Additional videos will be released in an upcoming edition of *The Commons*.

View the Nelson Earth Day program archives. Learn more about how you can support future Earth Day events.

Weston Series

The Weston Roundtable Series is designed to promote a robust understanding of sustainability science, engineering, and policy through weekly lectures co-sponsored by the Center for Sustainability and the Global Environment (SAGE), the Department of Civil and Environmental Engineering, and the Office of Sustainability. The spring series is complete, but past lecture recordings are available for viewing.



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. The spring series is complete, but past lecture recordings are available for viewing.

Nelson Video Library

A 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.

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