

Fall 2024

**M** | SEAS+PITE

# Stewards

A MAGAZINE FOR ALUMNI AND FRIENDS OF THE SCHOOL FOR ENVIRONMENT AND SUSTAINABILITY  
AND THE PROGRAM IN THE ENVIRONMENT



"The  
Great Lakes  
University"

Island Biology:  
"A Lot of Bang for Your  
Conservation Buck"

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Meet the Future of Sustainable  
Food Systems: A Focus on Soil  
Health and Crop Diversity



# M | SEAS+PITE Stewards

A magazine for alumni and friends of the School for Environment and Sustainability and the Program in the Environment.

Cover photo by Maddie Fox: Smoke from the Canadian wildfires created hazy skies near the Mackinac Bridge in June 2023. Read more about how climate change is impacting the Great Lakes, and how U-M is solving those issues, in our cover story.

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SEAS acknowledges the university's origins through an 1817 land transfer from the Anishinaabek, the Three Fires People: the Odawa, Ojibwe, and Bodewadami as well as Meskwahkiasahina (Fox), Peoria and Wyandot. We further acknowledge that our university stands, like almost all property in the United States, on lands obtained, generally in unconscionable ways, from Indigenous peoples. In addition, our research on environmental science and sustainability has benefited and continues to benefit from access to land originally gained through the exploitation of others. Knowing where we live and work does not change the past, but understanding and acknowledging the history, culture, and impacts of colonial practices is an important step towards the creation of an equitable and sustainable future.



## Dear Friends,

It's an exciting time at SEAS, PitE and U-M.

We're meeting 21st century challenges—and creating a better world for future generations—by developing solutions that will have a lasting impact on our planet and its inhabitants.

With SEAS leading the way, you can look to Michigan for advancements in climate action. We're tackling an expanding array of environmental crises—from climate change and biodiversity loss to food scarcity, water quality and sustainable transportation—by turning research into real-world engagement with tangible benefits.

In this issue of *Stewards*, you'll find examples of how we're addressing the grand problems of our time while inspiring hope for a better future. Our cover story, for instance, focuses on U-M as “The Great Lakes University” and how we're using research, engagement and collaboration to protect and plan for a more resilient Great Lakes region. You'll also find stories about conservation efforts in the Greek Islands to guard against biodiversity loss and species extinction and efforts to promote soil health and crop diversity.

These stories and more highlight the breadth and depth of the work we do at SEAS and our commitment to bringing interdisciplinary solutions to complex problems, with environmental justice at the core of all we do.

SEAS is making significant strides in creating a more sustainable, just future. Thank you for the progress we've made together—and for the collective advances that are still to come. We *can* achieve a healthier planet for all.

In gratitude,

Peck

Jonathan Overpeck  
Samuel A. Graham Dean  
William B. Stapp Collegiate Professor of Environmental Education

P.S. As the university embarks on its next capital campaign, I hope you'll look to SEAS and U-M to learn about all the ways we're transforming research into action. Within these pages of *Stewards* magazine is just a small sampling of the cutting-edge work we do to tackle urgent environmental challenges.

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# Climate Conversations

SEAS brought a number of high-profile speakers from the government, private and nonprofit sectors to campus during the 2023-2024 academic year, each of whom addressed the urgent need for just climate action while offering solutions and messages of hope and resilience.

**Shalanda H. Baker**, then director of the Office of Energy Justice and Equity at the U.S. Department of Energy and now the first vice provost for sustainability and climate action at U-M, visited the university last September, where she told an audience that Michigan is an essential part of creating an equitable clean energy future. ❶

During a January visit to U-M, **Rajiv Shah (BS '95)**, president of The Rockefeller Foundation, said it's important to have what he calls a “big bets” mindset about making impactful change and solving the world's pressing problems, whether it's climate change, health care access or food insecurity. A big bets mindset starts with an “audacious goal,” Shah said, and includes three components: fresh and innovative solutions, partnerships and results measurement. ❷

**Deputy Secretary of Energy David Turk** made an impromptu visit in March to speak to U-M students about careers in the climate and clean energy field. “There's not a profession, I don't think, that doesn't have an opportunity to be part of getting us to net zero,” he told attendees. ❸

In March, **U.S. Secretary of the Interior Deb Haaland** emphasized the importance of including marginalized communities in federal-level decisions that aim to build an equitable future. “To get this historic work accomplished with everyone at the table, we're fundamentally changing how we work with states, Tribal nations and the labor community. It's important for us to connect early and often with the communities whose lives we want to positively affect,” she said. Before the talk, Haaland attended a poster session where she interacted with students to learn about their work. ❹

Climate scientist **Katharine Hayhoe** delivered the Wege Lecture on Sustainability, SEAS' flagship environmental talk, in April. Noting that the media focuses on “doom and gloom headlines” about climate change because they generate clicks, Hayhoe said they don't spur people to act. Instead, she advocated for a “head to heart to hands connection” to galvanize action. “There has never been a more important time to focus—not so much on our personal carbon footprint—but on our climate shadow and how we affect people around us,” Hayhoe said. ❺





# "The Great Lakes University"

Story by  
Lori Atherton

Photos by  
Maddie Fox

**T**he Great Lakes are the great unifiers. That's how SEAS Professor of Practice and Engagement Mike Shriberg (MS '00, PhD '02) describes these valuable resources.

Shriberg, whose career has largely focused on Great Lakes water policy and management in the nonprofit sector, says the Great Lakes are one of the few issues that receive strong bipartisan support given their cultural, economic and environmental significance.



"There's this unifying aspect to the Great Lakes," says Shriberg, who, in addition to teaching at SEAS, serves as the associate director of the Cooperative Institute for Great Lakes Research (CIGLR) and director of engagement for Michigan Sea Grant (MISG), two of SEAS' prominent Great Lakes research centers. "There's no other issue I can think of where there is such widespread support across political differences and almost all demographic groups."

SMOKE FROM THE CANADIAN WILDFIRES CREATED  
HAZY SKIES NEAR THE MACKINAC BRIDGE IN JUNE 2023.



There is a strong interest in protecting and restoring the Great Lakes—and making them healthy and resilient for generations to come—not only because they account for more than 20% of the world's surface freshwater and supply drinking water for over 40 million people in the United States and Canada, but also because of the complex issues facing them. Those problems include climate change, pollution, invasive species, algal blooms, PFAS, coastal erosion and habitat destruction, among others.

"The Great Lakes have experienced environmental challenges for many years, but climate change is unlike any other challenge they have faced," says Gregory Dick, CIGLR's director and a professor at SEAS and of Earth and Environmental Sciences. "Climate change affects biodiversity, and it affects water quality and coastal infrastructure. It's really this master challenge, so we need a research university like U-M that can take the lead in tackling this massive, complex threat in a holistic manner."



## NOAA Funding

Since 2017, SEAS has received \$60.3 million in National Oceanic and Atmospheric Administration (NOAA) funding focused almost entirely on Great Lakes research and engagement. This amount nearly matches the NOAA funding received by the rest of the university combined—in fact, much of the funds received by other units are sub awards from one of SEAS' Great Lakes research centers.

U-M is a major convener of Great Lakes research thanks to its interdisciplinary efforts to address climate change and other problems. And SEAS is a microcosm of that work because of its Great Lakes research centers and institutes; collaborations with other U-M units including engineering, public policy, the Graham Sustainability Institute and its Water Center; and its expansive partnerships with organizations within Ann Arbor, the region, and spanning the U.S., Canada and other countries.

"U-M has this amazing diversity of perspectives on the Great Lakes," says Shriberg, "and SEAS has expertise representing almost all the disciplines you can think of. But we also have really critical collaborations with other areas in the university. These perspectives are important because we need specialists who can think about the Great Lakes across systems and boundaries in a global context. You can't solve air pollution, for example, without thinking about water and climate policy."



U-M is a major convener of Great Lakes research thanks to its interdisciplinary efforts to address climate change and other problems."

What this means, according to SEAS Dean Jonathan Overpeck, is that U-M is well-positioned to be "The Great Lakes University."

"The importance of the Great Lakes to this region and to the world cannot be overstated," Overpeck says. "And it's more crucial than ever because of climate change that we double down on our efforts to protect and manage the Great Lakes for the future. Our research and engagement are focused on creating the Great Lakes of tomorrow by helping to build a future that is sustainable, equitable and prosperous. U-M, and SEAS in particular, has a significant role in this vision."

There are more than 1,000 partners that U-M collaborates with in the Great Lakes region. This article is a snapshot of some, but not all, of the Great Lakes research that is being done by SEAS' centers and institutes and in collaboration with other partners.

## Cooperative Institute for Great Lakes Research

If you've ever visited western Lake Erie in late summer or early fall, you've likely seen harmful algal blooms (HABs) along its surface, which can be green or blue-green in appearance and resemble foam, scum or pea soup.



CIGLR SUMMER FELLOWS AND RESEARCH ECOLOGIST ASHLEY ELGIN OF THE NOAA GREAT LAKES ENVIRONMENTAL RESEARCH LAB EXAMINE INVASIVE MUSSELS ON THE LAURENTIAN, A NOAA RESEARCH VESSEL, LAST SUMMER.

HABs, which are composed of cyanobacteria that produce toxins that are harmful to humans, pets and wildlife, are a significant threat to all five Great Lakes—and a major research focus of the Cooperative Institute for Great Lakes Research (CIGLR).



## Why Are the Great Lakes So Important?

- They contain **20% of the world's surface freshwater**.
- They supply drinking water for over **40 million people** in the United States and Canada.
- They contain roughly **6 quadrillion gallons** of water.
- If the Great Lakes region was its own country, it would be the **third largest economy** in the world.



## A Key Leader in Great Lakes Research

U-M's deep history of Great Lakes research dates back to the 1800s, when it was focused on fish and fisheries. That emphasis later changed to limnology, the scientific study of bodies of freshwater, such as lakes, after 1920.

Funded by the National Oceanic and Atmospheric Administration (NOAA) and hosted by SEAS since 1989, CIGLR includes a research institute and a regional consortium that is a partnership between NOAA, universities, nongovernmental organizations and businesses. Their collaborative research efforts focus on managing and protecting the Great Lakes, its ecosystems, and the coastal communities who rely on them for drinking water, economic security and recreation.

CIGLR research scientists and their NOAA partners monitor HABs through regular water quality samplings of western Lake Erie and Lake Huron's Saginaw Bay. The up-to-date data is then made available to the public days after sampling. Researchers also use water quality data in tandem with satellite data, weather forecasts and

water movement forecasts to predict the occurrence of future HABs, which is useful for management decisions.

"This isn't just research that is getting published in journals and being read by other scientists," says Dick. "This is what we call Great Lakes science for society."

"It's impactful research that is being used by fishermen, drinking water intake managers, beach managers and other stakeholders to inform their decision making."

Last summer, U-M was awarded a \$6.5 million, five-year federal grant to host a center to study the links between climate change, harmful algal blooms and human health, with CIGLR playing an important role. The Great Lakes Center for Fresh Waters and Human Health will look at cyanobacterial blooms and their impacts on freshwater ecosystems, drinking water supplies and coastal communities, including understanding the effects of breathing in airborne particles released by HABs.



## Beyond SEAS, CIGLR collaborates on Great Lakes research with a breadth of disciplines at U-M, including engineering; biology; public health; chemistry; and earth and environmental sciences.

The research will be used to develop management strategies and public policies that will protect not only drinking water supplies but also human health in the Great Lakes region, according to Dick, who is serving as the center's director.

In addition to HABs, CIGLR conducts research projects focused on other challenges affecting the Great Lakes, including invasive species, which threaten aquatic ecosystems; the loss of ice in the Great Lakes, which has shipping implications; the restoration of degraded ecosystems and habitats, which are home to thousands of plant and animal species; and coastal flooding, which has increased in scope over the past two decades as a result of extreme weather events caused by climate change.



ARCADIA SCENIC TURNOUT OVERLOOKING LAKE MICHIGAN IN ARCADIA, MICHIGAN.



THE WESTERN LAKE ERIE HARMFUL ALGAL BLOOM FROM SEPTEMBER 26, 2017. THE SCUM SHOWN HERE NEAR DOWNTOWN TOLEDO, OHIO, STRETCHED ALL THE WAY TO LAKE ONTARIO. THIS PHOTO IS FROM LANDSAT-8 (A NASA/USGS SATELLITE).



Our people live and work in the communities they serve, so our projects are ongoing and we have long-term relationships with communities and with state agencies around science-based information, outreach and decision making.”

“Water levels are going up and down faster than ever before,” says Dick, “and these extreme highs and lows are having devastating impacts on coastal communities.”

Accomplishing this research couldn't be done without NOAA's collaboration, stresses Dick. What makes CIGLR unique is that its 50 research scientists, postdoctoral fellows, technicians and staff work alongside researchers from NOAA's Great Lakes Environmental Research Lab (GLERL) in Ann Arbor. “It's a pretty unique relationship between a university and a federal agency,” notes Dick. “CIGLR and GLERL researchers are collaborating on research in the laboratory and in the field that leads to sustainable lakes, ecosystems and human communities in the Great Lakes region.”

## Michigan Sea Grant

A cooperative program led by SEAS and in collaboration with U-M, Michigan State University and NOAA, Michigan Sea Grant (MISG) works with scientists, regulators, educators, policymakers and community members to develop science-based solutions to pressing environmental issues affecting Great Lakes coastal areas.

MISG works to protect the Great Lakes and its coastal resources through research, education, and outreach and communications—an approach that SEAS Professor Silvia Newell, MISG's director, describes as a “three-legged stool” because these efforts are done in tandem with one another and each has equal importance.



MISG funds research projects in four key areas: 1) healthy coastal ecosystems, 2) sustainable fisheries and aquaculture, 3) resilient communities and economies, and 4) environmental literacy and workforce development.

Some examples of MISG research projects being funded for 2024-2027 include:

- **“Assessing Blue Gentrification in Michigan's Coastal Communities.”** Blue gentrification is an emerging issue for coastal communities in Michigan and the Great Lakes region and refers to displacement of long-term residents living near water bodies because of physical and cultural



## U-M Water Center

Since 2012, the Water Center has provided more than \$34 million in grants for collaborative research projects that improve water resource decisions. The Water Center informs policy and management decisions at all levels, from those affecting historically oppressed communities such as water service affordability or Manoomin (wild rice) well-being to those preserving estuaries along coastal waterways. Projects focus on water-related issues that external partners bring to the center. In partnership with SEAS, the Water Center hosts the Water@Michigan Collaborative, which includes monthly coffee talks and an annual symposium focused on bringing together U-M students, faculty and staff with other experts who are interested in water issues. The 2024 symposium, held last April, centered on water justice, access and affordability in Michigan. The Water Center is part of the Graham Sustainability Institute and is led by Director Jen Read.



## Institute for Fisheries Research

The Institute for Fisheries Research is a long-term cooperative effort between the Department of Natural Resources, SEAS and U-M that focuses on fisheries research and other aquatic resources in Michigan. Its mission is to conduct research and education for advancing scientific understanding of the ecology and management of aquatic resources, habitats and the fisheries they sustain, and to provide scientific and technical expertise to support sound management decision making.



LAKE MICHIGAN NEAR CECIL, MICHIGAN. PHOTO BY DAVE BRENNER

changes. This project will assess the extent of blue gentrification from 2006 to 2020, identify its driving forces, and develop policies and strategies to address the issue. SEAS Professor Josh Newell is the principal investigator.

- **“Michigan the Beautiful: Great Lakes.”** Using input from a multi-sector advisory group and Tribal engagement, researchers will assess how Michigan’s coastal and Great Lakes waters can contribute to the United Nations’ “30x30” goal of ensuring 30% of Earth’s land, coast and open waters are under effective conservation and management by 2030. Jen Read of the U-M Water Center and Mike Shriberg of SEAS are the principal investigators.
- **“Mapping Genetic Variation in Microcystis to Improve Great Lakes Harmful Algal Bloom Models.”** Lake Erie, Saginaw Bay and other areas of the Great Lakes regularly experience harmful algal blooms (HABs), which are explosions of microscopic organisms that can generate toxins that threaten recreation, ecosystem health and drinking water supplies. Microcystis is a genetically

# Michigan Sea Grant's Impact

(February 2023-January 2024)

**\$8,820,016**

Economic benefits derived from MISG activities

**8,921**

K-12 students reached through MISG-trained educators or MISG education programs

**228**

Acres of coastal habitat protected, restored or enhanced as a result of MISG activities

**310**

Local, regional and state partners MISG collaborated with to protect the Great Lakes

diverse bacteria species commonly found in HABs. Researchers are leading a project that will link *Microcystis* genetic variation with its ability to defend against predators and viruses, leading to better HABs predictions and tracking. Vincent Deneff of U-M's Ecology and Evolutionary Biology Department is the principal investigator.

In step with its research focus, MISG keeps businesses, residents and students informed about current coastal issues and resources, including leading a K-12 program for students and educators that teaches them about the Great Lakes through classroom activities, field trips and workshops. It also engages government agencies, organizations, educators, business owners and citizens with outreach programs such as the Michigan Clean Marina Program, annual fisheries workshops and the Sustainable Small Harbors project.

"We fund research that answers questions about the Great Lakes that are relevant for policy and decision making at the state level in Michigan," says Newell, "and we engage with communities to get the word out about research on particular issues and provide trusted information to inform the response to those issues."

One focus area of MISG involves developing resilient coastal communities. Its outreach and research specialists work with land use planners, citizens and local government leaders throughout Michigan to help communities revitalize their waterfronts and coastal areas to attract businesses and enhance quality of life.

Another focus area involves the restoration of the Great Lakes region. Thanks to more than \$2 million in funding from the Great Lakes Restoration Initiative, MISG works on projects related to endangered fish, invasive species, beach contamination, water pollution, and environmentally friendly boating and marina operations.

"What makes Michigan Sea Grant special is that we're not just doing research, outreach and education about a single project," Newell notes. "Our people live and work

in the communities they serve, so our projects are ongoing and we have long-term relationships with communities and with state agencies around science-based information, outreach and decision making."

## GLISA

How can communities in the Great Lakes region adapt to the effects of climate change? This is the key focus of GLISA—NOAA's Great Lakes Climate Adaptation Partnerships (CAP) team which helps communities understand, plan for and respond to climate variability and change—now and in the future.

A collaboration between U-M, Michigan State University, the College of Menominee Nation, and the University of Wisconsin, GLISA is part of the national CAP network, formerly known as Regional Integrated Sciences and Assessments, or RISA, that is supported by the NOAA Climate Program Office.

GLISA helps to advance equitable climate adaptation in the Great Lakes through applied research and engagement by serving as a bridge between regional scientists, decision makers and communities—bringing climate science, information and action into the real world for areas that need it most.

Whether its role is to serve as a project lead, funder or partner, GLISA's social and physical scientists work together to understand their partners' climate information needs, then collaborate with these partners iteratively to co-produce adaptation solutions that are designed to mitigate the effects of climate change.

Its team:

- Investigates and understands emerging climate issues and synthesizes findings;
- Facilitates collaborative activities, education and training;
- Translates existing climate information and customizes it for communities;





THIS PHOTO OF WHITEFISH BAY ON THE EASTERN END OF LAKE SUPERIOR WAS TAKEN IN FEBRUARY 2023 AND SHOWS REDUCED ICE COVERAGE RESULTING FROM CLIMATE CHANGE.

# GLISA By the Numbers

## Regional Support

156

Total entities engaged

94

Total boundary organizations engaged

10

Networks supported

\$4.8M

Additional funds leveraged

## Key Sectors Engaged



Health



Hazards



Tribes



Urban



Water



Agriculture



Coast



Defense



Economy



Infrastructure

## Organizations Engaged

15

Federal

27

Cities

9

States

9

Tribes

24

NOAA

25

Academic

33

Nonprofits

12

Private

DASHBOARD HIGHLIGHTING GLISA'S WORK FROM 2015 TO 2022, INCLUDING PARTNERS, SECTORS AND RESEARCH AREAS THAT SUPPORTED THE CO-PRODUCTION OF USABLE CLIMATE INFORMATION.

- Develops, implements and evaluates resources and tools that support decision making.

“GLISA brings together social and physical scientists to develop long-term relationships with our community partners, helping them to integrate the best-available climate science in their decision making,” says Jenna Jorns, GLISA’s co-director.



“In particular, we strive to serve lower-capacity communities with fewer resources to adapt to climate change.”

GLISA is helping Great Lakes cities that are grappling with climate change-induced problems, such as increased precipitation and extreme flooding and heat events.

GLISA’s projects with cities include developing and implementing assessment tools to better inform their long-term decision making related to weather and climate events, for example with scenario planning or stormwater vulnerability assessments. A newer focus area for GLISA is developing a crowdsourced decision support tool to help communities plan and prepare for potential climate change-related in-migration to the region. GLISA is understanding current residents’ priorities and needs for development using future climate and land use projections and helping 12 Great Lakes states with stormwater management and Gulf states with resilience planning.

Due to their reliance on natural resources for cultural, socioeconomic and ecological needs, Tribal communities in the Great Lakes region are especially vulnerable to climate change. Through its partnership with the College of Menominee Nation, GLISA is integrating its scenario planning approach with the Tribal Adaptation Menu in an interactive game format and working to understand the complexities of Tribal relationships with water in a changing climate.

## Global Center for Climate Change and Transboundary Waters

Because climate change poses an existential threat to the sustainability of freshwater resources in communities around the world, there is a need globally to ensure that issues of water equity, justice, policy and law are being addressed in regions where large water bodies such as the Great Lakes cross state, country or Tribal boundaries, says SEAS Professor Drew Gronewold.



Gronewold serves as the director of the Global Center for Climate Change and Transboundary Waters (GCTW), an international research center designed to help manage water resources in transboundary regions. The GCTW,



AN AERIAL VIEW OF THE 2018 GOSHEN, INDIANA, FLOOD, WITH ROGERS PARK DISAPPEARING UNDERWATER AND TRINITY SQUARE PLAZA ENCRICLED BY RISING WATERS. FLOODING IN GREAT LAKES STATES IS INCREASING AS A RESULT OF CLIMATE CHANGE. PHOTO BY JUSTIN FREDRICK CLARK

among other research priorities, advances hydroclimate modeling to predict the impacts of climate change on the Great Lakes, including impacts to water quality, ecological systems and lake levels. Improving both the science behind those predictions, and the pathways for communicating them, is expected to lead to better policies and management strategies, and forward-thinking solutions for at-risk communities, says Gronewold.

The GCTW’s research addresses regional needs for water resource management and supports community and ecosystem sustainability. One goal is to improve management and disaster resilience within partnering communities across the Great Lakes, which is critical in an era of increasing extreme weather events and variability of lake levels. The GCTW focuses on understanding climate change impacts on water quality that affects ecosystems and communities, which isn’t just important for the region, but also the globe. In addition to working on the Great Lakes, the GCTW is also leading related research along the U.S.-Mexico border, with a focus on understanding how historical treaties and water use affect flows and water allocations in the Rio Grande.

“This center represents a unique, important and exciting opportunity to bring together a diverse and talented group of scientists and practitioners focused on understanding and reducing the impacts of climate change on transboundary water resources and their management,” says Gronewold. “Northern North America is one of the fastest-warming regions on the planet, and Indigenous communities are extremely vulnerable to the impacts of climate change.”



**U-M collaborates with organizations in the Ann Arbor area and across the state, region and globe, making it an epicenter of Great Lakes research. In Ann Arbor alone, some of the partners include:**

- Great Lakes Commission
- Great Lakes Environmental Center
- Great Lakes Fisheries Commission
- National Wildlife Federation  
Great Lakes Regional Center
- The Nature Conservancy,  
Great Lakes
- U.S. Geological Survey  
Great Lakes Science Center

To help address these challenges, the GCTW was built through partnerships with the College of Menominee Nation, Six Nations of the Grand River and Red Lake Nation, whose voices and perspectives are critical to developing and guiding implementation of climate change adaptation measures across the Great Lakes region and elsewhere. 🍀



# Meet the Future of Sustainable Food Systems: A Focus on Soil Health and Crop Diversity

Story by  
Nayiri Mullinix

Photos by  
Dave Brenner & Brian Lillie

Although the global population has more than tripled since 1950, studies show that modern intensive agriculture, which largely ignores ecological practices and focuses on a small number of high-yielding commodity crops reliant on chemical fertilizers and pesticides, did not grow out of necessity, but rather a drive for profits.

These methods have spawned environmental consequences and problems throughout food systems, with a major concern being soil health. So much so, in 2022, the Food and Agriculture Organization of the United Nations warned that, unless current practices are changed, 90% of topsoils will be degraded by 2050.

Agroecologist Jennifer Blesh is an associate professor who came to SEAS in 2014 as part of a Sustainable Food Systems cluster hire—intended to encourage collaboration across U-M schools and colleges by hiring faculty with similar research interests—which included Meha Jain, also in SEAS, Andy Jones in the School of Public Health, Lesli Hoey in the Taubman College of Architecture and Urban Planning, and Regina Baucom in Ecology and Evolutionary Biology in the College of Literature, Science and the Arts (LSA).

“Healthy soil is a living ecosystem that has an active biological community and is packed with carbon and nutrients. Healthy soil gives us life. But today, due to low crop diversity and excessive use of chemical inputs and tillage, many agricultural systems have not only lost vast amounts of soil, but the remaining soil is degraded,” says Blesh.

Blesh explains that soil degradation threatens our ecosystems and climate, and thus the future of food access. To be sustainable, ecological processes will need to be managed using species diversity to sustain production and support important functions including restoring soil health.

“These practices aren’t new. They were developed by Indigenous communities and groups of farmers around the world, but expecting farmers to flip a switch and go from growing acres of corn using pesticides and fertilizers to diversifying their output isn’t realistic,” says Blesh.

“

Food systems should be environmentally sound and provide healthy foods for all, considering all outcomes, not just yield.”

“Time, policy support and funding will be needed, but making the shift is essential to ensuring the stability of our food systems.”

Researchers and students in Blesh’s lab support farms in incorporating methods that boost soil health. One method is cover cropping—planting grasses, legumes or forbs such as clover or ryegrass to enrich and protect soil.

Green Things Farm Collective in Ann Arbor, founded by Nate (BA ’08) and Jill Lada (BS ’10), both graduates of the Program in the Environment (PitE), is one of 10 farms Blesh’s team partnered with





ABOVE: ASSOCIATE PROFESSOR JENNIFER BLESH

on a study to identify factors that cause different cover crop outcomes.

“The Ladas manage a highly diversified farming system. They worked with our team on research where we tested how different types and levels of cover crop diversity relate to essential benefits from cover crops, like nitrogen supply, nutrient retention and weed control,” says Blesh.

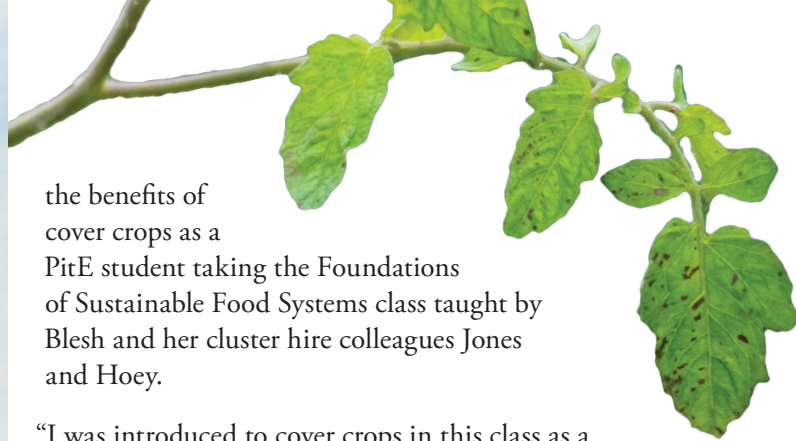
Nate Lada says that cover cropping protects and enriches the soil.

“Cover crops give soil nutrients and structure with roots that protect it from heavy rain, erosion and slow weed growth,” says Lada. “Then, in late spring, before summer planting, we use occultation (or tarping) to trap heat and kill off the crop, which produces straw, providing more soil-enriching biomass and organic matter.”

Blesh adds that soil enrichment also helps to mitigate climate change.

“Through photosynthesis, cover crops take atmospheric carbon dioxide and turn it into organic carbon in plant biomass. A portion of that carbon is retained and potentially sequestered long-term in the soil.” This results in using fewer synthetic fertilizers produced with fossil fuels, which reduces greenhouse gas emissions.

Etienne Sutton (BS '18, PhD '24), became interested in



the benefits of cover crops as a PitE student taking the Foundations of Sustainable Food Systems class taught by Blesh and her cluster hire colleagues Jones and Hoey.

“I was introduced to cover crops in this class as a way to increase biodiversity and ecosystem services on farms, and was immediately intrigued,” says Sutton.

So much so, that she based her dissertation research on cover crops, designing a citizen science project that reached over 100 farms across the Midwest. Using real-time data, Sutton demonstrated that cover crop performance was highly variable and identified strategies for maximizing benefits.

Although Sutton’s work focused on agricultural ecology and cover crops, Blesh encouraged her to tackle research questions in an interdisciplinary and holistic way.

“Food systems are about much more than production; there’s also the people who are making decisions about and interacting with the land, influencing policy, the list goes on,” says Sutton.

Blesh adds, “We’re at an inflection point where we can’t continue business as usual. Throughout the food chain—from farmers and workers exposed to toxic chemicals to meatpackers and restaurant workers earning low wages—we have equity problems. Food systems should be environmentally sound and provide healthy foods for all, considering all outcomes, not just yield.”

Though it may seem daunting, Blesh says that producing a wide range of crops that support soil and ecosystem health as well as human health and well-being is the key to a sound future for food systems.

“Despite large barriers, a growing number of farmers, such as the Ladas, are maintaining and transitioning to diversified management systems. We can learn from these models of innovation about pathways to restoring diversity and enriching soils on farms around the world.”



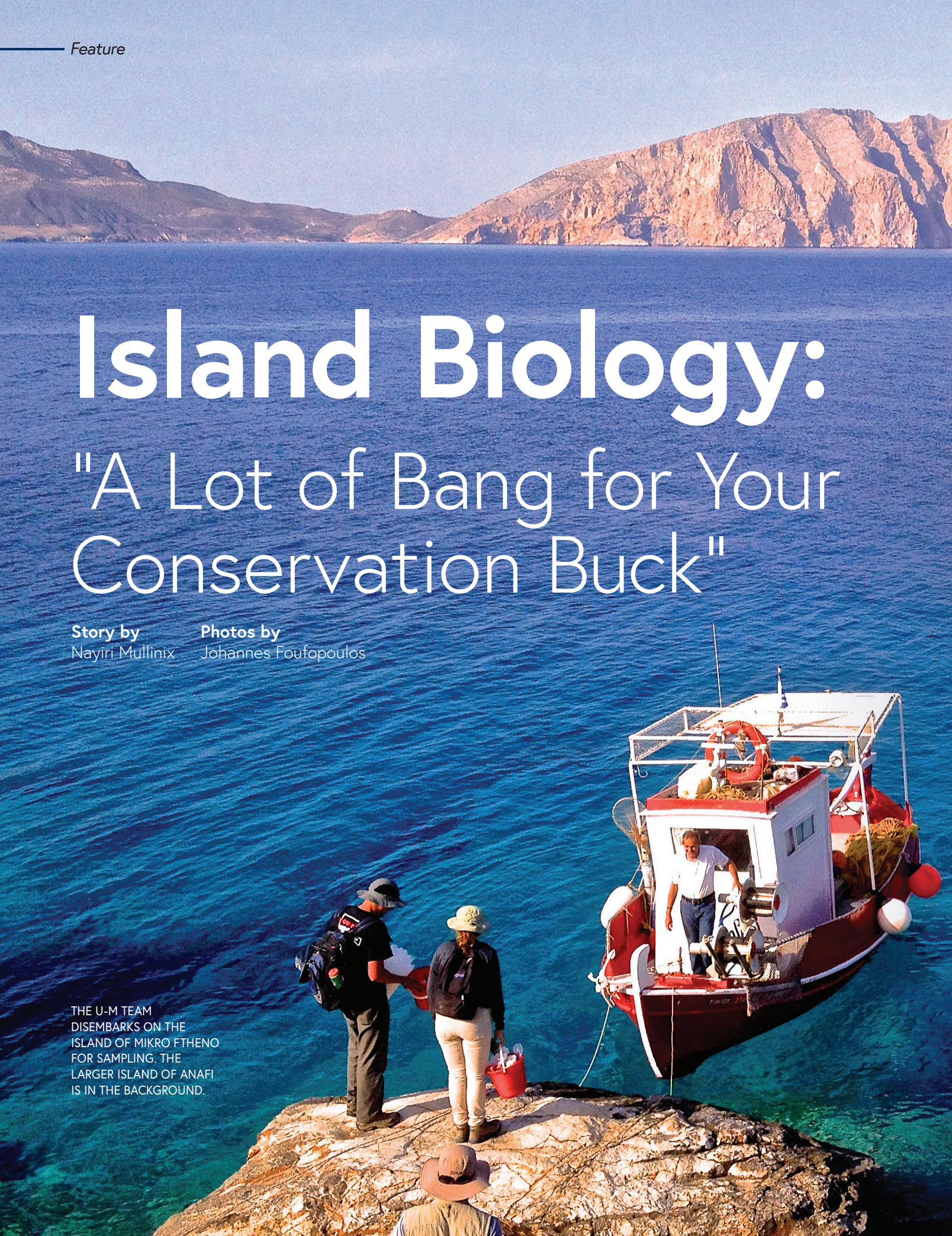
Learn more about the teaching collaboration between SEAS, Taubman and Public Health.

# Island Biology: "A Lot of Bang for Your Conservation Buck"

Story by  
Nayiri Mullinix

Photos by  
Johannes Foufopoulos

THE U-M TEAM  
DISEMBARKS ON THE  
ISLAND OF MIKRO FTHENO  
FOR SAMPLING. THE  
LARGER ISLAND OF ANAFI  
IS IN THE BACKGROUND.





Islands, which comprise just 5.3% of the planet's land area, hold about 20% of the world's wildlife and 50% of endangered species. They offer boundless opportunities to inform basic ecological science and applied conservation biology, and are integral to protecting global biodiversity.

"There's a great need to understand how ecosystems work, because if we are to manage them effectively and protect species, we need to understand how they function, and we can do that more easily on islands," says SEAS Associate Professor Johannes Foufopoulos, who studies island biology to identify what endangers resident species and how biodiversity can be protected.

For nearly a decade, Foufopoulos has focused his research on the Aegean Sea and Ionian Sea archipelagos in the northeastern Mediterranean region, which encompass more than 3,000 islands of various sizes and habitats that make them ideal study subjects.

"These islands are a biodiversity hotspot well suited for studies, in part because they contain numerous land-bridge islands, which were formerly connected to the mainland and created with the rise in ocean levels," says Foufopoulos. "They are, therefore, great models for human-caused habitat fragmentation, especially under a changing climate. We know that the Mediterranean basin, already an understudied system, will be heavily impacted by the changing climate, which makes understanding how to manage and protect biodiversity urgent."

Foufopoulos says that, from a management perspective, islands provide "a lot of bang for your conservation buck" since one can manage or fix things relatively easily. When he first zeroed in on island biology, it was with a focus on lizards, but he says that he soon saw how much more there was to understand and for students to get involved in, such as livestock grazing, fires, seabirds, invasive species and the extreme events that come with climate change.

"I think of nature as a multi-colored rug," says Foufopoulos. "You start tugging on one string at the edge, and all kinds of things start coming off, but in the rug, all the colors are connected. Lizards don't live in isolation, they depend on other plant and animal species, and are affected by predators and humans."

“

These islands are a biodiversity hotspot well suited for studies, in part because they contain numerous land-bridge islands.”

Each summer, Foufopoulos leads a group of SEAS students to the Mediterranean, where they conduct research and add to what he calls an "intentional collage" of projects that build upon each other from year to year with the islands serving as a real-world lab outside of his SEAS lab.

"Over the years, students have conducted a wide range of studies, each different, but connected, with the common thread being the focus on islands," says Foufopoulos.

"Sometimes the work can be contained to one summer, with the remainder done back in Ann Arbor; other times there have been students who have conducted experimental evolution studies, where they introduced lizards onto new islands and then watched them evolve year after year, documenting their adaptations to the condition of the new island."

Kate Leeson (MS '24) says she came to SEAS specifically to work with Foufopoulos and that he helped her plan a project that would line up with her interests.



ABOVE: A MALE AEGEAN WALL LIZARD (*PODARCIS ERHARDII*) OVERLOOKS ITS TERRITORY ON THE ISLAND OF NAXOS.



LEFT: KATE LEESON ON A HIKE ACROSS AN OVERGRAZED LANDSCAPE ON THE ISLAND OF ASTYPALEA. PHOTO CREDIT: BRITTANY AMARAL

“We spent a lot of time on literature review and deciding what to research, and then I spent the following summer on the islands doing hands-on, intense work that I really enjoyed,” says Leeson.

Leeson’s study was focused on understanding how different species are affected by plastic waste, which is found even on uninhabited islands because seabirds ingest and then regurgitate the plastic on their nesting islands.

While on the islands in Summer 2023, Leeson collected 400 samples—insects, roots and feathers—that she later processed back at SEAS. She looked for signs of oxidative stress, one of the physiologically toxic effects of plastic exposure. Leeson says that islands with more plastic pollution had organisms with higher levels of oxidative stress.

“We expected this finding, but this was the first field study of its kind that looked at natural ecosystems to show that

plastic waste has reached the levels necessary to induce these toxic effects.”

“

The wellspring of ecological knowledge is nature, so I have to show students how things are in the real world.”

She adds that finding out that even uninhabited and remote islands aren’t safe from the effects of plastic waste is news to most scientists, and that action should be taken to protect endemic island species that live in a limited area because they have fewer places to move compared to mainland species.

Henry Wallison (MS ’25), who joined the Foufopoulos team in 2023, returned to the Mediterranean last summer



A GROUP OF YELLOW-LEGGED GULLS (*LARUS MICHAHELLIS*) ON THE ISLAND OF OVRIOKASTRO WITH THE AEGEAN SEA IN THE BACKGROUND. THE GULLS, WHOSE GUANO FERTILIZES THE ISLANDS AND ALLOWS OTHER SPECIES TO SURVIVE UNDER OTHERWISE HOSTILE CONDITIONS, ARE IMPORTANT ECOLOGICAL ELEMENTS ON THE STUDY ISLANDS.

to build upon his study that is focused on the grazing activity of goats on inhabited islands.

“Grazing is a big issue because it has a significant impact on local diversity— island areas are bounded and goats can’t spread out the way they would on the mainland, and in the isolated landscapes species can’t repopulate the same way they would on the mainland. So, once an endemic species population is reduced or lost, recovery is not really a given,” says Wallison.

Wallison says the issue is complex since many rely on goats for their livelihoods, but that the islands could benefit from employing restoration methods that he will recommend, which would encourage a more diverse and verdant landscape.

For Angelina Kossoff (MS ’23), whose research focused on understanding the ecological impacts of European rabbits on the islands, the experience of working with Foufopoulos alongside her peers was life-changing.

“This was one of the most incredible experiences of my life,” says Kossoff. “He [Foufopoulos] fosters a community of students that help and care for each other while he points us in the right direction for good research and literature and guides us through it all. I am so grateful for these experiences and everything I learned and how it has influenced my career.”



ASSOCIATE PROFESSOR JOHANNES FOUFOPOULOS COLLECTS DATA ON THE ISLAND OF TIGANI IN THE AEGEAN SEA. THE ISLAND OF ANTIPAROS IS IN THE BACKGROUND.

Foufopoulos says that guiding future ecologists was an intentional pivot in his career.

“The focus on studying islands has been a powerful experience for me and my students. I believe that giving students hands-on experience is good for many reasons. It’s very comfortable and easy to just stay in the classroom and give students clean abstractions of the world, but in reality, the world is messy, complex and ambiguous. The wellspring of ecological knowledge is nature, so I have to show students how things are in the real world,” says Foufopoulos. 🐦

# The Legacy of Bunyan Bryant

*SEAS Professor Emeritus Bunyan Bryant, a pioneer in the field of environmental justice (EJ) who helped to establish the nation's first EJ program at the school, died at home in Ann Arbor on March 28, 2024, from cancer. He was 89. Bryant shepherded and inspired countless social and racial justice advocates in his four decades at U-M. Here, former students share how he influenced them.*



I arrived at SEAS as an undergrad in the mid 1990s, a bundle of energy ready to immerse myself in a community where I could dive deeper into my long-time environmental passion. I was fortunate that I was placed into a mentorship group with Bunyan, as he would forever shape my life path. He gave me the confidence to bring my big dreams into reality, and if it wasn't for him, I wouldn't have created Growing Hope, the nonprofit I founded and led for many years. Sitting in his office, wide eyes and talking a mile a minute, he listened to me exuding visions of environmental justice through putting seeds in soil and helping them grow, and unlike many others, he was nothing but supportive. I am sure I speak for many who feel equally fortunate that we had the chance to learn from his leadership, mentorship and

love. We will hold him with us always, and carry his work forward.

—**Amanda Maria Edmonds (BS '00, MS '05)**

I was a student of Bunyan's 40 years ago, and considered him a mentor and friend. He was unlike any professor I'd ever had and left an indelible impression. He found ways to prepare us to take on powerful economic and political forces, inspiring his students to stand proudly and humbly in the struggle for justice. Years later, I came to work for the Ecology Center, an organization marked by Bunyan's influence. He had participated in the first Teach-In on the Environment in 1970, which led to the center's formation. He served as one of our first board members, and we worked in partnership when he published his disproportionate impacts research in the early 1990s.



## He was unlike any teacher or professor I'd ever had and left an indelible impression.”

To his final days, he'd been a teacher and collaborator with most of the long-term staff at the center. But what I'll remember above all else was Bunyan's welcoming and loving spirit.

—**Mike Garfield (BGS '84)**

Bunyan was amazing with students and inspired many of us to develop competence to do environmental justice work. He was the first person I met at the School of Natural Resources (SNR) in 1991. I was wandering the hallway and he invited me into his office. We ended up having a conversation about Kingian nonviolence, which has shaped my life and career to the present day. I credit Bunyan for instigating my early involvement in EJ at SNR and my experience of the early EJ movement during the Michigan Coalition meetings. He introduced me to Grace Lee Boggs and other national leaders of the movement. Most importantly, he got me out speaking to people in Sumpter Township about their experiences living next to the landfill. I cannot thank him enough for his unbending support, good-natured tenacity in the face of any adversity, and clarity of focus as an example to create a future that embraces both people and climate justice as a single, fundamentally achievable goal.

—**Karen DeGannes (MS '91, PhD '13)**

Bunyan and I became good friends during his transition into the School of Natural Resources in the early 1970s. We went on a 10-day road trip in the Northern Rockies visiting coal mines, American Indian reservations

and rancher anti-coal groups. We developed a special and enduring friendship from that opportunity. Later, Bunyan contacted me to discuss his developing the Environmental Justice program. This all resulted in a very special friendship we had together until his passing.

—**Bill Bryan (MS '67, PhD '72)**

Bunyan's academic, political and teaching accomplishments are exemplary and enduring. I believe Bunyan's true superpower was his ability to wholeheartedly “show up” to listen, learn, laugh and be empathic. There have been numerous times in my career and life where Bunyan offered me council, consulted with organizations where I was staff, offered me opportunities for professional growth and just called to check in. I am certain my experience is not unique. Bunyan was a gift and inspiration to us all!

—**Pamela Mavrolas (MS '77)**

Drawn to one of Dr. Bryant's courses in 1984 due to the connection between social change and natural resources, I had no idea what a lasting impact the curriculum and the professor would have on my life. A pioneer in an arena that was once unrecognized and is now part of our vernacular, his work has impacted thousands of students, his peers, the academy, the environmental movement and, indeed, the course of history. The Biden-Harris administration's Justice40 Initiative can be traced back to Dr. Bryant's relentless work to connect social

and economic justice to public health. His passion for the issues, deep belief in peaceful protest and steady determination to persevere in often extraordinarily challenging circumstances has been a model for me and countless others who have struggled to make sense of the vast disparities in this country. Dr. Bryant's work shaped the trajectory of my career, and for that I am fortunate and grateful.

—**Lisa Wozniak (BA '87, MA/MSW '93)**

The week that Bunyan passed I had mentioned his influence on my academic career to a graduate student who was thinking of going into a doctoral program. I pointed to the magazine picture of Bunyan that I have framed in my office and talked about how important it is to have a dissertation advisor who is also a mentor and your strongest advocate. I teach Research Methods for Sustainability. The previous week's lecture was on qualitative methodology. I presented my dissertation work on community-based activism within an environmental justice frame around the siting of a waste-to-energy facility in Flint, Michigan, as a case study on using qualitative research methods, and I mentioned Bunyan's guidance as my dissertation chair on the project. So, I talked about Bunyan twice that week to my students. This is a testimony that he is always with me, and I will continue to keep his presence in my heart and mind the rest of my days.

—**Joseph W. Dorsey (PhD '99)**

# 10 Questions: Ayumi Fujisaki-Manome



*Ayumi Fujisaki-Manome is an associate research scientist at the Cooperative Institute for Great Lakes Research (CIGLR), which is hosted by SEAS. Her research uses geophysical modeling to address the impacts of interactions between ice, oceans and lakes on larger-scale phenomena, such as weather, storm surges, and sea and lake ice melting.*

## How did you become interested in your research, and what is most exciting about it for you?

When I was a college student, I watched the first HDTV live broadcast from the Showa Station in Antarctica. During the broadcast, scientists discussed exciting weather observations they had made in the harsh polar environment. This sparked a deep interest in me. Since then, I have spent a good amount of time reading about how polar environments influence global climate, how ice cover interacts with ocean and lake circulations and ecosystems, and how ice cover has been culturally significant to communities living in coastal areas near mid-latitude lakes and oceans. Eventually, I landed a job doing research on ice cover. It turned out that my daily research life is mostly about computer programming for modeling ice and hydrodynamics,

sitting in front of computers all day, rather than going out into the field and making exciting observations. This might sound boring, but regional weather and climate research are almost always collaborative efforts among various experts. For example, I talk to observationalists, meteorologists and mathematicians to ensure my modeling accurately represents the physical processes we are interested in. I regularly communicate with people who use ice cover information in the Great Lakes to ensure that the predictions from our models are helpful to them. So, it's not just about sitting in front of a computer, but about being a driver of important collaborative processes. This makes me excited.

## What is your favorite thing to do on the weekend?

I enjoy weekends with my husband and two kids. We go shopping, hiking, biking and to the pool.

## What is your favorite CIGLR moment?

I feel so much pleasure when discussing new research ideas with my colleagues, often with expertise different from mine. We are always busy and don't have enough time to realize all of them; however, these moments give me energy. Exchanging

diverse perspectives inspires creativity and drives my passion for our work.

## Do you have a favorite Great Lake?

Lake Michigan.

## What is the most-used app on your phone?

Maps, since I have no sense of direction.

## Cats or dogs?

Tough question...but dogs.

## Favorite vacation destination?

Iceland. We visited there a decade ago; it's a good time to consider going back. And Japan!

## What advice would you pass on to future researchers?

Enjoy the process instead of getting caught up in the results.

## What is the most recent book you read?

I bought "Wonder" for my fourth grader and it moved me to tears.

## What is the most adventurous thing you've done?

Driving around Iceland in a car built from junkyard parts. The drive was approximately 2,000 km.



# Faculty News and Research



New research shows that letting cattle graze in the Maasai Mara National Reserve in Kenya had almost no discernible positive or negative effect on the ecological well-being of the reserve. According to **Bilal Butt**, SEAS

associate professor, this provides important context for land that welcomes tourists while excluding Indigenous farmers, sometimes violently. The study was conducted by Butt and **Wenjing Xu**, a postdoctoral researcher at SEAS, and focused on measuring and quantifying the impact of the Maasai's cattle grazing practices. Butt hopes the study findings will help reshape how people think about who gets to use land and for what purposes.



As the human population grows, it's expected that more than half of Earth's land will experience an increasing overlap between humans and animals by 2070, which could lead to increased conflict between people and animals.

Understanding where overlaps could occur will be crucial for urban planners, conservationists and countries that have pledged conservation commitments. **Deqiang Ma**, a postdoctoral research fellow at SEAS' Institute for Global Change Biology, is the study's lead author, while SEAS Associate Professor **Neil Carter** is the principal investigator and SEAS Assistant Professor **Brian Weeks** is a co-author.



Nearly half of food waste, about 620 million metric tons, could be eliminated by fully refrigerated food supply chains worldwide. At the same time, "cold chains" could cut food waste-related emissions of climate-

warming greenhouse gases by 41% globally. The study's lead author is **Aaron Friedman-Heiman** (MS/MBA '24) and the co-author is SEAS Professor **Shelie Miller**.



SEAS Dean **Jonathan Overpeck** was elected to the National Academy of Sciences (NAS) in recognition of his distinguished and continuing achievements in original research.

He joins five other NAS members at SEAS: **Arun Agrawal**, **Rosina Bierbaum**, **Maria Carmen Lemos**, **Ivette Perfecto** and **Peter Reich**, an unusually high number of NAS members for a school the size of SEAS.



SEAS Associate Professor **Meha Jain** was awarded the Early Career Award in Global Environmental Change from the American Geophysical Union, the largest Earth and space science association

in the world. The award recognizes outstanding contributions in research, educational or societal impacts in the field by honorees within 10 years of receiving their PhD or highest terminal degree. Jain's research examines the impacts of environmental change on agricultural production, and strategies that farmers may adopt to reduce negative impacts.



As our planet warms, many species are shifting to different locations as their historical habitats become inhospitable. Trees are no exception, but their shift to new areas has been lagging behind those of other plants and animals. Now,

scientists show that the reason for this lag might be found below ground. A recent study shows that trees, especially those in the far north, may be relocating to soils that don't have the fungal life to support them. **Kai Zhu**, an associate professor at SEAS' Institute for Global Change Biology, is the study's co-author.



FACULTY AND STUDENTS FROM THE PROBLEM SOLVING INITIATIVE COURSE IN WINTER 2024.

# U-M Students Develop "Roadmap" to Clean, Equitable Power in Michigan

Story by

Lori Atherton

**A**s Michigan works to achieve its clean energy and energy justice goals outlined in the MI Climate Action Plan, the traditional Investor-Owned Utility (IOU) model for providing electricity is often an obstacle to progress.

In collaboration with the Michigan Climate Action Network (MiCAN) and Michigan Environmental Justice Coalition (MEJC), a group of 20 selected U-M graduate students, including five from SEAS, recently published a comprehensive report about Michigan's public power options.

The report, "A Roadmap to Clean and Equitable Power in Michigan," was developed as part of the students' Problem Solving Initiative (PSI) course in Winter 2024. PSI courses bring together students and faculty from law and other disciplines to develop creative solutions to complex, real-world problems.

"The roadmap is a comprehensive, well-done analysis with a bottom line that shows that Michigan can move away from Investor-Owned Utility power and get significant benefits, if it does so strategically," says Mike Shriberg

(MS '00, PhD '02), a professor of practice and engagement at SEAS who co-taught the PSI course with Andy Buchsbaum, a lecturer at the Law School.

"No one has done a study like this before in Michigan or elsewhere in the country," Shriberg adds. "It's the first systematic assessment of alternative options for power provision."

Shriberg and Buchsbaum were approached by MiCAN and MEJC to research the thorny topic of alternatives to IOUs, which are private enterprises acting as public utilities.

"MiCAN and MEJC wanted us to think big and think long-term about what an alternative to our current system of IOUs could look like," says Buchsbaum. "Our goal was to help create a pathway for a new vision for electricity in the state that could be used by advocacy groups and lawmakers so that they could compare the different options and decide on next steps."

The roadmap examines four alternatives to the traditional IOU model for delivering electricity in the

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What this report shows is that there are alternatives that not only would help with energy access, but also perform better than our existing power structure. However, it's going to take political courage to change, and it's going to take a substantial amount of time and effort.”

state of Michigan. The students assessed each of the options against climate, energy justice, reliability and affordability goals.

The four options include:

- Reforming the Michigan Public Service Commission's authority, authorizing legislation and rules overseeing IOUs, focusing on those that alter IOU incentive structures;
- Creating a statewide public power authority that replaces IOUs;
- Creating municipally-owned utilities to replace IOUs at the local level; and
- Utilizing Sustainable Energy Utilities to provide a municipal utility alternative that works alongside (and can compete with) the existing IOUs.

A key takeaway from the report is that not only are alternatives to Michigan's current utility system feasible, but they are more equitable than IOUs.

“What this report shows is that there are alternatives that not only would help with energy access, but also perform better than our existing power structure,” says Denise Keele, executive director of MiCAN. “However, it's going to take political courage to change, and it's going to take a substantial amount of time and effort.”

Margerie Snider (BA '19, MS '24), one of the SEAS students who took the PSI course, says the class included opportunities to learn from experts in the electric utility field, including engineers, public utility commissioners and city officials. She says she hopes the final roadmap will contribute to the conversation about alternative electricity options in the state of Michigan—and spur information sharing and action.

“Prior to the course, I had not thought much about how electricity is delivered to my home, or what types of mechanisms are in place to regulate these utilities to ensure I am receiving affordable, reliable and clean power,” says Snider, who graduated from U-M last spring and is now working as a technical specialist for the National Association of Regulatory Utility Commissioners.

“

No one has done a study like this before in Michigan or elsewhere in the country. It's the first systematic assessment of alternative options for power provision.”

“This class taught me that there is a lot of work to be done to push our utilities to obtain goals prioritized by its customers via state utility commissions.”

In addition to Snider, the other SEAS students who took the PSI course and developed the roadmap include Ally Martin, Francisco Rentería, Carmen Wagner and Sarah Wells. 🍓



Read the final report:  
"A Roadmap to Clean and Equitable Power in Michigan"

# Students Turn Fallen Campus Trees Into Public Tables

Story by  
Jen Hogan

Photos by  
Dave Brenner

**S**tudents in Professor Joseph Trumpey's recent Tree to Table class, which included those from the Program in the Environment (PitE) and the Penny W. Stamps School of Art & Design, milled logs and worked with wood taken from storm-damaged trees on campus to create new, functional furniture at U-M.

The trees include the legendary Tappan Oak, which had become decayed and was removed from its location near Harlan Hatcher Graduate Library in 2021 for safety reasons. The students also worked with cherry logs from Nichols Arboretum that fell during a July 2023 windstorm.

Trumpey has appointments at SEAS, PitE and the Stamps School. He has worked on developing the Tree to Table course for several years.

"Our broader community consumes an overabundance of disposable plastic, fast fashion and fast furniture. These are objects that we know little or nothing about, including their sourcing, materials or labor practices," Trumpey says. "This class asks students to see those goods, understand how many are not sustainable, and work to design and build better goods."

The students researched sustainable forestry and proposed processes for a sustainable studio practice that used the



STUDENTS WORK WITH PROFESSOR JOE TRUMPEY ON A CONFERENCE TABLE SURFACE IN THE SCULPTURE STUDIO AT THE U-M STAMPS SCHOOL.



LEFT AND ABOVE: STUDENTS SAND AND MEASURE WOOD FOR PROJECTS IN THE TREE TO TABLE CLASS.



“

Our broader community consumes an overabundance of disposable plastic, fast fashion and fast furniture.”

wood. Many students had little or no experience with tools, so much time was focused on building skills.

The students also traveled to Trumpey’s farm, where they milled the wood to prepare it for construction.

The pieces they built will be placed at various locations on U-M’s campus, including the Art & Architecture Building on North Campus. Each table will have a QR code engraved on the top that will link to a website chronicling the full story of each table, from the history of the tree to the final campus location and information about the student team that created it. ♡



## 1990s

**Alan Bean (BS '95)** is a community development specialist for the City of Frankenmuth, Michigan. Isabella County hired Spicer Group, Bean's employer from 2002 to 2023, to assist with the permitting and approval process for the 383-megawatt Isabella Wind Project, Michigan's largest utility-scale wind project encompassing 136 wind turbines. As the project manager responsible for Spicer's review, recommendations and guidance at public meetings, he led the County's Community Development Department and the Planning Commission on the use of Google Earth at meetings to communicate the project's features to the public, as well as to ensure compliance with the county's zoning ordinance. After the Planning Commission approved the project and the start of commercial operation by DTE Energy, over 50,000,000 metric tons of CO<sub>2</sub> emissions are anticipated to be reduced by 2030. Google Earth Outreach awarded the Isabella Wind Project a Google Geo for Good 2023 Impact Award.

**Catherine M. (Simmons) Benson (BS '96)** was promoted to partner at the law firm of Simms Showers LLP in Baltimore, Maryland. It is a maritime and commercial litigation

practice representing international and domestic clients in maritime matters, including liability arising under a variety of environmental laws and regulations such as the National Marine Sanctuaries Act.

**Clare Ginger (MS '92)** retired as an associate professor of environmental policy and planning in the Rubenstein School of Environment and Natural Resources at the University of Vermont in May 2024 after 30 years there. Her research focused on the intersection of the public interest with environmental issues through collective processes in organizational settings.

**Jennifer Norris (MS '96)** was named the California Wildlife Conservation Board's (WCB) first female executive director in 76 years. The WCB selects, authorizes and allocates funds for the protection, conservation and restoration of fish and wildlife habitat and related public recreation across California. Since 1947, WCB has protected over two million acres of land, restored one million acres of habitat and invested nearly \$4 billion to support California's natural resources.

**Kris Olsson (AB '85, MS '90, MS '00)** retired as a watershed ecologist from the Huron River Watershed Council (HRWC) after 31 years of

service. To celebrate her decades of work supporting a healthy Huron River, Olsson and her husband, David Moran, established the Watershed Resilience Endowment Fund at HRWC.

**Douglas Pearsall (MS '90, PhD '95)**, senior conservation scientist for The Nature Conservancy, received the Conservationist of the Year Award from the Michigan Natural Features Inventory. Pearsall is an adjunct associate professor at SEAS.

## 2000s

**Sharon Shattuck (BS '05)** is directing a new film about the search for the milky seas, a rare bioluminescent phenomenon never before captured on film.

**Brian Swett (MS/MBA '08)** became the City of Boston's first chief climate officer in June 2024. He is a nationally recognized leader in climate change and sustainability strategy with over two decades of leadership experience in municipal government, private sector real estate development, federal government and nonprofit sectors. He previously was a principal at Arup, a global engineering, design and consulting firm focused on sustainable development.

## 2010s

### **Martha Campbell (MS/MBS '13)**

is the senior climate policy advisor for Michigan Gov. Gretchen Whitmer. She previously was a principal at RMI in Oakland, California, where she worked on a portfolio focused on scaling building decarbonization in the U.S. and leveraging industrialized construction.

**Katherine O'Hare (MS/MBA '11)** was named vice president of sustainability at J.Crew Group. She most recently served as senior director of sustainability.

**Sara Meerow (PhD '17)**, an associate professor in the School of Geographical Sciences and Urban Planning at Arizona State University (ASU), is completing a Humboldt Research Fellowship at the Technical University of Munich, where she is studying urban green infrastructure and resilience planning and governance. In addition, she will serve as ASU's co-lead for the new Center for Heat Resilient Communities, which was awarded funding from the Biden-Harris administration to develop heat mitigation and management strategies for local communities.

## 2020s

**Tiffany Wu (MS '24)** is the first recipient of the newly established Class of 2023 Scholarship Fund, which awards \$1,000 to a graduating SEAS student who has demonstrated financial need. "The scholarship has been a true blessing, not just financially, but also as a source of encouragement and validation for my passion for sustainability," says Wu, who studied Sustainable Systems. Last year's graduating class raised over \$26,500 for SEAS' first-ever class gift-endowed scholarship under the leadership of Kat Cameron (MS/MURP '23) and her committee.

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(MS '21)

## Anna "Xan" Urso

**A**fter obtaining a dual undergraduate degree in environmental geoscience and viola performance from DePauw University, Xan Urso (MS '21) took a job on a NASA-funded mission capturing high-resolution images of Mars and analyzing active landscape evolution.

Here they realized, "Mars is super cool, but I want to get back to Earth."

This led Urso to The Nature Conservancy, where they worked on coastal wetland restoration alongside SEAS alum and Adjunct Associate Professor Doug Pearsall (MS '90, PhD '95).

"I was interested in the community engagement aspect of conservation efforts. Doug encouraged me to pursue a master's degree, and SEAS seemed like a great fit."

Finding themselves at SEAS during COVID, Urso specialized in Environmental Justice and dug into supporting peers and reimagining the student experience, serving as a representative and then president of student government.

Now, as the environmental equity program specialist at the Foundation for California Community Colleges, Urso identifies where EJ fits into community impact programs and how students can be involved.

"I lead student ambassador programs where students are paid to learn about EJ and conduct community outreach and engagement, all while doing their coursework."

Urso says working in higher education and supporting students has felt like a natural transition from their SEAS days.

"I aspire to create pathways for community college students not just to be trained in electric vehicle manufacturing, for example, but to be included in the knowledge economy, influence decision making and empower their communities while working towards a climate resilient future." —*Nayiri Mullinix*



**D**uring a study abroad trip to India as an undergrad, Alison Shereda (MS '23) had an opportunity to learn from local communities about their experiences with climate change, which enhanced her Sustainability and Development (SusDev) studies at SEAS.

Shereda appreciated SusDev's international focus and that it gave her the flexibility to take classes in other topics, such as food security and climate adaptation.

"It paired well with other tracks at SEAS," Shereda notes, "so I was able to also specialize in Environmental Justice and diversify my lens a little bit."

Shereda is utilizing those different perspectives in her role as a post master's research associate in the Coastal Sciences Division at the Pacific Northwest National Laboratory (PNNL), a national laboratory of the U.S. Department of Energy's Office of Science.

She studies the social and ecological impacts of renewable energies, particularly emerging ones such as offshore wind and marine energy, on coastal communities along the West Coast.

"Looking at the people side of things is new and something that's been understudied," says Shereda. "What's rewarding is being a part of this novel area of research that has a lot of excitement and enthusiasm, both at the lab and at the federal level. There's a lot of opportunities to engage with experts across different areas of expertise."

Shereda says her SEAS capstone project gave her the skills needed to succeed at PNNL given that she works on large projects with multiple collaborators. "Being able to propose a project and see it all the way to its completion is something I draw upon as a researcher at a national lab."  
—Lori Atherton

**A**rman Golrokhian (MS/MPP '17) recalls what it was like to be an international student at SEAS. Having left behind his friends and family in his home country of Iran, he not only had to get acclimated to graduate school, but also to a new culture. Now, Golrokhian works as a clean energy transition advisor, a role that seemed unimaginable when he first landed in the U.S. One of the main things that made his trajectory possible was the SEAS alumni network, which he says made a major difference in navigating his career path.

That support is a key reason why Golrokhian returns the favor and mentors current SEAS students, whether it's doling out advice during coffee chats, talking to admitted students at Visit Day or serving on the SEAS Alumni Leadership Council.

"I still remember the folks who helped me understand the job market and discover my own career goals and prepare for job interviews. The alumni network gave me so much, and now I'm trying to give back as much as possible," says Golrokhian, who was named the 2024 Alumni of the Year by SEAS' Career Services office.

Golrokhian, who works with investors, regulators and corporate executives to plan for and navigate the energy transition, had been a mechanical engineer in Iran. He realized he wanted to know more about the sustainability piece of engineering, which led him to study Sustainable Systems and Environmental Policy and Planning at SEAS.

"Caring about the planet and trying to make things better is part of my value system," he says. "I feel that passion the most when I'm focusing on projects where it feels like we are really making a difference in creating a brighter, cleaner future with fewer fossil fuels." —Lori Atherton



(BA '19)

## Jena Brooker

Be-coming a journalist wasn't always the plan for Jena Brooker (BA '19), the environment and food reporter for BridgeDetroit. Moving to Detroit after graduation, her first job was as a substitute teacher. When COVID hit and teaching moved online, she pursued freelance writing. By the following spring, Brooker was named the first Midwest fellow for Grist.

"I grew as a journalist during that time and was responsible for covering environmental issues in the region and reporting on everything from climate change and culture to environmental justice and agriculture," says Brooker, who graduated from the Program in the Environment (PitE).

Brooker, who has been published in The Guardian, Salon, Slate and Mother Jones, is widely recognized for her work. This year, she received a Michigan Press Association award for a story about air pollution from the Detroit Stellantis plant, was named a Young Journalist of the Year by the Society of Professional Journalists Detroit, and received a National Press Foundation grant for environmental justice reporting.

Brooker says her experiences at U-M—including an environmental health journalism class she took as a PitE student and managing the U-M Campus Farm—inspired her.

"What I learned resonated with my skill set and interests, and when I started writing, I realized that having an interdisciplinary background from U-M was better than having a journalism degree in many ways. Local food is so important to me, so that's a frequent topic and also the focus of my side hustle making ice pops using locally sourced fruit," says Brooker, who, during the summer, sells JB's Ice Pops at stores and events. —*Nayiri Mullinix*



(MS '21)

## Inigo Peng

Inigo Peng (MS '21) came to SEAS with several interests in mind, but his love of coding led him to specialize in Geospatial Data Sciences.

"I'm interested in data and how it will get used in policies and decision making," Peng says. "Making data-driven decisions is one of the most responsive ground-level things you can do to get projects done effectively and with impact."

As a staff data scientist at FlowWest in northern California, an organization that uses technology to find solutions to water and natural resources issues, Peng utilizes data integration, analytics and visualization tools on large government projects. One project, for the California Department of Fish and Wildlife, involves streamlining how they collect, upload and share fisheries data. Another project for the California Department of Water Resources uses modeling to improve the spring-run salmon population in the Tuolumne River. Peng also works with Indigenous communities to improve their environmental data management capacities, including working with the Big Valley Band of Pomo Indians of the Big Valley Rancheria to save the Clear Lake hitch, a culturally and ecologically significant fish in the Clear Lake basin.

"I do interesting work that I feel has tactical effects on the communities and fisheries environment in northern California," says Peng.

Most of Peng's time at SEAS overlapped with the COVID pandemic, but he has fond memories of Natural Resources Statistics with Associate Professor Meha Jain, Diverse Farming Systems with Professor Ivette Perfecto, and his master's project on Great Lakes ice cover with Associate Research Scientist Ayumi Fujisaki-Manome.

—*Lori Atherton*



(MS '23)

## Megan Husted

An internship in the Office of Environmental Justice at the White House Council on Environmental Quality helped Megan Husted (MS '23) see how the government can effect change. Now, she's creating her own impact as special assistant in the Office of Electricity at the Department of Energy.

Husted supports the Office of Electricity in its goal of “strengthening and modernizing the nation’s power grid,” which allows her to work at the intersection of policy and clean energy.

“I’m learning so much because this is my first time working with engineers and experts who are building the technology that will be deployed someday,” she says. “Being able to contribute to the Office of Electricity’s goal of providing affordable, secure and resilient energy is exciting.”

Though Husted never thought she would work for the government growing up, she says the Biden-Harris administration’s climate and environmental justice investments align with her values and served as a “big driver” in applying for her position.

An Environmental Policy and Planning and Environmental Justice student at SEAS, Husted learned how to use policy as a tool to achieve EJ outcomes. She credits SEAS with helping to shape her career path and giving her the foundation to be successful and confident.

“I learned to think critically about policy and implementation, especially through the lens of EJ issues and how to alleviate or address them,” she says. “A sustainable future involving a transition to clean energy can’t be achieved without centering environmental justice communities.”—*Lori Atherton*



(MLA '11)

## Fai Foen

An interest in sustainable development led Fai Foen (MLA '11) to the Peace Corps, where she served as a small business advisor in West Africa. While there, she observed how connected people were to their physical environment. It made her want to foster that same connection back home, and inspired her to pursue landscape architecture at SEAS.

Foen is the director of green infrastructure at The Greening of Detroit, a nonprofit organization that enhances the quality of life for Detroiters by planting trees, repurposing the land to create green spaces, and helping communities rebuild their neighborhoods one lot at a time. She leads the Community Forestry program, which restores Detroit’s urban forest by planting trees in neighborhoods, streets, parks, community-held public spaces, schools and other institutions.

“Our big focus is tree planting,” says Foen, “but what we are doing is providing the equitable distribution of tree resources to underserved neighborhoods, so that everyone can benefit from cooler summer temperatures, improved air quality, stormwater management, pollinators and wildlife, and the seasonal beauty of a maintained forest.”

As a first-generation Chinese American who grew up on Detroit’s west side, Foen says she didn’t have many opportunities to experience nature as a young person. Despite that, she developed a love of the outdoors, which is what The Greening of Detroit helps to cultivate in youth and adults through job training and volunteerism.

“We need everyone to feel and be involved in our natural areas, whether it’s the federal park system or our local regional parks,” says Foen. “And that starts with people knowing that there is access and that it is theirs to participate in.” —*Lori Atherton*



(MS '21)

## Kimberly Guo

After graduating from Yale with a BS in ecology and evolutionary biology, Kimberly Guo (MS '21) led educational programs about watershed science and habitat restoration in California's Bay Area. She enjoyed the work, but she began to wonder why the audience didn't represent the area's diversity, which inspired her to address the relevance and accessibility of outdoor spaces.

At SEAS, she was sure that she'd focus on environmental education but, early on, she chose to specialize in Behavior, Education and Communication with a large dose of Environmental Policy and Planning and Environmental Justice coursework.

"SEAS was a good place to explore a broad range of options for classes, particularly in the social sciences, where I was most interested," says Guo. She adds that her master's project gave her a peek into the world of consulting, and demonstrated the impact she could have by collaborating with clients.

Now a senior associate at Better World Group, Guo takes on projects that address park equity and natural resources, with a focus on conservation and environmental justice.

"To me, parks and public spaces are intersectional, and provide an essential piece of the fabric of how and where we live," says Guo. "I go to a park to exercise, get fresh air, calm my brain, watch wildlife and socialize. But on a systemic level, they provide public health benefits, sequester carbon, provide habitat, host community gatherings and more. When parks are absent it's obvious, so I'm grateful to work on expanding and improving these spaces to make them available and welcoming to as many people as possible." —*Nayiri Mullinix*



(MS '14)

## Ali Shakoor

Fish ecologist Ali Shakoor (MS '14) developed a love of the outdoors and science from his father. They went fishing and used nature walks and their backyard as opportunities to observe the natural world around them.

It might seem like a given that Shakoor would end up at SEAS, but his introduction to the school was serendipitous. As an undergrad U-M student, he played basketball with SEAS faculty members Jim Diana, Ed Rutherford and David Jude, and was drawn to their work. Through Jude, Shakoor met Gary Crawford, a Black PhD student who was studying round goby in Jude's lab.

"I began helping Gary process his samples, and it was eye opening. Here's someone who looked like me doing this kind of research, and it could lead to a career," Shakoor says. "It was awesome to see the work that was being done, and there was such a sense of community in the school that I felt like I was home."

Shakoor, who is known on X as @FishScienceDude, is now completing his PhD at Wayne State University in Detroit, where he has been researching the effects of Microcystis exposure on the early-life history of walleye.

A tournament fisherman who competes in Montana, South Dakota and the Upper Midwest, Shakoor also educates others about science. He speaks to anglers and conservation groups about fisheries research and ecosystem challenges to the Great Lakes and gives similar talks to K-12 youth. He's even been featured on podcasts and documentaries for PBS and The Discovery Channel.

"Reaching the next generation is super important," he says. "Youth can be a powerful ally in our efforts to positively impact the environment." —*Lori Atherton*

# In Memoriam

**Julia Elkin (MS '15)**, 37, of Berkeley, California, died on February 25, 2024, in Redwood City, California, from traumatic brain injury. She was hit by a car while jogging and was hospitalized before succumbing to her injuries. She was an organ donor and was known to have saved at least five lives. A land acquisition program manager at Sonoma Land Trust, Elkin enjoyed traveling, backpacking, sailing and tide pooling. She also was an accomplished amateur artist, classical flautist, folk harpist and singer of sea chanteys. She graduated from SEAS in 2015 with a focus on Environmental Policy and Planning, and was named a Wyss Conservation Scholar in support of her interest in becoming a conservation leader in the U.S. A \$200,000 gift from the Wyss Foundation and U-M established the Julia Elkin Conservation Leadership Award in Elkin's memory. It will enable students to participate in a summer internship focused on U.S. land conservation.



**William Johnson**, FASLA, 92, died on September 10, 2024, in Holland, Michigan. He graduated with landscape architecture degrees from Michigan State University and the Harvard Graduate School of Design, and worked for noted Japanese American landscape architect Hideo Sasaki. In 1961, he formed Johnson, Johnson and Roy Inc. (JJR) with his brother Carl Johnson and their friend Clarence Roy. Under Johnson's leadership, JJR (now SmithGroup) became one of the most esteemed planning and design firms in the country. Johnson blended practice—first at JJR and later at William J. Johnson Associates—with his commitment to education. He taught at SEAS for 30 years from 1958 to 1988, and served as dean of the school from 1975 to 1983. A Fellow of the American Society of Landscape Architects (ASLA), he was awarded its ASLA Medal.



**John "Jack" Milliken (BLA '62, MLA '63)** died on June 8, 2024, at age 90 in Niagara Falls, Ontario, Canada. A faculty member at the University of Guelph, Ontario, from 1965 until his retirement



in 1993, Milliken was credited with establishing the school's Master of Landscape Architecture (MLA) program in 1974. He earned his Bachelor of Landscape Architecture and MLA degrees from SEAS in 1962 and 1963, and taught landscape architecture for a short time at the school before joining the University of Guelph. He was inducted into the Canadian Society of Landscape Architects College of Fellows and the Ontario Association of Landscape Architects as an emeritus member.

**Michael Schechtman (MS '74)**, of Helena, Montana, died at age 77 on August 7, 2024. He became active in the environmental movement after participating in teach-ins at U-M during the first Earth Day celebration in 1970. He became the director of the Ann Arbor Ecology Center in 1971, then co-founded the Illinois South Project to take on the coal industry and mitigate its environmental destruction for the next 10 years. He later moved to Montana to serve as the executive director of the Northern Rockies Action Group, followed by 22 years as founder and executive director of the Big Sky Institute for the Advancement of Nonprofits.



**Carroll B. Williams Jr. (BSF '55, MF '57, PhD '63)** died on March 1, 2024, in Berkeley, California. He was 94. A pioneer in environmental sciences, Williams was the first African American to receive a PhD in forestry and entomology from SEAS in 1963, and the first African American scientist hired by the U.S. Forest Service, as well as the forestry faculties at Yale University and the University of California, Berkeley. While attending U-M, Williams' studies were interrupted by the Korean War. He served in the U.S. Marine Corps and was a survivor of the battle for Outpost Vegas, one of the bloodiest encounters during the war. He returned to U-M on the G.I. Bill and earned bachelor's and master's degrees in forestry in addition to his doctorate. After retiring from the Forest Service, Williams joined the faculty of UC Berkeley, teaching courses in forestry and entomology. In 2021, the Dr. Carroll B. Williams Fund for Black Excellence was established to honor Williams' legacy at SEAS. In 2024, it was endowed in perpetuity through a gift from Williams' three children.



*To make a gift to the Elkins or Williams funds, email [seas-alumni@umich.edu](mailto:seas-alumni@umich.edu).*



# Last Look

New SEAS students put their creativity on display during the “Plant Fashion Forward” session at Orientation in August. Participants used leaves, flowers and other natural items foraged from the woods at the U-M Biological Station to make wearable art and other items. The session was led by Assistant Professor of Practice Lisa DuRussel (BS '02, MLA '06), who teaches in the Master of Landscape Architecture program.





INCOMING STUDENTS POSE WITH SEAS FACULTY AND STAFF DURING ORIENTATION AT THE U-M BIOLOGICAL STATION.

## STAY CONNECTED

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## MISSION

At SEAS, we are at the forefront of building a more sustainable and just world for all by transforming the impact of higher education and reimagining the future. We are advancing action through innovation, research, education and engagement in society, and developing leaders who are empowered to halt the climate crisis and create an environmentally sound future for generations to come.

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