



# THE UNIVERSITY OF MICHIGAN BIOLOGICAL STATION

Students, faculty, and researchers from around the globe who come together in northern Michigan to learn from the natural world and seek solutions to critical environmental challenges

The time is now to cultivate a mindset of caring about our natural world and carrying it out in how we live our lives. We are part of nature, sharing it with many beings—beyond the surface of forests and lakes and rivers. We have incredible connections with organisms notches lower on the food chain. To sustain the planet's remarkable biodiversity, it's critical to train more environmental problem solvers. Not only field scientists make a difference; anyone can carry this mindset forward in any career in any community around the world.

The University of Michigan Biological Station (UMBS) is uniquely positioned to make a difference in this urgent shared mission. With over 100 years of accumulated place-based knowledge and 11,000+ acres of forested and water-rich property in northern Michigan, UMBS is a leading scientific field station dedicated to research and education. UMBS is exceptionally good at training students to approach complex problems with curiosity, reverence for the natural world, and an appreciation for the interconnected systems that unite us all. Researchers and alumni contribute thousands of peer-reviewed papers to the scientific and policy communities and occupy key positions in universities, research and advocacy agencies, schools, health professions, and businesses. Further, given Michigan's relatively cool climate and abundance of fresh water, it is predicted to become a climate refuge in the coming years—leading to increasing pressures on our natural resources. Understanding the past and preparing for the future has never been more important.

More researchers through the door means more brilliant minds leveraging our century-long datasets to discover forward-looking solutions to the environmental crises that threaten our health and natural resources. Therefore, reducing barriers to participation for students and researchers is our highest priority. This means ensuring our facilities are accessible, welcoming, and sustainable, increasing collaborative scholarship and research support, and expanding our dynamic and empowering educational programming.

Like many field research stations around the world, UMBS lacks adequate resources to keep pace with the equipment and laboratory needs of modern scientific research, teaching, and community engagement. In order to generate difference-making science at full capacity, we must increase student and researcher support and bring our facilities into the 21st century.

We aim to evolve into the field station of the future. The Biological Station hopes to take UMBS fossil-fuel free, expand to year-round educational programming, grow and strengthen its research community and address new cabin and facilities needs for the next 100 years—including insulated, electrified residential cabins powered by on-site solar arrays. We propose a five-year plan to bring UMBS to scale in four key areas, allowing us to fulfill our potential at the forefront of environmental research and education.

## **BUILDING A COLLABORATORY**

### **A RESEARCH, EDUCATION, AND COMMUNITY ENGAGEMENT CENTER FOR THE 21ST CENTURY**

If we are to tackle big, multi-faceted environmental problems, we must bring a diversity of scientific perspectives to the table and engage with our community partners. One of the strengths of UMBS is the confluence of our research and teaching missions. Solving modern field-based science problems—and educating the problem solvers—requires collaboration as well as exploration in technical methodology from genetics to chemistry to the arts and beyond. Students interact with researchers to solve problems together—but our seasonal and outdated teaching and research facilities are failing us.

Further, our collaborative spaces and residential cabins must be able to accommodate researchers throughout the whole year, not just in the summer. A serious barrier to UMBS becoming a leading research institution is our 50+ year old laboratory and community facilities with outdated and energy intensive equipment unable to meet the standards of contemporary best practices.

We seek \$40M to create a “collaboratory” space where researchers and students can work together to apply individual work to shared discovery and real-world solutions. This includes a state-of-the-art research and education center, interactive classroom spaces that encourage collaboration, and a visitor center that engages the regional community and visitors to northern Michigan in our important work.



**“The classes here are unique. You’re not going to get that experience on central campus or really most other campuses. It’s not in a textbook or picture on a computer you’re looking at. You’re able to interact with them, take a flower apart, and look at the pieces of it. It’s been really awesome to see.”**

**—Austin Melancon, Plant Biology major and transfer student**



## SUPPORT WORLD-CLASS RESEARCH IN NORTHERN MICHIGAN FUNDING FOR RESEARCHERS AND THEIR STUDENTS

UMBS has over 100 years of accumulated data we can use to understand how systems are changing—but those data are only valuable if we have an active and vibrant research community. Despite the urgency of our shared climate problem, funding for academic research on environmental problems has not kept pace. Competition for National Science Foundation funding is fierce, and critically important, thoughtfully planned proposals are routinely denied simply because there is not enough money to go around.

We need support to help researchers establish new programs that continue to explore northern Michigan, utilize our century of place-based knowledge, and build bridges across existing projects that enable us to make new environmental inferences. Leveraging our rich data environment, scientists will explore emerging diseases, water resources, carbon cycle, biodiversity, global change, agroecology, student learning, and more. We seek \$500,000 to develop key research agendas and attract leaders in their field to do science at UMBS. This includes:

- Support of \$70,000 - \$100,000 per scientist annually for early-career researchers focused on leveraging UMBS data resources, UMBS property, and our diverse community of researchers to tackle novel questions and build capacity for new research.
- Support of \$10,000 per summer will ensure our ability to provide “starter” funding to support and recruit new researchers establishing a research program at UMBS and support existing long-term research that may be in between funding cycles.



In the face of global environmental change, students in a four-week course—a combination of field-based research and modern technology—explore resiliency and the factors that affect nature’s biodiversity. Dorian Campillo (above) was an LSA student in “Ecological Evolutionary Developmental Biology” or “Eco-Evo-Devo,” taught at UMBS by Dr. André Green.

Campillo studied ecology and evolutionary biology at U-M and did field work at UMBS in 2023. Under the guidance of Dr. Green, Campillo and fellow students used gene-editing technology CRISPR to attempt to engineer a specific monarch butterfly mutation.

“I’m absolutely fascinated with butterflies, in particular the monarch butterfly because it makes this amazing annual migration from southern Canada and the United States all the way down to these specific places in Mexico,” Green said. “How is that programmed within them in order to make that trip?”

“It’s a great hands-on experience,” said Campillo. “Almost no students are going to get an experience like this. I’m learning new things. I’m doing things that not many people in the world have done.”

# TRAINING THE NEXT GENERATION OF ENVIRONMENTAL PROFESSIONALS

## SUPPORT FOR UNDERGRADUATE RESEARCHERS

Undergraduate students do remarkable things in our community of exploration and discovery. For example, Emma Thomson, a U-M sophomore in 2023, caught a perch with her bare hands while snorkeling to survey fish in Douglas Lake. And Indira Sankaran, a senior in fall 2023, waded knee-high in the Maple River in search of endangered water beetles. Meanwhile, immersed in nature, senior Naomi Diake set camera traps to catch nest-raiding predators, changing the way she sees the world.

In our second century of operations, UMBS is particularly good at training students to become field-based researchers. We allow students to do the work that makes a difference. Through mentorship, discovery, and robust independent projects, UMBS student researchers learn how to be scientists. The close-knit community at the field station in northern Michigan opens up opportunities, experiences, and connections that last a lifetime.

Our goal is to make these transformative research experiences accessible for all, especially those who have been historically marginalized in STEM (Science, Technology, Engineering, and Math) fields. Thanks to generous donors, we offer several rare paid internship opportunities for undergraduate students to design, conduct, analyze and present their own mentored research, addressing questions that are important to northern Michigan landscapes and communities. But at this critical time in human history, there is a great need to unleash the power of research and discovery for many more students, supporting and significantly growing the size of the next generation of environmental problem solvers.

By taking UMBS operations year-round, building modern collaborative research centers, and offering more paid internships to undergraduate student researchers, we can make the University of Michigan's campus in northern Michigan the best, most relevant field station in the world. We seek \$200,000 annually to support a 12-week 12-student research program that provides on-the-ground training for the next generation of environmental problem solvers. Funding options include supporting individual student internships for \$12,000 each. And we are working to create an inclusive cabin culture; the cost to replace one cabin is \$300,000.

*"I'm understanding more about what it means to be in the conservation field. And how, although it is surveying and protecting species, it's also connecting with the public. There's so many facets to protecting nature and the first one is making sure that people have the right relationship with it."*

*—INDIRA SANKARAN, LSA class of '23*

## CARBON NEUTRALITY

### BUILDING A CARBON NEUTRAL, SUSTAINABLE, AND INCLUSIVE RESEARCH STATION

Much of our research focuses on the environment—and the evidence is overwhelming: as a society, we must limit our carbon emissions in order to mitigate the effects of global warming. As a leading environmental research institution, UMBS is committed to “walking the walk,” including modeling potential design solutions to our northern Michigan neighbors. In order to do so, we seek to take UMBS carbon neutral at a total cost of \$17M. A gift of \$400,000 would allow us to design a model cabin at UMBS that demonstrates how to go carbon neutral at home for northern Michigan neighbors, students, and university alumni, and community members.



## WAYS TO FUND YOUR GIFT

Your partnership connects the college’s rich past to a boundless and bright future. You can change lives with gifts of cash, pledges, or appreciated securities, and create a meaningful legacy through your bequest, trusts, gift annuities, and other planned gifts. Your generosity makes an impact on what’s next, for a better tomorrow.

*for what’s next* ▶

## Look to Michigan

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