



# ECOSYSTEM SCIENCE AND MANAGEMENT (ESM) MASTER OF SCIENCE

**BECAUSE ECOLOGICAL KNOWLEDGE IS THE FOUNDATION OF SOUND, SUSTAINABLE ENVIRONMENTAL POLICY, MANAGEMENT, CONSERVATION, EDUCATION, AND ADVOCACY**

What is the intersection between life and environment? How do humans impact and manage ecosystems? And what does a natural sciences perspective show us about the sustainability of life? In the Ecosystem Science and Management specialization, you will explore these questions and more, learning the technical and quantitative skills necessary for the study of ecosystems, as well as how to apply them to solve complex problems, preparing you to become both a scientist and practitioner in the field.

## WHY ESM?

Focus your coursework around a specific topic or blend classes and experiences to create a truly interdisciplinary experience. Examples of concentrations include:

- **Landscape Ecology:** Study how different land uses — agriculture, urban, residential, forest, natural — affect ecological systems.
- **Global Change Biology:** Understand the biosphere's responses to human activities, such as climate shifts, land-use conversion, release of pollutants, and species introductions.
- **Quantitative Methods in Environmental Science:** Acquire the fundamental quantitative literacy to correctly evaluate and interpret ecological data.
- **Conservation GIS:** Study the effective use of GIS across multiple fields in conservation, including forestry, wildlife mapping, aquatic resources, ecosystem management and regional planning.
- **Ecosystem Science and Management:** Link the scientific understanding of ecosystems with the challenges inherent in sustainable management and of the societal benefits they support.
- **Ecological Engineering:** Combine the principles of ecology and engineering to predict, design, construct or restore, and manage ecosystems.
- **Decision Making and Risk Analysis:** Identify and manage potential problems that could undermine key initiatives or projects, while building critical decision-making skills.

## GAME CHANGERS

### BRITTANY BENNETT '15 ECOLOGIST, ENVIRONMENTAL PROTECTION AGENCY

"The interdisciplinary focus was crucial to my success in securing a position at the EPA. It was my diverse background in ecology, communications, and policy that set me apart from the rest."



### KIRK ACHARYA '20 RESEARCH FELLOW, ROCK MOUNTAIN NATIONAL PARK

"I chose SEAS first for its world-class interdisciplinary curriculum, and second for the warm, welcoming community. In the Ecosystem Science and Management track I was able to build on my scientific understanding of global change, but the opportunity to relate these issues to policy and management has been invaluable."



## FACULTY

- Karen Alofs
- Bradley J. Cardinale
- Jennifer Blesh
- Allen Burton
- Johannes Foufopoulos
- Sara Adlerstein González
- Drew Gronewold
- Inés Ibáñez
- Ivette Perfecto
- Paul Seelbach
- Brian Weeks
- Donald Zak

# MASTER'S PROJECTS

Part of the culminating experience of your program is a master's project or master's thesis, where you will work with an external client to solve real-world problems. Recent projects include:

***Herbivory, Climate Change and the Future Landscape of Isle Royale National Park: Developing an Herbivory Monitoring Program to Adaptively Manage the Park's Terrestrial and Aquatic Ecosystems*** (Keweenaw County, Michigan, USA)

**Client:** National Park Service - Isle Royale National Park

**Advisor:** Dr. Inés Ibáñez

***Bijagual River Watershed, Costa Rica: Improving Watershed Health and Engaging Local Communities in Monitoring and Outreach*** (Costa Rica)

**Client:** Bijagual Center for Environmental Education and Conservation

**Advisor:** Dr. Ivette Perfecto, Dr. Catherine Riseng



# COURSE SAMPLING

- Ecological Risk Assessment
- Fluvial Ecosystems
- Forest Ecology in a Changing World
- Interpreting Research in Conservation Ecology

**APPLY NOW!**  
**SEAS.UMICH.EDU/APPLY**

# CONTACT

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(734) 764-6453

**Learn more: [seas.umich.edu](https://seas.umich.edu)**

# CAREERS

In-house career coaches will provide personal guidance while you are a student and continued support after you graduate.



# SEAS SUSTAINABILITY THEMES

Students specializing in Conservation Ecology have the option to focus their studies and deepen their knowledge in one or more sustainability theme.



CITIES+MOBILITY  
+BUILT ENVIRONMENT



CLIMATE  
+ ENERGY



CONSERVATION  
+ RESTORATION



FOOD  
SYSTEMS



WATER



CROSS-CUTTING  
EXPERTISE

