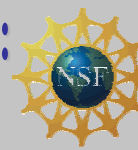




Ecologists, Educators, and Schools (ECOS): University of Montana GK-12 Program



Fellows as Students

🌱 **Career** – Fellows learn from teachers how to be educators through participation in institutes and classroom inquiries.

🌱 **Contributing to Discipline** – Fellows learn how to communicate to the next generation of young scientists.

Alison Perkins: *"Working with the school kids through ECOS has been the most amazing educational experience! I'm as much a student as they are."*

Brooke McBride: *"Being an ECOS fellow allows me to explore my professional interests in addition to scientific research with ample opportunity to design and illustrate K-12 ecology curricula, which I ultimately aim to publish."*

Abstract

The University of Montana GK-12 Program promotes the use of schoolyards as outdoor laboratories for learning about the environment ensuring no child is left indoors! Graduate student fellows have identified 7 roles in which they develop professional skills and confidence: *mentor, educator, student, scientist, scholar, citizen, and collaborator*. In these roles they strengthen their career paths, contribute to their discipline, and bring their cutting-edge research to the K-12 classroom.

Fellows as Mentors

🌱 **Career Path** – Fellows prepare to be effective advisors and role models by mentoring K-12 students and undergraduate teammates.

🌱 **Contributing to Discipline** – Fellows model how to employ scientific logic in decision making.

🌱 **Integrating Knowledge** – Fellows translate current research (e.g., plate tectonics, avian behavioral ecology) in ways that are accessible to K-12 audiences.

TJ Fontaine: *"Being a positive mentor and an engaged citizen is a responsibility. Being with a 1st grader makes you aware of that responsibility."*

Fellows as Educators

🌱 **Career Path** – Fellows learn how to disseminate scientific knowledge to nonscientists.

🌱 **Contributing to Discipline** – ECOS excites the next generation about science by introducing outdoor scientific inquiry.

🌱 **Integrating Knowledge** – Fellows use their research to develop inquiries and curriculum pieces (e.g., microclimates, nest predation).

Katie Hailer: *"ECOS has been a truly enlightening and exciting experience that has given me insight as to the kind of educator I want to become in the future."*

Bruce Threlkeld: *"ECOS has enabled me to connect more deeply with education literature and with experienced teachers. The fellowship has given me a chance to develop skills as an educator which will surely benefit my future students."*

Fellows as Collaborators

🌱 **Career Path** – Fellow interact with local and state government agencies, lawyers, businesses, and non-profit organizations to develop demonstration projects (e.g., the prescribed burn developed as a demonstration project at Big Sky High School).

🌱 **Contributing to Discipline** – Fellows work with citizen scientists to enhance data collection and knowledge about real-world problems (e.g., fire ecology, and an insectary developed to gather baseline information about biological controls).

🌱 **Integrating Knowledge** – Fellows collaborate with other UM scientists to bring STEM knowledge into the K-12 classroom (e.g., scanning electron microscope laboratory).

Rachel Loehman and Johnny MacLean: *"Working with professionals from local, state, and private agencies has allowed us to develop innovative teaching tools that provide exciting new learning opportunities to enhance K-12 education."*

Fellows as Scholars

DISSERTATION CHAPTER TITLES

🌱 TJ Fontaine, Evolutionary Biologist: *Using Microclimate to Predict Plant Distribution in the Outdoor Classroom*

🌱 Katie Hailer, Bioinorganic Chemist: *Identifying Some Common Science Misconceptions in a 5th Grade Science Class. Are These Misconceptions Similar to Ones That Have Been Identified in College Freshman?*

🌱 Rachel Loehman, Ecosystem Ecologist: *Ecological Footprint Analysis: A Tool for Environmental Education*

🌱 Mike Machura, Population Ecologist: *A Fourth Grade Lesson in Classification Through an Interactive Card Game*

🌱 Johnny MacLean, Geochronologist: *Kids' Fieldtrip Guide to Western Montana Geology*

🌱 Brooke McBride, Soils Ecologist: *Using Cartoon Illustrations to Explain Complex Processes in Soil Ecology*

🌱 Alison Perkins, Behavioral Ecologist: *Communities of People & Communities of Pollinators: A Citizen Science Project to Explore Pollinators in our Environment*

🌱 Sam Stier, Conservation Ecologist: *Lessons from Significant Life Experience Research for Outdoor Ecological Education Programs in the K-12 Schools*

🌱 Bruce Threlkeld, Plant Ecologist: *Teaching Plant Ecology through Garden Inquiries*

Fellows as Citizens

🌱 **Career** – Fellows build a commitment to community service through public outreach.

🌱 **Contributing to Discipline** – Fellows inform local communities about the importance of scientific research.

🌱 **Integrating Knowledge** – Fellows use current research to develop demonstration projects which provide public educational opportunities (e.g., Lewis and Clark biodiversity walk).

Sam Stier: *"Every time I walk into the public schools as an ECOS Fellow, I am reconnected to the awe and wonder that led me into becoming an ecologist in the first place."*

Fellows as Scientists

🌱 **Career** – Fellows broaden their scientific understanding by considering multiple disciplines (e.g., forest ecology, vertebrate biology).

🌱 **Contributing to Discipline** – Fellows become more integrative professional scientists.

🌱 **Integrating Knowledge** – Fellows bring research equipment from their labs to enhance students' learning opportunities.

Mike Machura: *"ECOS has definitely made me a better teacher and a better communicator, and I think I've also made a very personal connection with my students. I've spent some time discussing my own research with my classes, and many of the kids will recall the details of my work weeks later."*

