# Creating Connections between MILES Research and the Public through Outreach and Education

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## Introduction

The purpose of this project is to increase connection between MILES research and the public through education opportunities surrounding socio-ecological systems and ecosystem services. McCall Outdoor Science School graduate students worked with the Boise WaterShed to connect research to K-12 students through teacher professional development, curriculum development and implementation, and the establishment of a pollinator garden.

## Background

Ecosystem services are measured in relation to human benefit and how human actions alter ecosystems and services they provide (MEA, 2005). The ecosystem services framework has been adopted widely among scientific and policy communities and has resulted in new approaches for research and sustainable management of natural resources.

An important component of sustainable management of natural resources is creating both informed public(s) and researchers informed by the public. Collaboration between researchers who study socio-ecological systems and individuals living within local ecosystems may promote resource management solutions that lead to better management, resilience, and functioning of ecosystem services.

Education may play a central role in creating more informed pubic(s) and better researchers, particularly through education that emphasizes interdependence of natural processes and human ways of living (Cutter-Mackenzie & Smith, 2003; Sterling, 2002; Capra,1997; Capra, 2002).

This collaboration between MOSS graduate students and the Boise WaterShed focused on:

1) exposing educators to current research in ecosystem services through the MILES program and Adventure Learning workshops,
2) developing and delivering a curriculum on raptors and rodents as an example of threatened ecosystems services, and
3) planting a pollinator garden that exemplifies relationships between pollinators, native plants, and ecosystem services.

## Results

**Adventure Learning Boise:**

- 12 in-person learners
- 30 Digital learners
- 21 interdisciplinary researchers and presenters
- 105 blog posts
- 17 lesson plans

**Habitat and Biodiversity Curriculum:**

- Pollination and ecosystem Services
- Raptors and rodent relationships
- 40 students served

**Boise WaterShed Pollinator Garden**:

- 400 square foot garden
- 20 plant species
- 20 plant identification tags
- 2 interpretive signs
- Bird Bath
- Insect hotel

## Future Directions

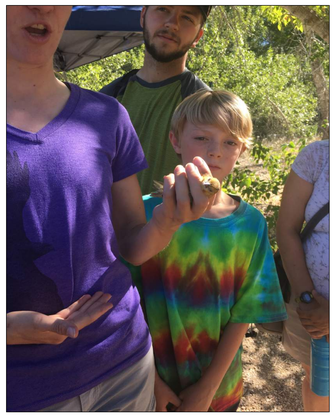
Future directions include: 1) Program evaluation, including case studies of curriculum implementation in classrooms and longitudinal study of Adventure Learning workshops, 2) Citizen science project monitoring pollinators at Boise WaterShed Pollinator Garden, and 3) Creating opportunities for researchers to interact with the public and understand their needs and concerns.

## Adventure Learning Workshop

Middle and high school teachers from across the Treasure Valley participated in a five day workshop designed to explore the ecosystem services surrounding the Boise River watershed. They learned what constitutes a healthy functioning ecosystem and the challenges and management practices these systems face due to growing urbanization. The workshop emphasized MILES research and included an on-line component through which digi-learners connected with in-person learners.

Monarch monitoring with Dave Draper from College of Western Idaho

Boise State University researchers Chelsea Merriman and Ellie Opdahl

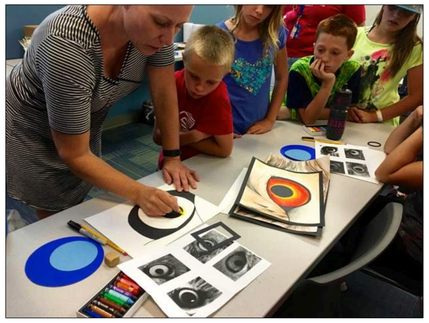


Bird banding with Heidi Ware from Idaho Bird Observatory

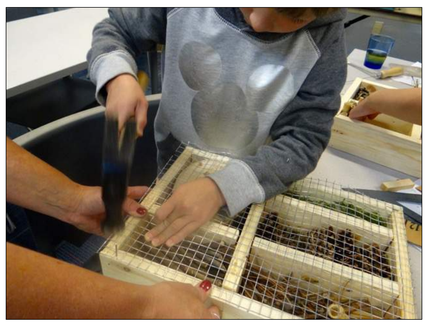
Adventure Learning participants visiting the Boise River Diversion Dam

## Habitat and Biodiversity Curriculum

MOSS students developed a hands-on curriculum linking MILES research on raptors and pollinators with the public. The curriculum was implemented as part of the Boise WaterShed's eARThworks program, combining science and art to promote interdisciplinary thinking.



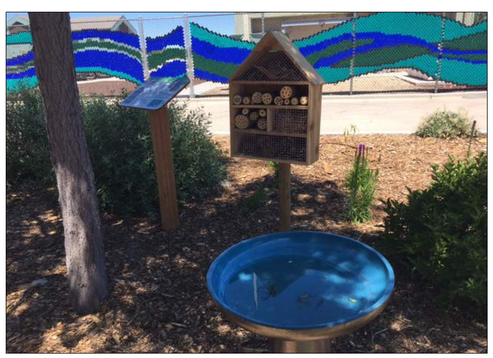
Students learned about ecosystem services provided by raptors in this eARThworks class. Students then worked with local art teacher Renda Palmer to create watercolors focused on they eye of raptors.



Students learned about pollinators, native plants, and the perils they face. Students then worked with local carpenter Eric Moore to create insect hotels for use in their home garden.

## Boise WaterShed Pollinator Garden

Pollinators facilitate the reproduction and survival of many plants and are critical to food and clothing production (Kluser & Peduzzi, 2007). One out of three bites of food we eat relies on pollinators (Ingram et al., 1996). Yet pollinators are in decline due to human population pressures. This MOSS/Boise WaterShed collaboration created a pollinator garden on the campus of the Boise WaterShed to create nesting and foraging opportunities for pollinators and create opportunities for students and visitors to learn about the role of pollinators in providing ecosystem services. The garden includes milkweed habitat for the charismatic monarch butterfly.



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