



W. K. Kellogg
Biological Station
MICHIGAN STATE UNIVERSITY

KBS K-12 Partnership 2018 Spring Workshop – Wednesday, April 18th

Conservation Connections: In and Outside the Classroom

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| 8:00am | Breakfast, Introductions, Announcements | Auditorium |
| 8:30am | Plenary Speaker: Dr. Nick Haddad , MSU Professor at KBS <i>Biodiversity conservation in degraded landscapes</i> | Auditorium |
| 9:30am | Concurrent Session Teasers | Auditorium |
| 10:00am | Concurrent Session 1 | |

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| A. Digital Data Nuggets: real research, real data, real classrooms (M,H) Organizers: Marcia Angle, Elizabeth Schultheis, and Melissa Kjelvik (Data Nuggets) | Terrace Room |
| B. Designing teacher “cheat sheets” on new or difficult concepts in ecology (All) Organizers: Bonnie McGill (KBS Graduate Student, Integrative Biology) | Stack Room 139 |
| C. People and the environment: using social science to interpret behavior (H) Organizer: Adam Reimer (KBS LTER Postdoc) | Stack Room 141 |

11:00am **Break**

11:15am **Concurrent Session 2**

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| A. Butterflies and caterpillars: getting kids outside with citizen science (All) Organizer: Ashley Anne Cole-Wick (Kalamazoo Nature Center Biological Research Director) | Terrace Room |
| B. The snacks in your backyard: wild and edible plants of Michigan (H) Organizer: Danielle Zoellner (KBS Academic Programs Coordinator) | Stack Room 139 |
| C. Argumentation: the basics of claims, evidence, and reasoning in elementary classrooms (E) Organizer: Sara Syswerda (Pierce Cedar Creek Institute Education Director) | Stack Room 141 |

12:15pm **Lunch**

McCrary Dining Hall

1:15pm **Concurrent Session 3**

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| A. Clip Mobile Challenge, Junk Drawer Robotics (E, M) Organizer: Janis Brinn (Michigan State University Extension Educator) | Terrace Room |
| B. Designing NGSS lessons: constructing units based on what you want the students to learn without giving away the punchline (E) Organizer: Sara Syswerda (Pierce Cedar Creek Institute Education Director) | Stack Room 139 |
| C. Butterflies and caterpillars: getting kids outside with citizen science (All) Organizer: Ashley Anne Cole-Wick (Kalamazoo Nature Center Biological Research Director) | Stack Room 141 |

2:15pm **Break**

2:30pm **Concurrent Session 4**

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|---|-----------------------|
| A. Clip Mobile Challenge, Junk Drawer Robotics (E, M) Organizer: Janis Brinn (Michigan State University Extension Educator) | Terrace Room |
| B. A living legacy: trees of the Kellogg Estate (All) Organizer: Kara Haas (KBS Science Education and outreach Coordinator) | Stack Room 139 |
| C. Quantifying systems thinking skills: using modified Data Nuggets (M,H) Organizer: Joelyn de Lima (Graduate Student, Plant Biology) | Stack Room 141 |

3:30pm **Group Brainstorm: connecting sessions to NGSS standards**

Auditorium

4:00pm **Evaluation & Adjourn**

Auditorium

The evaluation form can be found online at this link:

If you are unable to access the form at the moment, please let a workshop coordinator know.

Session Descriptions (listed in order they occur in the schedule overview)

Plenary: Biodiversity conservation in degraded landscapes

Speaker: Dr. Nick Haddad

Digital Data Nuggets: real research, real data, real classrooms

Middle & High School

Organizers: Marcia Angle, Elizabeth Schultheis, and Melissa Kjellvik

Are you struggling to bring data into your classroom, or address NGSS practices? In this hands-on session we demonstrate Digital Data Nuggets, free resources that address the challenges of using real data in the classroom. Walk away with resources you can immediately implement in your classroom to help students ask their own questions, gain comfort on a digital platform, and find reliable sources of data.

Designing teacher “cheat sheets” on new or difficult concepts in ecology

All Ages

Organizer: Bonnie McGill

Wish you could brush up on the nitrogen cycle over a coffee break? Need a quick update on climate science? In this session we'll brainstorm how to design a series of teacher cheat sheets (actual name TBD) to address common gaps in teacher knowledge that will build their confidence in these topics and help improve their ability to engage with students on these topics. I will bring a rough draft of a sample to share with workshop participants and will elicit your feedback on whether or not this is a useful idea, how to make it more useful, topics for the series to address, level of detail, how to format the text and images, medium for communication (shareable PDF, website, twitter, etc.), how to reach teachers, and everything in between! My personal motivation for this project is to hope to have something in hand to continue to engage with K-12 science educators as I transition from graduate school to a postdoc. I know that “workshop-ing” this with our KBS GK-12 teachers will set me in the right direction!

People and the environment: using social science to interpret environmental behavior

High School

Organizer: Adam Reimer

In this session, we will explore the ways in which people view and interact with the environment and how social and economic systems drive environmental behaviors. By using basic social science theory and data collection methods, we will explore how social scientists investigate environmentally relevant behaviors, attitudes, and values. Participants will learn how to identify basic social science concepts, identify and describe social science methods, and interpret social science data.

The snacks in your backyard: wild edible plants of Michigan

High School

Organizer: Danielle Zoellner

We will go over the basics of wild edible plants, and I will introduce you to some of our most common species that will likely be in your own "back yard". We will also discuss how you can incorporate edible plants into your teaching on several topics such as human health to invasive species impacts.

Argumentation: The basics of claims, evidence, and reasoning in elementary classrooms.

Elementary School

Organizer: Sara Syswerda

In this session, teachers will learn how to integrate claims-evidence-reasoning into classroom discussions and writing assignments. Teachers will be able to explore what makes good evidence and how to scaffold students towards building more effective scientific arguments. Teachers will be introduced to the KLEWS chart as a scaffold for constructing arguments as a classroom group.

Designing NGSS lessons: constructing units based on what you want the students to learn without giving away the punchline

Elementary School

Organizer: Sara Syswerda

During this session, teachers will explore backwards design and how teachers can construct units to help students make claims about what is going on based on the evidence you present to them during their units. Teachers will think about the standards in their grades what types of experiences students need to reach those standards.

Clip Mobile Challenge, Junk Drawer Robotics

Elementary & Middle School

Organizer: Janis Brinn

Showcase from the 4-H Robotics curriculum from **book 2** of the **Junk Drawer Robotics** curriculum. The activity is called the **Clip Mobile Challenge, 4-H Junk Drawer Robotics**. The 4-H Robotics curriculum is a series of activities designed to make STEM engaging and meaningful to youth. The 4-H Robotics activities and projects are based on the National Science Education Standards and Standards for Technological Literacy. They focus on developing abilities in science, math, engineering, and technology through the Experiential Learning Model of Do, Reflect, Apply.

Web site for the curriculum: <http://www.4-h.org/resource-library/curriculum/4-h-robotics/junk-drawer-robotics/>

The free download Clip Mobile Challenge is on this site

Butterflies and caterpillars: getting kids outside with citizen science

All Ages

Organizer: Ashley Anne Cole-Wick

This session will talk about three projects: the Michigan Butterfly Network, Caterpillars Count!, and our (KNC's) Heronwood Field Station's Conservation Biology Education for Employment program through KRESA. Ashley runs the Michigan Butterfly Network, which engages hundreds of volunteers across Michigan who complete butterfly surveys in a variety of public lands - the protocol is easily taught in a couple hours, and butterfly identification is not a pre-requisite. Data is pooled with that of several other states to help us estimate how common and rare butterfly populations are changing across space and time. We also have data-sharing possibilities so students can work with real butterfly data in Michigan. Caterpillars Count! is a new project that KNC has helped pilot with scientists from North Carolina and Washington D.C. Students and teachers can get involved by choosing trees in their schoolyard and turning over leaves to count caterpillars. These estimates can help us study and predict the changing phenology and abundance of arthropods - this project is suitable for all ages. Finally, Ashley will talk about KNC's Education for Employment program, where 40 high school students gain hands-on experience in the field of wildlife biology.

A living legacy: trees of the Kellogg Estate

All Ages

Organizer: Kara Haas

In this session, we will investigate the trees of the Kellogg Estate. Many were planted in the late 1920s and are original to the estate. Each tree on the estate has a unique story to tell. Teachers will walk away from this session able to identify the trees of the Kellogg estate, with historic photos of trees on the estate, and the ability to take tree measurements.

Quantifying systems thinking skills: using modified Data Nuggets Middle & High School

Organizer: Joelyn de Lima

Systems thinking is a way of appreciating the entire system as a whole, being able to identify the parts, understand the ways the parts work together and the function of the unified whole. The study of biology is a good example to elicit systems thinking as concepts do not exist in an isolated vacuum, and the interrelationships can be appreciated even by novices. Understanding systems and modeling them is one of the crosscutting concepts in the NGSS. Our adaptation of Data Nuggets (Dns; <http://datanuggets.org>) progresses students through a series of practices that mirror authentic scientific practice, including using models to represent and reason about system interactions.