

**Global Change in Your Classroom** – THURSDAY, October 10th  
Kellogg Bird Sanctuary, 12685 East C Ave., Augusta, MI 49012

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- 8:00am **Welcome & Introductions** (Bird Sanctuary Auditorium, includes breakfast): Group Ice Breaker activity; [Update on K-12 Partnership Strategic Plan](#); @KelloggBioStn #kbsk12
- 8:30am **Plenary Speaker: Dr. Denise Keele**, Associate Professor of Political Science and Environmental Sustainability Studies at Western Michigan University. [Bringing Climate Change into Every Classroom](#) (Bird Sanctuary Auditorium)
- 9:45am **Concurrent Session Teasers** (Bird Sanctuary Auditorium)
- 10:00am **Concurrent Session 1**

A. [What bugs a sturgeon? How early environments shape behavior](#) (Bird Sanctuary Aud.)

**Age range:** Middle and High School

**Organizer:** Lydia Wassink (MSU Graduate Student, Integrative Biology)

Students learn about lake sturgeon and how encounters with predator during early life might shape the way larval sturgeon behave. They collect data on swimming activity from videos of sturgeon larvae and then compare means of treatment groups using a bar graph to see if there's a difference between sturgeon that encountered predatory vs. herbivorous insects.

B. [TeaTime4Science Soil Health Protocol](#) (Bird Sanctuary Classroom)

**Age range:** Middle and High School

**Organizer:** Lindsey Kemmerling (KBS Graduate Student, Integrative Biology)

TeaTime4Science is a community science project to explore decomposition and soil health. We will unbury some tea bags, and learn about the protocol and its implications for soil health.

C. [Migration and Birding Walk](#) (Outside at Bird Sanctuary)

**Organizer:** Kara Haas (KBS Science Education and Outreach Coordinator)

Fall waterfowl migration will be in full swing! We'll learn to use binoculars and a field guide to identify migrant and resident waterfowl on Wintergreen Lake. Pretend to be a bird in migration to understand some of the dangers along the journey.

11:00am **Break**

11:15am **Group Activity**

[Birds of Prey Program](#) (Bird Sanctuary Auditorium)

**Organizer:** Sara DePew-Baby (Kellogg Bird Sanctuary Avian Caretaker)



**Feather Observation Activity**

(Bird Sanctuary Auditorium)

**Organizer:** Kara Haas (KBS Science Education and Outreach Coordinator)

Who are good observers? What skills are needed to make in depth observations? We'll take a long look at feathers while using the BEETLES resources for [Making Observations](#). BEETLES is the Better Environmental Education, Teaching, Learning & Expertise Sharing program and offers a ton of free and excellent resources.

12:00pm **Drive to KBS upper parking lot ([Kellogg Biological Station](#), 3700 East Gull Lake Dr., Hickory Corners, MI 49060)**

12:15pm **Lunch** - McCrary Dining Hall

**McCrary Dining Hall**

1:15pm **Concurrent Session 2**

A. **Hot and Hangry: Exploring Arctic Food Web Interactions Under Climate Change** (Stack 139)

**Age range:** Upper Elementary & Middle School

**Organizer:** Allison Young (MSU Graduate Student, Integrative Biology)

In this lesson we will explore how climate change can influence food web relationships using the charismatic and threatened Arctic marine ecosystem. Students will build and rebuild themselves into living food webs as 'the Arctic environment' changes around them, allowing them to gain a deeper understanding of the interconnectedness of organisms in an ecosystem and how even small changes in climate can have far-reaching impacts.

B. **Limit by Limit: How do nutrients control algal growth in Arctic streams?** (Stack 140)

**Age range:** High School

**Organizer:** Ariel Shogren (MSU Postdoctoral Researcher)

Just like you get energy from the foods you eat, aquatic algae and microbes require nutrients from the surrounding ecosystems for growth. What happens when the ecosystem "diet" is unbalanced? Through this lesson, students will use experimental data to learn and identify limiting nutrients in Arctic ecosystems.

C. **Eggementary, my dear Squawkson: using graphs to solve a biological mystery** (Stack 145)

**Age range:** Elementary and Early Middle School

**Organizer:** Ava Garrison (KBS Graduate Student, Plant Biology)



This interactive activity will teach students to read, interpret, and use graphs using the real-world example of birds and their eggs. First they will learn how the size of bird eggs correlate with adult bird length, and then they will use that knowledge to solve a mystery!

2:15pm **Break** (snacks in Auditorium!)

2:30pm **Concurrent Session 3**

A. [Keeping Tabs on Turtles: An Introduction to Mark-Recapture and Quantitative Population Biology](#) (Stack 139)

**Age range:** All Ages

**Organizer:** Brendan Reid (KBS Postdoctoral Researcher)

This session will present a framework for teaching the basics of mark-recapture methodologies that can be fit to a wide variety of different teaching formats (from single class sessions to long-term field monitoring projects). Teachers can tailor the specifics of the lesson (such as the degree of math and probability involved) to the ability level of the students, and the study organisms are charismatic, engaging, and of great conservation concern: TURTLES!!

B. [Streams as Sensors: Using Arctic Watersheds as Indicators of Change](#) (Stack 140)

**Age range:** Middle School & Early High School

**Organizers:** Ariel Shogren (MSU Postdoctoral Researcher)

Though the Alaskan Arctic may seem far away from where we live, the carbon and nutrients stored in and released from tundra permafrost are important for the entire globe. This lesson plan will cover how scientists use watershed budgets to assess ecosystem change in the Arctic.

C. [Shrinking Our Footprints: A Project-Based Learning Experience](#) (Stack 145)

**Age range:** Grades 3-6

**Organizer:** Debra Kolberg, STEM Teacher Coach, Kalamazoo Regional Education Area

This is a PBLWorks project that is freely available on their website, through which we will work through a "typical" project timeline with ties to standards. It will be a quick walk through PBL so participants can get a great project and a taste of how rich PBL can be.

3:30pm **Discussion: how will you bring climate change into your classroom?** (Auditorium)  
End-of-day brainstorming discussion



K-12 Partnership 2019 Fall Workshop at Kellogg Biological Station  
#KBSK12 @KelloggBioStn

4:00pm **Evaluation & Adjourn**

Link to today's evaluation: <http://bit.ly/2MjQ5Ue>

or access it via QR code

