

KBS K-12 Partnership 2018 Fall Workshop – **WEDNESDAY**, October 31  
**Science isn't Spooky! *let's do the microbe mash. it'll be a classroom smash!***

8:00am **Breakfast, Introductions, Announcements**

8:30am **Plenary Speaker: Kathryn Docherty**, Associate Professor of Biological Sciences at Western Michigan University. **Topic: Environmental microbiology**

9:30am **Birding Basics**, using binoculars for observations, Misty Klotz (KBS Community Outreach Assistant)

9:45am **Concurrent Session Teasers**

10:00am **Concurrent Session 1**

A. **Topic: Fishing for answers: how does stress affect behavior in a threatened species?** (Stack 140)

**Age range:** 7th- 9th grade

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

**Short description:** Understanding the effects of environment stressors is important in wildlife conservation. Lake sturgeon larvae are stressed by warm temperatures, which may affect their behavior and survival. In this lesson, students collect data from videos of sturgeon larvae raised in either warm or cold temperatures, and use a graph to compare datasets and detect how temperature stress affects lake sturgeon behavior.

B. **Topic: Plants and pollinators- a bee-utiful mutualism** (Stack 141)

**Age range:** Middle school

**Organizer:** Sean Griffin (KBS Graduate Student, Integrative Biology)

**Short description:** Almost 90% of all flowering plants rely on animals for pollination, making pollinators an essential part of most ecosystems! In this session, we will discuss the role of pollinators in plant reproduction, explore the concept of a mutualism, and play a game that encourages students to think about pollination from the point of view of both bees and flowers.

11:00am **Break**

11:15am **Concurrent Session 2**

- A. Topic: Biodiversity & BioBlitz** (Stack 140)  
**Age range:** Middle school/All  
**Organizer:** Kara Haas (KBS Science Education and Outreach Coordinator)  
**Short description:** Explore National Geographic's educational materials for teaching about biodiversity and conducting a bioblitz. After the session you will have a good working definition of biodiversity and will spend time outside practicing species identification with the iNaturalist app. (optional: prior to session download iNaturalist on your phone/tablet and set up an account).
- B. Topic: Invasion Meltdown!** (Stack 141)  
**Age range:** Middle school/high school  
**Organizer:** Meredith Zettlemyer (KBS Graduate Student, Plant Biology)  
**Short description:** What role do invasive species play in our native ecosystems? In this hands-on game where students act as invasive and native insects collecting resources (m&m's!), students will be introduced to some of the adaptations of and the effects invasive species have on local habitats, including resource limitation and the decline of native species.

12:15pm **Lunch**

**McCrary Dining Hall**

1:15pm **Concurrent Session 3**

- A. Topic: Drones: Opportunities that Generate Student Excitement and Endless Learning** (Stack 140)  
**Age range:** 5th grade and up  
**Organizer:** Kevin Kahmark (KBS LTER Research Technician)  
**Short description:** Drones usage has increased dramatically in the technology and engineering world. In this session, we will cover drone use in agricultural environments, and discuss multispectral analysis and visual imagery applications. Teaching via drone technology is currently utilized and becoming more commonplace in computer programming, science, language arts, and math classrooms.
- B. Topic: Antibiotic Resistant Bacteria Carried by Birds in Michigan** (Stack 141)  
**Age Range:** High school  
**Organizer:** Kathryn Docherty (WMU Associate Professor) and Allie Spring (WMU Graduate Student, Biological Sciences)

**Short description:** Bacterial strains that are resistant to our arsenal of antibiotic drugs are reaching epidemic proportions. Many of these bacterial strains can be carried and distributed by wildlife in pristine habitats. This can be especially problematic when antibiotic resistant strains are carried by birds that migrate global distances. In this exercise we examine whether different species of birds common to southwest Michigan carry bacteria that are resistant to four different antibiotics. Students are encouraged to form hypotheses, analyze results and draw conclusions from data collected by the class.

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

2:30pm **Concurrent Session 4**

**A. Title: Teaching methods to support diversity and inclusivity** (Stack 140)

**Age range:** any/all

**Organizers:** Ash Zemenick (MSU Postdoctoral Research Associate) and Sarah Jones (MSU Graduate Student, Integrative Biology)

**Short description:** First, we will review the importance of supporting diversity and inclusion in biology classrooms, and the current groups of students that may not feel fully supported or included in the classroom. Then, we will overview various methods for making your biology/science classroom more inclusive while

retaining high standards of biological accuracy. These methods will be especially helpful for students that are girls, and those that are a part of the LGBTQIA+ community (i.e. students that may one day identify as LGBTQIA+, or have parents, family members, or friends that are part of the community).

**B. Title: Going down under: learning about mycorrhizal fungi-plant symbiosis** (Stack 141)

**Age range:** 7th-12th grade

**Organizer:** Tayler Chicoine (KBS Graduate Student, Integrative Biology)

**Short description:** Plants interact with diverse fungi and bacteria that can help them access nutrients and water to survive. Mycorrhizal fungi, in particular, associate with 85% of all plant families and play an important role in plant growth. This hands-on less will leave students (7th - 12th grade) with a better understanding of the mycorrhizal-plant symbiosis. We will use a computer game

"shroomroot" to interactively visualize the role of mycorrhizal fungi and then design an experiment to explore the differences between plants that do or do not associate with mycorrhizae.

3:30pm **Debrief & Evaluation**

Content review, reflect on connections between sessions and the Next Generation Science Standards

4:00pm **Adjourn**