

KBS K-12 Partnership 2019 Summer Institute – **TUESDAY**, June 25**Biodiversity Bonanza!**8:00am **Breakfast, Introductions, Announcements** Auditorium8:30am **Plenary Speaker: Dr. Will Wetzel**, Professor of Entomology
Plant-insect interactions Auditorium

9:30am Concurrent Session Teasers

9:45am **Group Picture**10:00am **Tuesday – Concurrent Session 1**

A. Involving students in ecological restoration decisions (Middle and High School) Organizer: John Brittenham (Restoration Ecologist, Blue Heron Ministries)	Stack Bldg Room #
B. One of the wonders of the microbe world: Nitrogen fixation (Elementary) Organizer: Caro Cordova (KBS-GLBRC Postdoctoral Research Associate)	Stack Bldg Room #
C. S'mores and More!** (Elementary) Organizer: Sara Syswerda (Education Director, Pierce Cedar Creek Institute) ** This session continues in Concurrent Session 2	Auditorium

11:00am **Break**11:15am **Tuesday – Concurrent Session 2**

A. Biodiversity sampling (AGES) Organizer: Mitch Lettow (Stewardship Specialist, SW Michigan Land Conservancy)	Stack Bldg Room #
B. Seed adaptations: dispersal and predation! (All Ages) Organizers: Sarah Johnson (KBS Independent Study Undergraduate) & Meredith Zettlemoyer (KBS Graduate Student, Plant Biology)	Stack Bldg Room #
C. Switchgrass Biology (AGES) Organizer: Mike Ryskamp (MSU Graduate Student, Plant Biology)	Stack Bldg Room #
D. S'more and More! (Elementary) Organizer: Sara Syswerda (Education Director, Pierce Cedar Creek Institute)	Auditorium

12:30pm **Lunch** McCrary Dining Hall1:15pm **Tuesday – Concurrent Session 3**

A. Dendrology Scavenger Hunt (High School) Organizer: Katie Minnix (MSU Graduate Student, Department of Forestry)	Stack Bldg Room #
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B. Fostering Wonder through Project-Based Science (Grades 3-5) Organizers: Chris Reimann & Angela Kolonich (CREATE for STEM Institute at MSU)	Stack Bldg Room #
C. How to bee a pollen detective (Middle and High School) Organizer: Sean Griffin (KBS Graduate Student, Integrative Biology)	Stack Bldg Room #

2:15pm **Break**

2:30pm **Tuesday – Concurrent Session 4**

A. Bugs in your backyard (High School) Organizer: Kayleigh Hauri (MSU Graduate Student, Entomology)	Stack Bldg Room #
B. What's Your "Q" - Water Quality Activities (Middle & High School) Organizer: Cheryl Hatch (High School Teacher, KAMSC)	Stack Bldg Room #
C. Where the wild things aren't: using eDNA to find rare species (Middle & High School) Organizer: Kyle Jaynes (KBS Graduate Student, Integrative Biology)	Stack Bldg Room #

3:30pm **Connecting Sessions to NGSS for Classroom Implementation**

Auditorium

Organizer: Kara Haas and Thomas Charney

4:00pm **Evaluation & Adjourn**

Auditorium

Your feedback helps us improve our programming for you. Please take a moment to complete this online evaluation form.

Link to today's online evaluation form: June 25 Evaluation

<https://bit.ly/2WSLDmQ>



KBS K-12 Partnership 2019 Summer Institute – **WEDNESDAY**, June 26**Biodiversity Bonanza!**8:00am **Breakfast, Introductions, Announcements** Auditorium8:30am **Plenary Speaker: Dr. Mariah Meek**, Professor of Integrative Biology Auditorium
*Genomics to the rescue: improving conservation of imperiled fish populations*9:30am **Concurrent Session Teasers**9:45am **Group Picture**10:00am **Wednesday – Admin and Teacher Roundtable** Auditorium

Organizers: Kara Haas, KBS Science Education and Outreach Coordinator and Misty Klotz, KBS Community Outreach Assistant
 Facilitated discussion groups to identify needs of school districts and goals for the KBS K-12 Partnership moving forward. Participants will work in teams to learn about and discuss student learning around data collection and analysis, place-based education. Project based learning, productive talk/discussion, climate change and evolution.

11:00am **Break**11:15am **Wednesday – Admin and Teacher Roundtable (cont.)** Auditorium

Organizers: Kara Haas, KBS Science Education and Outreach Coordinator and Misty Klotz, KBS Community Outreach Assistant
 Facilitated discussion continues!

12:00pm **Group Picture (behind the Manor House)**12:15pm **Lunch** McCrary Dining Hall1:15pm **Wednesday – Concurrent Session 5**

A. Chromebooks and Probeware (Middle and High School) Organizer: Connie High (Delton Kellogg High School Teacher)	Stack Bldg Room #
B. UofM Dearborn Environmental Interpretive Center (All Ages) Organizer: Dorothy McLeer (Program Coordinator and Interpretive Naturalist)	Stack Bldg Room #
C. 3-D or not 3-D, that is the question!!! (Elementary & Middle School) Organizer: Marti Beitner-Miller (MSU Instructor, Teacher Education)	Stack Bldg Room #

2:15pm **Break**2:30pm **Wednesday – Concurrent Session 6**

A. Monarch program (AGES)	Stack Bldg
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Organizer: Veronica Bolhuis (4-H Program Coordinator, MSU Extension)	Room #
B. Food justice, sustainability, gardening – Root to Shoot program (AGES)	Stack Bldg
Organizer: Angela Newsomm (Detroit Educator)	Room #
C. Hiding in plain sight: adaptations for survival (Middle School)	Stack Bldg
Organizer: Ava Garrison (KBS Graduate Student, Plant Biology)	Room #

3:30pm **Connecting Sessions to NGSS for Classroom Implementation**

Auditorium

Organizer: Kara Haas and Thomas Charney

4:00pm **Evaluation & Adjourn**

Auditorium

Your feedback helps us improve our programming for you. Please take a moment to complete this online evaluation form.

Link to today's online evaluation form: June 26 Evaluation

(<https://bit.ly/2QLCXch>)



KBS K-12 Partnership 2019 Summer Institute – **THURSDAY**, June 27**Biodiversity Bonanza!****Field Day**

7060 N. 42nd St., Augusta, MI 49012

8:00am **Breakfast, Introductions, Announcements** Auditorium8:30am **Plenary Speaker: Dr. Rebecca Jordan** Department of Community Sustainability Auditorium
*Citizen Science***Thursday – Activity 1**

10:00am – 3:00pm

10:00am	Vernal Pool Classroom	KBS Classroom
	Organizer: MNFI	
12:00pm	Carpool to Pierce Cedar Creek Institute	Upper Parking Lot
	<i>Pickup and distribute boxed lunches</i>	
12:30pm	Field portion of vernal pools	Pierce Cedar Creek Institute
	Organizer: MNFI	

Thursday – Activity 2

10:00am – 3:00pm

10:00am	BioBlitz - A schoolyard species inventory event	Location: TBD
	Organizer: Gabrielle Likavec, Michigan Geographic Alliance Director, Central Michigan University	
12:15pm	Lunch	McCrary Dining Hall
1:15pm	BioBlitz - A schoolyard species inventory event	Location: TBD

3:15pm Snack3:30pm **Connecting Sessions to NGSS for Classroom Implementation** Auditorium

Organizer: Kara Haas and Thomas Charney

4:00pm **Evaluation & Adjourn** AuditoriumLink to today's online evaluation form: **June 27 Evaluation**<https://bit.ly/2wC71Of>

Session Descriptions – Tuesday, June 25, 2019

Involving students in ecological restoration decisions

Middle School

Organizer: John Brittenham

Abstract: This session will discuss ideas on how to include students in ecological restoration projects in and around school grounds from the perspective of a restoration ecologist. Potential project ideas and how to incorporate the projects in the classroom will be covered.

One of the wonders of the microbe world: Nitrogen fixation

Elementary

Organizer: Caro Cordova (KBS-GLBRC Postdoctoral Research Associate)

Abstract: Did you know that 78% of the air that we breathe is nitrogen (N₂)? Did you also know that the most limiting nutrient in terrestrial plants is nitrogen? Weird, right? Come join me to dive deep into this subject and learn more about nitrogen in agroecosystems, especially how some plants have the advantage to associate with nitrogen fixing bacteria to obtain their nitrogen from the air.

S'mores and More!

Elementary

Organizer: Sara Syswerda (Education Director, Pierce Cedar Creek Institute)

Abstract: This session, geared towards elementary teachers, will focus on helping teachers learn how to construct engineering problems to address Michigan Science Standards. We will be building solar ovens to help us learn about energy transformations, temperature measurement, and engineering practices. Be prepared to work hard to cook your s'more, and the most melted s'more wins!

Biodiversity Sampling

Age Range

Organizer: Mitch Lettow (Stewardship Specialist, SW Michigan Land Conservancy)

Abstract:

Seed adaptations: dispersal and predation!

All Ages

Organizers: Sarah Johnson (KBS Independent Study Undergraduate) & Meredith Zettlemoyer (KBS Graduate Student, Plant Biology)

Abstract: How do seeds get around? In this inquiry-based lesson, we will observe and collect data on seed adaptations and the many unique ways seeds disperse. We will also investigate how seed predators affect seed populations by learning how to set up a seed predation study in the schoolyard.

Switchgrass Biology

Age Range

Organizer: Mike Ryskamp (MSU Graduate Student, Plant Biology)

Abstract:

Dendrology Scavenger Hunt

High School

Organizer: Katie Minnix (MSU Graduate Student, Department of Forestry)

Abstract: In this activity, participants will practice identifying leaf characteristics and some tree species during an outdoor scavenger hunt.

Fostering Wonder through Project-Based Science

Grades 3-5

Organizers: Chris Reimann & Angela Kolonich (CREATE for STEM Institute at MSU)

Abstract:

How to bee a pollen detective

Middle and High School

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

Abstract: What makes a bee a good pollinator? Do bees always pollinate the flowers they visit? How can flowers make bees do what they need? In this session we will talk about pollination and plant competition, and will create pollen slides to unravel the mysteries of bee behavior.

Bugs in your backyard

High School

Organizer: Kayleigh Hauri (MSU Graduate Student, Entomology)

Abstract: What bugs are in your backyard, and what is their role in the ecosystem? Learn what traits distinguish insect herbivores, predators, and parasitoids, how they interact with plants and each other, and how to identify bugs from your own garden or yard.

What's your "Q"? -

Middle and High School

Water Quality Activities for Middle and High School Classrooms*Organizer:* Cheryl Hatch (High School Teacher, KAMSC)

Abstract: Cheryl and friends will review and provide hands-on practice of the components needed to calculate a water quality index for a body of freshwater. Using physical and chemical tests and examination of freshwater invertebrates collected from leafpacks, students and teachers can draw a complete picture of the health of nearby bodies of water. Join us for practice and conversation about this important topic!

Where the wild things aren't:

Middle and High School

Using environmental DNA (eDNA) to find rare species*Organizer:* Kyle Jaynes (KBS Graduate Student, Integrative Biology)

Abstract: Environmental DNA (eDNA) is DNA shed by organisms in their environment, which can be sampled to test for the presence of rare species that may be difficult to find. This talk will explore these methods with a

focus on hypothesis-driven classroom based activities for both using eDNA techniques and analyzing example datasets.

Session Descriptions - Wednesday, June 26, 2019

Video Games: Gateway to Outdoor Exploration?!

K-12

Organizer: Thomas Charney (KBS Science Education Intern)

Abstract:

UofM Dearborn Environmental Interpretive Center

Age Range

Organizer: Dorothy McLeer (Program Coordinator and Interpretive Naturalist)

Abstract:

3-D or not 3-D, that is the question!!!

Elementary and Middle

School

Organizer: Marti Beitner-Miller (MSU Instructor, Teacher Education)

Abstract: Does your school district have a science curriculum that provides lab experiences with formative assessments for your students to complete? Do you have no science curriculum to follow and you design your own lab experiences? Do you have a favorite lab experience that you have been doing for years, but want to be sure it fits into the new Next Generation Science Standards? If your answer was “yes” to any or all of these questions, this session is for you!!! Through participation in simulation experiences, we will practice and examine how to be sure that the formative assessments being used for your students are meeting the 3-D’s for the NGSS Performance Expectations!!!

Monarch program

Age Range

Organizer: Veronica Bolhuis (4-H Program Coordinator, MSU Extension)

Abstract:

Food justice, sustainability, gardening - Root to Shoot program

Age Range

Organizer: Angela Newsomm (Detroit Educator)

Abstract:

Hiding in plain sight: adaptations for survival

Middle School

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

Abstract: In a short lecture, students will learn about how animals and plants use camouflage to avoid predation and herbivory, and how those adaptations can affect population and community composition. An

activity following the lecture will allow students to simulate the role of camouflage in predation and community composition.

Session Descriptions - Thursday, June 27, 2019

Field Day Options

Vernal Pool Monitoring Workshop

Grade levels: 5-12

Organizer: Daria Hyde, Phyllis Higman, and Yu Man Lee, Michigan Natural Features Inventory, Michigan State University

Our vernal pools workshop will start in the classroom where educators from the Michigan Natural Features Inventory will give what, when, where, why of vernal pools—what are they, when and where do they occur, and why should we care about them? They will also tell us how we can find them and what critters we can expect to find in them! In the afternoon we will head out to a vernal pool to put our knowledge in action! We will sample the pool to look for macroinvertebrates and amphibians present (including indicator species like fairy shrimp!), and learn how we can participate in the Vernal Pool Patrol, a statewide citizen science-based vernal pool mapping and monitoring program. By the end of the day you will have all the tools you need to feel confident teaching about vernal pools yourself!

BioBlitz - A schoolyard species inventory event

Grade levels: K-12

Organizer: Gabrielle Likavec, Michigan Geographic Alliance Director, Central Michigan University

Using the free lessons developed by the Michigan Geographic Alliance, we'll start by participating in some structured BioBlitz activities (inc. plot/grid observations, scavenger hunts, etc.). For the afternoon we'll head outside to do some Blitzing! We'll do a broad survey of many different groups of organisms, practicing survey techniques and using identification tools such as apps and field guides. We will conclude the experience with a wrap up of species observed (iNaturalist) and creating plans for bringing the experience to students. At the end of the day participants will also have taken the first step in the journey towards becoming National Geographic Certified Educators.