

Agenda

Day 1 – Wednesday, August 17, 2016

8:00am **Breakfast, Introductions, and Announcements - Auditorium**

8:30am **Speaker: Sara Tanis, “What’s Under the Bark: Forest Insect Research” - Auditorium**

[Sara Tanis](#), post-doctoral researcher, Michigan State University, Department of Entomology
([Emerald Ash Borer youtube](#))

9:30am Michigan Environmental Education Curriculum Supplement Training Session Teasers (MEECS Facilitators) – **Auditorium**

10:00 **Michigan Environmental Education Curriculum Supplement: Climate Change** for Grades 7-9 - facilitator: Amanda Syers - **Auditorium** Amanda Syers works at Grand Valley State University in the College of Education on the MEECS Online project. Amanda has experience as a classroom teacher, having taught 6th grade science in North Carolina and adult and alternative education at White Lake Area Community Education. She also has worked as a non-formal educator at the GVSU Annis Water Resources Institute. She is the co-author of the MEECS Climate Change Unit.

MEECS Climate Science Unit provides teachers with a relatively compact overview of climate science, emphasizing data relative to Michigan and the Great Lakes. The lesson sequence begins with distinguishing between weather, climate, and climate variability. Students then gain a basic understanding of the natural mechanisms of climate change through hands on activities of the Earth’s energy balance, the greenhouse effect, and the carbon cycle (sources and sinks).. Climate Science includes the following lessons: what is climate?; earth’s energy balance; greenhouse effect, climate models, carbon cycle, climate forces and uncertainty, and evidence of change. MEECS is a program of the Michigan Department of Environmental Quality

10:00 **Michigan Environmental Education Curriculum Supplement Ecosystems & Biodiversity** Grades 5-6 - facilitator: Patty Tolly, Co-facilitator Misty Klotz– **Terrace Room** Patricia Tolly has been a teacher in the Forest Hills School District, in Ada, Michigan for the past 21 years. During this time she has taught students in grades 3-8 in all subject areas. She is currently teaching 6th grade science, math and reading at Central Woodlands 5/6 School. Five years ago, she added place-based environmental education through Groundswell to her classroom and with that came her interest in the MEECS program.

MEECS Ecosystems & Biodiversity Unit uses a Michigan context to provide students with a solid foundation in understanding basic ecological principles, as well as the importance of biodiversity as it relates to Michigan’s environment, economy, and society. Key concepts

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include: Habitat levels; biome, community, population, ecosystems, organisms. MEECS is a program of the Michigan Department of Environmental Quality

11:00am **Break**

11:15 Return to your MEECS training session

12:30pm **Lunch** at McCrary Dining Hall

1:30pm MEECS Climate Change for Grades 7-9 - **Auditorium**

Part 2: Climate Impacts on Michigan and the Great Lakes begins where Climate Science ends, with a review of the indicators of climate change, and then focuses on the potential impacts of changes in Michigan. Three lessons focus on the social science perspective and on the decisions which might confront citizens of Michigan in the future. The lessons are Climate Change Indicators; Plant and Animal Phenology; Ecosystem Relationships; What Can I do?; Community Conversations and Climate Change in the News.

1:30pm - 3:00 MEECS Ecosystems & Biodiversity Grades 5-6 – **Terrace Room**

Biodiversity lessons include scientific investigation, data-based decision making and reviewing factors that threaten biodiversity.

3:00 - 3:15 Practice a MEECS lesson to present to the other MEECS session participants.

3:15- 3:30 **Break - Auditorium**

3:30 - 4:00 participants share a MEECS lesson with their peers - **Auditorium**

3:50 - 4:00pm **Evaluation and Adjourn**



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Day 2 – Thursday, August 18, 2016

8:00am Breakfast, Introductions, Announcements - Auditorium

8:30am Speaker: Sarah Nelson, Barry County Conservation District, “Helping Citizen Scientists Battle Invasive Species” – Auditorium

Sarah Nelson, Executive Director, [Barry Conservation District](#)

1. Native species basics and the benefits of diverse, native communities (briefly touching on ecosystem services)
2. Invasive species basics and "are they really such a big deal?" (case studies)
3. The invasion curve- prevention, EDRR, control & monitoring
4. Statewide effort/Cooperative Invasive Species Management Areas (CISMAs)
5. As an educator, what can I do?

9:30am Concurrent Session Teasers - Auditorium

10:00am Concurrent Session 1 (2 hours Sessions)

A. Algae in the Classroom – Jake Nalley (K-12 Partnership Fellow) and Connie High (Delton Kellogg) – Algae just might be the answer to a number of the pressing sustainability concerns we face. Bringing algae into the classroom with this “drop in ready” kit offers students the opportunity to be phycologists! Students will cultivate their own algae, monitor its growth and discover the many reasons algae could be feed, food, fertilizer and fuel! Kits will be provided without charge by the Algae Foundation.

B. Data Nuggets in the Classroom - Little Nuggets Can Do Great Things! - Cheryl Hach (Kalamazoo Area Math & Science Center) and Marcia Angle (Lawton)

C. Agricultural Education at KBS* – Chris Anderson (KBS Teacher Liaison 2016) – The Kellogg Biological Station has world renowned research on row crop and animal agriculture, both of which focus on the ecology and sustainability of the ecosystem. In this session you will get an overview of agricultural research at KBS and the existing resources for K-12 students and teachers. You will participate in a hands on soil and transpiration activity that K-5 students engage in on the Agriculture and Ecology Student Activity trail. And then we will pick your brains to generate ideas to make more connections between teachers and the agriculture science and research at KBS. This work will help create a 5 year plan for K-12 agriculture-themed education at KBS. *elementary appropriate



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12:00pm Group photo behind the Manor House

12:15pm Lunch at McCrary Dining Hall

1:30 Concurrent session 2 (1 Hour Sessions)

A. Classroom Management Strategies – Nanette Clatterbuck (Lake Michigan Academy)-

Classroom management is a challenging task. How can teachers manage a classroom of students with differing abilities and attentiveness? This session aims to offer techniques and skills that will aid teachers in managing highly functional classes that meet a range of student needs.

B. What question can I investigate? – Misty Klotz (KBS Outreach Educator) and Heather Kittredge (KBS K-12 Fellow) –

Discover Pacific Education Institute's guide on Field Investigations: Using Outdoor Environments to Foster Students Learning of the Scientific Practices Join Misty and new K12 Fellow Heather Kittredge to create your own field investigation question.

C. Michigan's Most Unwanted – Dustin Kincaid (KBS K-12 Fellow) - How do we identify invasive species, and why do we care? In this lesson, students learn to make and use dichotomous keys to identify common invasive species. Students will gain an appreciation for why invasive species are important through a series of discussions, videos, and keying activities. A graphing activity will allow students to make graphs, interpret data from graphs, and draw conclusions based on data.

2:30 Concurrent session 3 (1 hour sessions)

A. The GLOBE Observer App - Citizen Science in partnership with NASA, Todd Ellis, Western Michigan University, Assistant Professor, Mallinson Institute for Science Education and Department of Geography

In this session, we will explore using the GLOBE Observer App, a new citizen science app produced by NASA in conjunction with the GLOBE Program (<http://www.globe.gov>). The app lets you take cloud observations anytime using your smartphone when NASA Satellites are overhead, and then later sends you images of what the clouds you saw look like from space. All the observations are then available as part of the GLOBE program for use in student research.



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B. Cooperative Invasive Species Management Areas - Citizen Science to combat invasive species - Ryan Koziatek (Field Director, Great Lakes Ecological Management, Kalamazoo Nature Center)

Tools and techniques for participating in citizen science invasive species monitoring/reporting.

C. What lives in the schoolyard?* – Kara Haas (KBS Science Education and Outreach Coordinator) and Renee Bayer (CREATE for Stem Institute, MSU) – Michigan Science Standard focused investigations for K-5 that help students find design and carry out investigations and gather data to answer to the driving question, “what lives in my schoolyard?”

*elementary appropriate

3:30pm Break & Snacks – Auditorium

4:00pm Evaluation and Adjourn



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Day 3 – Friday, August 19, 2016

8:00am Breakfast, Introductions, and Announcements - Auditorium

8:30am **Speaker: Phyllis Higman, “Tales from the Front: Battling Invasive Species with Place-based Education”** – Auditorium

[Phyllis Higman](#), Senior Conservation Specialist and Conservation Education Lead at Michigan Natural Features Inventory (MNFI)

9:30am Concurrent Session Teasers - Auditorium

10:00am Concurrent Session 1

- A. Carbon time here?
- B. **Papermaking with Invasive Plants – Jane Kramer** – Jane Kramer is a local artist who specializes in photographing the shadows of extremely rare native plant species and then prints these photos on paper made from invasive species biomass. Teachers will be presented with the art of making paper from plant biomass while highlighting the importance of fostering native plant diversity.
- C. **A Focus on Wildlife: a Zooniverse Citizen Science Project - Remington Moll (Setting up a camera at lunch break on Thursday)**

11:00am Break (Auditorium)

11:15-12:15 Concurrent Session 2 OR RET share-a-thon

- A. **Torrey Wenger (Bloomingtondale) and Marty Buehler (Hastings), 2016 Schemske Lab RETs: “Winter is coming! Are you adapted? A Next Generation-linked study in plant adaptation”** – K-12 Partner teachers will present on their summer research experiences. Two educators worked with Dr. Doug Schemske to develop a freezing assay for *Arabidopsis* sp.,
- B. **Shaun Davis (Thornapple Kellogg), Jodie McManus (Parchment), 2016 Lau Lab RETs - “Prairie Life Ain’t Easy, When It Never Rains”** - Got BEST plots? Want ideas for how to reuse them?! Learn how to simulate climate change in the prairie and what we have learned from researching at KBS.
- C. **Jennifer Boyle (Gull Lake), 2016 Lau Lab RET - “What’s eating the seeds? Puny Predators in the Prairie”*** - Walk to visit the prairie restoration plots and get an overview of the diverse research projects taking place. Then return to the classroom to

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put together your own grainivore trays for schoolyard investigations. Jen has a lesson plans for studying seed eaters, you will get a copy of the lessons. *elementary

12:30pm Lunch* at McCrary Dining Hall

1:30 Off-site Learning Opportunities – 1 hour each

- A. **Birding 101 - At the Bird Sanctuary** – Misty Klotz - Participants will go to the Bird Sanctuary to learn how to use binoculars for looking closer at birds. A journaling activity will be practiced that helps turn the focus on the structure and function of beaks and feet in waterfowl and bird of prey species.
- B. **Pond Labs and Greenhouse Tours – Sara Garnett** – The KBS Pond Labs have contributed a lot of amazing research that has advanced the field of ecology. This session will focus on introducing teachers to the Pond Lab and will cover past and current research at the site.

3:30pm Break & Snacks - Auditorium

3:45pm What's next for the KBS K-12 Partnership?

4:00pm Evaluation and Adjourn



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