KBS K-12 Partnership Workshop December 5, 2012

Our theme for this workshop is Weeds, Seeds, and Dispersal.

Below you'll find our agenda for the day as well as details on our concurrent sessions. Please rsvp to Sara at parrsar1@msu.edu if you plan to attend. We look forward to seeing you!

Agenda

8AM Breakfast, Announcements, and Introductions

8:30AM Speaker: Joe Dauer (Auditorium)

9:30AM Concurrent Session Teasers

9:45 Concurrent Session 1

- Elementary: Robby Cramer (Van Andel Education Institute) (Terrace Room)
- Middle/High School: Ecosystems session with Andy Anderson and Jenny Dauer (Room 140)
- All Grades: Modeling seed fate: a game (Room 141)
- Middle/High School: Weeds: tricks of the trade (Room 145)
- Data Entry (Room 214)

11:15AM Concurrent Session 2

- Elementary: Robby Cramer (Van Andel Education Institute) (Terrace Room)
- MS/HS: The double life of a squirrel – seed disperser and predator (Room 140)
- All Grades: Modeling seed fate: a game (Room 141)
- Middle/High School: Weeds: tricks of the trade (Room 145)
- Data Entry (Room 214)

12:30PM Lunch

1:30PM Concurrent Session 3

- MS/HS: Ecology and Evolution in the Human Microbiome with Jennifer Doherty (Terrace Room)
- MS/HS: The double life of a squirrel – seed disperser and predator (Room 140)
- All Grades: Modeling seed fate: a game (Room 141)
- Middle/High School: Weeds: tricks of the trade (Room 145)
- Data Entry (Room 214)

2:45PM Alaska Trip Update (Lisa Wininger, Marty Buehler, and Mary Grintals)

3:00PM District Planning and Evaluation (Auditorium)

4PM Adjourn and Teacher Advisory Committee Meeting

Concurrent Session Abstracts

Ecosystems: Carbon Cycles and Energy Flows!

With Jenny Dauer and Andy Anderson, MSP Carbon, MS-HS, Stack 140

Brand new materials for teaching about carbon-transforming processes at an ecosystem scale are now available for MSP Carbon teachers! Come and learn about the new activities including the "Sunny Meadows" interactive, the Carbon Dice Game and animated Power points of carbon pools and fluxes. The goal of the Ecosystems Unit is for students to be able to explain how and why matter cycles and energy flows.

The double life of a squirrel – seed disperser and predator

With Tomomi Suwa, Liz Schultheis, and Jacob Nalley, MS-HS,

Because they cannot move, plants have developed a diverse range of strategies to spread their genetic material: from producing tasty fruits to entice birds and mammals to encasing seeds in structures that can be carried off by the wind. Small mammals, like squirrels and mice, can be both beneficial and destructive for plant seeds – they serve as dispersal agents, moving seeds far from parent plants and into beneficial habitats, or as predators, consuming seeds before they have had a chance to germinate. Using squirrels as a study system, we will explore importance of squirrel behavior human disturbance influencing seed dispersal.

In this session we will discuss dispersal and predation as major forces determining the fate of a seed. We will conduct an experiment where we measure squirrel removal of seeds from a seed trap to determine their activity in a variety of habitats – including isolated woods and areas with high human impact. Using this data, we will go through the scientific method, from hypothesis generation to conclusion. Participants will be introduced to Project Squirrel, a citizen science database where students can submit and explore data on squirrel behavior.

Modeling seed fate: a game

With Anne Royer, Sara Garnett, and Michael Kuczynski. MS-HS,

In the 1970's, an influential ecological hypothesis was developed by two tropical biologists trying to explain the distribution of trees in the hyper-diverse rainforests of planet earth. We use a deceptively simple board game as a model for students to explore how two basic concepts (dispersing far is hard, and living at high density is dangerous) can be combined to explain this baffling natural pattern. We

show you how to interactively lead students through the predictions of the hypothesis, give you the tools to collect data from the game itself, and finish by graphing and discussing our board-game data.

Weeds: tricks of the trade

With Cara Krieg, Tyler Bassett, and Dustin Kincaid. MS-HS,

During this session we will explore how plant traits like seed dispersal (e.g., wind-dispersed, animal-dispersed, etc.), seed hardiness, and land use history influence the assembly of weed communities following a major disturbance. The focus will be on volunteer species most commonly found in our BEST plots. We will begin by providing a background on plant traits and land use change. Following this introduction we will make predictions about which plant traits make weeds most successful using an activity you can take back to your classroom. The remaining portion of the session will be graphing-intensive. We will utilize data on volunteer species collected from our network of BEST plots to explore how seed dispersal strategies and seedbank longevity correlate with how often particular weed species appear in our plots. Time allowing, we will conclude with a discussion about how best to use these data in a data nugget.

Ecology and Evolution in the Human Microbiome by Jennifer Doherty

-What lives in your belly button? What is a fecal transplant and why would someone do that? Do we really only have one effective treatment left for Gonorrhea? Why? Can your gut microbes keep you fat? In this session we will apply the concepts of community ecology and evolution to investigate these and other Human Microbiome scenarios. We will also talk about how you can integrate these interesting scenarios into your ecology and evolution teaching.

-This session will be interesting for anyone who wants to learn about the Human Microbiome but teaching applications is probably most appropriate for MS and HS

-MSP Biodiversity

Pill Bugs, Millipedes, and Hissing Cockroaches OH MY!! Science is Indeed a Verb!

Abstract: Practice thinking and acting like a scientist using Pill bugs. Experience blending of the three strands of the new Conceptual Framework: Crosscutting Concepts, Scientific and Engineering Practices, and the Disciplinary Core Ideas within an elementary science lesson. The instructional strategies will include: informational picture books, inquiry, questioning, discourse, and student science journaling. Samples ofstudent journals, discourse, and application projects will be shared. A QPOE2 Investigation Organizer Step Book and sticker packet will be given to each participant. Note: You will be able to experience the value of student choice by using Hissing Cockroaches or Giant Millipedes instead of Pill Bugs.

With Robby Cramer, Science Education Specialist Van Andel Institute, Executive Director Michigan Science Teachers Association, and Michigan NGSS internal Review Team

This Session designed for Elementary teachers

Participant List

Email Sara Syswerda (parrsar1@msu.edu) if you would like to be added to this list.

Comstock: Mary Grintals, Canaan Groff, Laurie Anderson, Shirley Gilland, Emmy Kimmer, Jan Kinno, Stacey VanZandt

Delton-Kellogg: Laurie Shipley, Todd Shipley

Galesburg-Augusta: Mary Moreland, Terri Blake

Gobles: Becky Drayton

Gull Lake: Matthew Hawkins, Debi Kilmartin, Jenn Boyle, Ashley Carroll, Blair Rodgers, Kari Freling

Harper Creek: Steve Barry, Shel Kunji, Amy Smith, Alissa Renner, Sue Swaton

Hastings: Marty Buehler, Jamie Dixon, Jill Withey, Ann Beemer

Kalamazoo Area Math Science Center: Cheryl Hach

Lawton: Dave Williams, Marcia Angle, Dennis VanWeelden

Martin: Rob Robrahn

Olivet: Marie Toburen, Lauri Maurer, Terri Morton, Mike Boehmer, Cheryl Worden, Sara Baker, Ruben Chavez

Parchment: Jodi McManus

Plainwell: Lisa Wininger, Marty Green, Noel Muselin, Sandy Breitenbach

Thornapple-Kellogg: Jamie Bowman, Shaun Davis, Martha LaVoie

Vicksburg: Dave Nette, Liz Ratashak, Lisa Harbour

KBS: Tom Getty, Andy Anderson, Sara Syswerda, Sarah Bodbyl Roels, Jennifer Doherty, Elizabeth Schultheis, Tomomi Suwa, Michael Kuczynski, Tyler Bassett, Jenny Dauer, Cara Krieg, Dustin Kincaid, Jake Nalley, Sara Garnett, Joe Dauer,

Van Andel Institute: Robby Cramer

WMU Evaluation Staff: Bob Ruhf +1