

# REEFS

## Resources for Ecology Education: Fair & Share

### Session Description:

This is a chance to learn about favorite classroom activities from ecology faculty and to learn about what your colleagues are doing to engage their undergraduate students using student-active methods. This session will break into small groups so that everyone can describe their activities to a few colleagues. Groups will offer general feedback and suggestions, including what kinds of information most educators will need to know to try an activity in their own courses. Discussion will also include how each activity could be improved, tailored, and/or adapted for use in different learning environments. We will provide information on digital publishing options during the session.

### Location:

*Monday, August 5, 2013*

*10:15 AM-11:30 AM*

*Room M100A, Minneapolis Convention Center*

### Session Agenda:

- 10:15 AM **Arrive / Welcome**
- Introductions ESA Education Section & ESA Office of Education and Diversity Program
  - Each presenter does a 1 minute pitch about their learning activity
  - Attendees split into groups – each attendee will have the opportunity to be part of two groups (each 25 min long)
- 10:25 AM **Break into groups**
- 5-10 min: Each Presenter describes their learning activity  
10-15 min: Presenter fields questions or guides a discussion about learning activity
- 10:55 AM **Break into groups**
- 5-10 min: Each Presenter describes their learning activity  
10-15 min: Presenter fields questions or guides a discussion about learning activity
- 11:25 AM **Wrap Up / Evaluations**

Special Session 6  
Session Preview



## Resource Descriptions:

### Mutations are random: The Lederberg experiment

*Brief description of classroom activity:*

In this classroom activity students are led through the Lederberg's replica plating experiment as an in-lecture guided inquiry. Students work in informal groups to design an experiment to test the hypothesis that antibiotic resistant strains of bacteria surviving an application of antibiotics had the resistance before their exposure to the antibiotics, not as a result of the exposure; a key piece of evidence for random mutation. They are then given Lederberg's experimental design and asked to predict results that would support or reject the hypothesis. Lederberg's results are then presented for students analyze and discuss.

*Extent this learning activity is developed:*

Newly developed, implemented once or twice in a classroom, lecture or laboratory

*Presented by:* Jennifer Doherty, Michigan State University, [dohertyjh@gmail.com](mailto:dohertyjh@gmail.com)

### Testing the Intermediate Disturbance Hypothesis with Periphyton

*Brief description of classroom activity:*

Students incubate sets of glass slides in pondwater. One set is left undisturbed, one is scraped lightly each week, one scraped aggressively twice weekly and a fourth is wiped clean each week. Students observe algal colonization after 4-6 weeks in a Whipple grid at 100X taking abundance data by the number of quadrats that species appears in. Early trials show that slides with intermediate levels of disturbance produce a greater diversity index ( $H'$  or  $1/D$ ) than the undisturbed slides and the regularly cleaned slides. Some trouble shooting is still needed with the set up, and I would like feedback on the assignment and data sheets.

*Extent this learning activity is developed:*

Newly developed, implemented once or twice in a classroom, lecture or laboratory

*Presented by:* Donna Vogler, SUNY Oneonta, [donna.vogler@oneonta.edu](mailto:donna.vogler@oneonta.edu)



## **Investigating the effects of invasive plant species on ecosystems by conducting authentic scientific research at an urban teaching institution**

*Brief description of classroom activity*

Students conduct their own multi-week research project by going to a field site to collect soil and leaf litter samples to investigate how forest ecosystems are affected by a highly problematic invasive plant species in the Midwest (*Rhamnus cathartica* or common buckthorn). Students are grouped into teams of 4 and they perform numerous activities that include: review of scientific literature, coming up with research questions, collection of their research samples, sample analysis in the lab (for variables such as pH, soil organic matter, nitrate, ammonium, and phosphate in the soil, soil microbial function, and leaf litter mass and diversity), presentation of group results to the whole class as an oral presentation, and writing an individual research paper in scientific format that undergoes peer review.

*Extent this learning activity is developed:*

Highly developed, implemented multiple times in a classroom, lecture or laboratory

*Presented by:* Pamela Geddes, Northeastern Illinois University, [p-geddes@neiu.edu](mailto:p-geddes@neiu.edu)

## **SUPER: Skills for Undergraduate Participation in Ecological Research**

*Descriptions of classroom activity:*

Semester long program of workshops designed to train undergraduates on how to participate in laboratory research.

*Extent this learning activity is developed:*

Newly developed, implemented once or twice in a classroom, lecture or laboratory

*Presented by:*

Claudia Boot, Colorado State University, [claudia.boot@colostate.edu](mailto:claudia.boot@colostate.edu)

Special Session 6  
Session Preview



## **Flip-cams & iPhones make presentations smarter: Encouraging better oral communication skills through reflective practice**

### *Descriptions of classroom activity:*

In the last two years, I have been part of a collaborative pedagogical experiment with the Center for Biodiversity and Conservation based at the American Museum of Natural History to bolster 21st century process skills in the area of conservation biology. In particular, I have focused my efforts on increasing student confidence and skills in the area of oral communication. I taught eight sections of Biodiversity (a first-year introductory course) in which students gave two, individual 5-minute oral presentations. The first presentation dealt with a specific species of concern (i.e. endangered, threatened, naturalized, exotic invasive) and the second presentation focused on a critical habitat. During Fall 2011, I simply had students give two presentations with some feedback provided on the first. During Fall 2012, the project added more reflective practice. With flip-cams, I recorded the first presentation by each student and gave each student an individual DVD to watch. As an option for enrichment credit (but not a course requirement), each student had the option to watch his/her performance with a critical eye and a focus on the established rubric. Although students improved their performance between the first and second presentation in both scenarios, the reflective practice resulted in better overall presentations. It took a lot of instructor effort to "officially" record the presentations and distribute them in the context of our study. In future iterations, I would require students to engage in this type of reflective practice but would figure out a way that the students could informally record and watch their own performances. Overall, increased effort of my part to emphasize oral communication skills resulted in clear individual student gains.

### *Extent this learning activity is developed:*

Newly developed, implemented once or twice in a classroom, lecture or laboratory

### *Presented by:*

Romi Burks, Southwestern University, [burksr@southwestern.edu](mailto:burksr@southwestern.edu)

