OPIHI Mandatory Pre-Field Trip Activities Spring 2016

1. Introduction to OPIHI, Watersheds, & Water Quality

You are required to teach your students

a. about watersheds,
b. how the intertidal environment is connected to the watershed, and
c. how to use the water quality monitoring equipment they will use in the field (e.g., thermometers, hydrometer, DO test kit, turbidity tube).

Your students should also

a. make predictions about the water quality at your site,
b. plan their water quality sampling,
c. collect data about water quality at your intertidal site, and
d. interpret their findings.

Provided Materials

1. **The introductory PowerPoint covers the fundamentals of OPIHI, watershed and water quality basics (mandatory)**. You may use this as your main teaching moment for talking with your students about watersheds.
    a. Note that a number of the slides are hidden, and are optional extensions only.
    b. Please feel free to make minor adjustments to the slides for your class!
    c. There are presenter notes for many of the slides. These are for you; you do not have to cover all of this information with your class.
    d. Show you students picture(s) of your intertidal site (there is a blank slide to remind you to do this).

2. **Tracy Weigner's guest lecture powerpoint covers watersheds in detail (optional).** You may use this a resource or use it to present to your class.

3. **The Chemistry Manual (optional)** covers water quality in detail. We suggest you use this a resource (not intended for students).

4. **The Watershed student text covers watershed and water quality basics (optional).** You may use this as a source of information for your students. This text contains two activities on water quality testing. You may use these activities as whole-class level planning and thinking, as group work, or as homework. You may modify these activities to suit your needs.
    a. The **first activity** is designed to have students characterize the water quality parameters at their site under specific conditions (e.g., hot and sunny or cold and rainy) and to think about sources of pollution from the watershed.
    b. The **second activity** is designed to help students plan their sampling procedure and then reflect on their findings.
    c. You may use the questions to prompt your students' thinking as you introduce them to the site they will be sampling, help them plan their water quality measurements, and reflect on their findings.

2. Sampling Design (M&M activity)

You are required to teach your students

a. what a sample is, and
b. how the more you sample, the more accurately you can describe an area (replication).

Provided Materials

1. **Sampling design activity (mandatory)**. Both the student text and teacher guide for this activity are provided, as is the PowerPoint used in the PD for this activity.
    a. A number of the slides are hidden, and are optional extensions only.
    b. Please feel free to make adjustments to the slides for your class!
    c. There are presenter notes for many of the slides. These are for you; you do not have to cover all of this information with your class.
    d. Change the numbers in red (starting slide 15) to reflect *your* bag of M&Ms. You can count the bags of M&Ms, or your students can count them after they take samples (so you do not have to count prior to doing the activity).

2. **Pizza initiation to sampling design activity (optional).** Directions for making a chefs hat are included in the teacher guide. A pizza (printable size) is provided online. The pizza introduction slides are hidden in the activity PowerPoint.

3. **M&M Counting excel sheet (optional).** This sheet can help easily tally M&M counts.

3. Sampling for abundance (Mock study site with transects and quadrats)

You are required to teach your students

a. what a transect and quadrat are and how to use them,
b. how to collect data using transect point-intercept, quadrat point-intercept (quadrat percent-cover is optional, although encouraged for HS students), and
c. the pros and cons of each method.

Provided Materials

1. **Sampling for abundance activity (mandatory)**. Both the student text and teacher guide for this activity are provided.
    a. The transect and quadrat practice sheets in the student text are pre-populated with intercept numbers. Feel free to change these.
    b. Alternately, use the classroom data sheets that are blank (separate document) and have your students fill in the intercepts during the activity (we did in the PD).
    c. We suggest you look at the student data sheets at the end of the activity (even if do not analyze) to note, and address, any errors in data collection.

2. **Transect-Quadrat excel sheet for easy comparisons (optional).** This sheet can help you easily tally and compare between the different methods.

3. **Sampling for abundance activity PowerPoint (optional).** A PowerPoint was not used in the PD, but you may choose to use it as a guide when doing this activity. Please feel free to make adjustments for your class! There are presenter notes for many of the slides. These are for you; you do not have to cover all of this information with your class.

4. Species identification

You are required to

a. show your student examples of algae they will find at your intertidal site, the best way to do this is to collect algae and bring it back to the classroom.
b. teach your students how to use the OPIHI identification cards (and other resources, like books) to identify organisms.

Provided Materials

1. **Algae introduction powerpoint (optional)**. Please feel free to make adjustments to the presentation for your class! The main points addressed include:
    a. The differences between algae and land plants.
    b. The three main divisions of algae
    c. Some tips on using the OPIHI identification cards
    d. How to build an algae press

2. **Algae dichotomous key and pressing activities (optional).** This sheet can help you easily tally and compare between the different methods.

5. Field Trip Prep

You are required to cover the following with your students

1. Safety information, for example:
    - Watch the waves, be aware of your surroundings, never turn your back on the ocean.
    - No running—algae and seawater make things slippery
    - Do not go into water more than knee deep
    - Stay in designated areas and along your transect line
    - Be aware of potentially hazardous marine organisms (e.g., cone snails, fireworms)
    - Site-specific safety concerns

2. Items to bring to field, for example:
    - Water
    - Water shoes
    - Sun protection
    - Clothes that can get wet
    - Rain jacket

3. Mindfulness in data collection and respect for the environment, for example:
    - Understand protocol and know how to use field data sheets so field trip is productive
    - Importance of ethnical and honest data collection
    - If you turn over a rock, turn it back exactly the way you found it
    - Handle all organisms gently, keep them wet, and return them to where you found them
    - Avoid stepping on invertebrates and algae when possible
    - Only pinch pick algae, leave the holdfast
    - Hold onto your trash (and pick up trash you see)
    - Be aware of impact field trip has on the environment (e.g., trampling)

We look forward to seeing how you teach these concepts and to hearing about your sampling in the field!