

## OPIHI Field Trips

### **How many field trips can/should my class go on?**

We recommend that students go on at least two trips, with three being ideal as the more familiar students are with the intertidal environment and organisms the more reliable their data. More than one trip also allows students to ease their way into the “full OPIHI” monitoring experience. Students need the previous background and exposure to the species and the field afforded on the first field trip to familiarize themselves with the whole experience and take more accurate data in the future. Multiple trips also allow comparisons to be made between different intertidal sites. However, we encourage teachers to modify the number of trips to their needs.

Generally, the less field trips, the more class time should be spent practicing sampling techniques. Thus more intense classroom preparation will prepare students taking just one trip to the intertidal to be as comfortable using transects and quadrats as students on their third field trip.

If you and your students can only go on one field trip due to school scheduling conflicts consider offering an optional Saturday trip. We have had great success with joint school monitoring trips when students from different schools coordinate an optional combined field trip.

The following are suggestions for each field trip. Based on your curriculum and goals you may want to modify the trips to incorporate water sampling, sand analysis, etc. We only ask that you do a “full OPIHI” trip, monitoring your site using both transects and quadrats, at least once.

#### *First field trip:*

Ideally, the first trip out to a site can be used to practice monitoring with transects and then doing an timed biodiversity search of the area to generate a list of species found at your intertidal site (see Card Safari lesson in sampling lessons). This allows students to explore the intertidal zone and get familiar identifying intertidal organisms.

A more structured trip might include handing out the ID cards as well as a list of common species at the site with space for students to write a description in the own words of the alga or animal and then draw a picture to remember the species. They way the students are creating their own personalized identification sheets.

If your school is monitoring a new OPIHI site, it is especially important to do a biodiversity search and generate a species list. This will help you determine

what species should be on the students' quadrat data sheets on future field trips as well as let you know if the ID cards accurately represent your site.

### *Second field trip:*

The second field trip can be used to monitor the intertidal site using both transects and quadrats to determine the abundance of key species.

### *Subsequent trips:*

A third field trip allows students to gain confidence in their new skills. A third or fourth field trip to a different site may also be used to compare species compositions or to answer student driven questions.

## **How long are field trips?**

The length of your field trip will depend on what you want to accomplish. If your first trip is going to be solely a diversity search, perhaps an hour is sufficient. We have found that the minimum time required to do a "full OPIHI" intertidal field trip (monitoring a site using both transects and quadrats) is a little less than two hours. Students will need time at the beginning and end of the trip to get situated, change shoes, and walk to the intertidal site. It is also helpful to debrief (with snacks!) at the site at the end of the trip. These tasks generally add approximately 15-30min to the field trips time, thus the total amount of time at the intertidal site should be about two hours. More time should be set aside for a trip if your site requires a longer walk from the parking lot, if you are planning to measure rock size (only applicable if monitoring cobble areas, see sampling lessons for more information), and if you plan to bring lunch.

Time travel to and from a site should also be considered. If your school's schedule limits the time you have for field trips, perhaps concentrating on sites nearby would be best.

## **How many students can go at once to the intertidal zone?**

We do not want to trample life in the intertidal zone! Some research has shown that large groups of students in the intertidal zone can be harmful to algae and animals. We recommend groups of 25 or less. If you have a large class it is best to divide them into groups and take more trips to the intertidal zone. If you have a very large class and can not divide them into groups it is best to set the project up as a volunteer after school program.

## **How many chaperones are recommended for field trips?**

We recommend "science assistants" for every group of 3-5 students. Science assistants are volunteers that should be familiar with OPIHI's protocols. They

are not necessary intertidal ecologists. Science assistants are there to motivate the students, encourage them to record accurate data, and assist students in identify organisms. We have had used older students who have participated in the OPIHI project in previous years as science assistants with success.

### **When should I plan the field trips to the intertidal zone?**

Field trips need to be planned around low tides. There are two high tides and two low tides every day in Hawaii. The level of tides is determined mainly by the relative positions of the earth, sun, and moon, as well as local geography (such as harbors). Tidal heights are written as negative and positive numbers indicating the magnitude of the tide. In Hawaii the difference between high and low tides is about 3 feet (1m). Most sites are accessible from any negative value to +0.5, although the more negative the tide the better the field trip as more organisms will be exposed. However, large swells can make some sites inaccessible even at negative tidal heights. Most of the negative tidal heights during daylight hours occur in the Spring for Hawaii. The time of low tide will vary depending on the site.

To determine the best time to go into the intertidal, consult a tide table. You can pick one up at a most drugs stores (e.g. Longs) or where fishing supplies are sold. Most tide tables have a section at the beginning to explain how they should be read. Some tidal charts are for a particular site, like Honolulu, and thus a correction value is needed to determine the time of low tide for other areas, such as the North Shore. If no correction value is listed for your intertidal site, assume the tides will be similar to the closest given correct value location or average the correction values given for two locations on either side of your site.

Some websites allow you to choose locations around the island without having to deal with correction values.

The best tide website is NOAA's Tides and Currents:

<http://tidesandcurrents.noaa.gov/tides07/tab2wc3.html#167>

You want to aim to schedule your field trip to straddle the low tide. The tide changes vary rapidly and within an hour a site can be covered by water. For instance, if the low tide is at 10am you would ideally have a field trip from 9 to 11am. For this reason, low tides closer to 8am may not be ideal as we'd get to the site too late.

Using tide tables to plan for optimal times to visit is an important part of planning in which your students can take an active role. Determine the best time for a field trip can introduce or reinforce the concept of tides and skills in reading tide tables. A sample lesson sequence could include:

- How to read a tide chart
- Using the tide chart, finding the best days for a field trip
- Mapping the tides for that week on graph paper
- Using the graph to determine the best 2 hour time blocks for a field trip
- Learning about tide adjustment for different areas of the islands
- Redrawing the graph for a site other than Honolulu based on tide corrections

### **How far in advance should I plan field trips?**

It is important to determine the dates your class will take field trips to the intertidal as early in the planning as possible. Having set dates, times, and locations of field trips not only gives you a framework and timeline for structuring lessons around and lets you secure your first choice dates with bus companies, but also allows you and the GK-12 program to advertise your field trip to potential science assistants. Having science assistants available to assist your class take accurate data in the field is an invaluable asset. However, time is needed to attract volunteers, and thus early planning is imperative. If you are planning on going into the intertidal in the spring, try to have dates, times, and locations finalized by the end of January.

### **What do we do on field trips?**

On field trips we do not swim (we stay in water less than knee-deep) and look closely for algae, invertebrates, and sometimes fishes. Students explore the intertidal using different sampling protocols. The methods used are covered in OPIHI's classroom preparation sampling lessons and the "OPIHI Protocol for Educators" under Field Trips.

### **How long should our transects be at the intertidal site? How many quadrats should we place along a transect?**

Different sites have different intertidal lengths and thus different transect lengths. Sites should be a minimum of 10m long from the high tide mark on the shoreline.

The number of quadrats you choose to place along each transect will depend which quadrat data collection method(s) you are using in the field, on the time frame of your field trip and how quickly you think your students will be able to complete the data collection. You should aim to have each transect group do 10 quadrats. The more quadrat points, the larger an area of the intertidal will have been intensively monitored, and thus the more accurate the data. Quadrats should be placed along the transect at any standardized distance (e.g. every 1m, 2m, 5m, etc.) depending on the size of your study site.