Name: _____   Date:_____

Sampling the Intertidal

Project Objective: Practice recording and observing intertidal communities along the Oregon coast. Many marine researchers that study the intertidal make use of survey techniques such as quadrats to measure biodiversity, percent cover, and zonation. Students will also identify intertidal organisms found throughout the site to get an understanding of the variation in body plans and physical traits of invertebrates and algae found here in Oregon. In this assignment students will practice making use of these techniques using a 3D model of "OIMBeach" (the tide pools located past the OIMB boathouse) located within the Coos Bay estuary in Oregon.

Pre-Lab Discussion:

1. The intertidal zone is a dynamic habitat, with changes seasonally and tidally. What are some environmental stressors organisms here might have to deal with?

2. What type of organisms do you think will be found in the model, and how do you think the types and appearance of organisms will change when they are exposed to air vs. inside of pools?

3. How many total species do you predict you will see in a 50 square meter area?

Part 1: Getting to Know the 3D Model

Name: _____   Date:_____

First we will look at the models as a whole, looking for patterns of where certain organisms are most common.

Opening the models

- Open the three models labeled OIMBeach 1, 2 and 3 in three separate tabs so that you can switch between them.
- Use the annotations on the edges of the models to understand which way is "sea direction" (looking out to the bay) vs. "land direction" (looking back at the cliff).

Notice Patterns

1. Notice the brown-looking algae that covers much of the rock. Where is it most common? Does it tend to be more dense in higher or lower areas?

2. Can you identify any other organisms from the model alone? (Don't look at the annotations yet)

Part 2: Organism Identification

In this section you will be collecting data about the organisms present in rocky intertidal.

1. click on the annotation labeled "pool 1" within the first model and open the attached pictures in a separate tab to see them more clearly.
2. Identify the organisms seen using the reference guide and fill in their common names and scientific names in the table below (if both provided).
3. Tally the number of each species you find in the corresponding pool column ("pool 1" in the model corresponds with the "pool 1" column in the table below). In the case of seaweeds and encrusting organisms (organisms that cover the rock without clear numbers of individuals), simply use a check mark if they are present in the pool.
4. Repeat steps 1 and 2 for each pool.
5. Add together your tallies for each species and write that number in the column labelled "Totals."

Name: _____   Date:_____

Table 1. Organism Identification

Organism Common Name	Scientific Name (*genus species*)	Pool 1	Pool 2	Pool 3	Pool 4	Pool 5	Pool 6	Pool 7	Pool 8	Totals

Questions:

1. Which organism had the highest total? Why do you think that is?

2. Were all organisms found in the pools also found in the above-water part of the model? Why do you think they were the same/different?

3. Were there changes in the patterns of organisms seen when moving farther from the shore? Think about why this might be the case.

Part 3: Percent Cover

Quadrats
In the model you will see PVC squares, with string creating (x number) of sections within each. These are called quadrats. Scientists use these to take random samples of transects and quantify biodiversity and percent cover within them to make inferences about a larger area.

Calculating Percent Cover
Look at the images for the three quadrats and estimate how much of the quadrat each of the three organisms takes up. This does not need to be exact, just do your best!
1. Open the quadrat 1 annotation in model 1.
2. Estimate the percent cover of barnacles within the quadrat in the "Q1 % cover" column of Table 2.
3. Repeat for each organism within quadrat 1.
4. Repeat steps 1-3 for quadrat 2 and 3.

Using the SACFOR Scale
The SACFOR scale was developed to estimate abundance without needing to calculate an exact percent cover. Based on your previous percent cover estimates, designate a SACFOR initial to each organism for each quadrat in the table below.

S (Super abundant) = >80%
A (Abundant) = 40-70%
C (Common) = 20-39%

Name: _____   Date:_____

F (frequent) = 10-19%
O (Occasional) = 5-9%
R (Rare) = 1-5%

Table 2. Percent Cover

Organism	Q1 % cover	Q1 SACFOR	Q2 % cover	Q2 SACFOR	Q3 % cover	Q3 SACFOR
Barnacles						
Red algae						
Aggregating anemones						

Questions

1. Which organism was the most abundant? Did it change between the quadrats?

2. Q1 was closer to the shore, while Q3 was closest to the cliff side. Do you think differences in percent cover correlated with distance from the shore? If so, which species got more/less abundant headed inland?

3. Do you think these abundances are always as they are in the model? What factors might change the abundances seen here?

Name: _____   Date:_____

Post Lab Questions

1. Which organism(s) were you the most surprised to see in the model?

2. What do you feel like you learned about the rocky intertidal through this exercise?

3. How might this area change going into the future as our oceans continue to warm and water levels rise?