

Sea-Level Rise Field Research Protocol

Overview

The goal of this research project is for students to understand that sea-level rise could have an impact on the animals that live along the coast. Students will survey and compare the types and numbers of intertidal species along two transects parallel to the shoreline. One transect will be set close to the waterline (low tide zone) and one will be set in the high tide zone. Students should notice a difference in the number and types of species that inhabit these two areas.

How sea-level rise could impact animals along the coast: as sea-level increases, organisms that live in the low tide zone may not be able to adapt to being immersed in water all the time, and organisms that live in the high tide zone may not be able to adapt to water covering their environment for longer periods of time. Losing species of animals can cause a disruption in food webs, issues for local people who forage and eat some of the intertidal species (blue crabs, urchins, sea cucumber, chiton, and whelk), and lowers diversity worldwide.

Research Protocol

*Mentors will be in charge of collecting data with a small group of students.

Data Collection:

- Fill out the top of the data sheet.
- Transect 1:
 - o Start at assigned end of transect:
 - Generate a random number by rolling the 10-sided die once.
 - The number generated will correspond to a meter marking in the first 10 meters of their side of the transect tape (ex. Group 1 starts in 0-10 m and Group 2 starts in 90-100 m).
 - Example: Group 1 rolls a 4. They walk to meter 4 on the transect tape.
 - Example: Group 2 rolls a 6. They walk to meter 96 on t transect tape.
 - When standing at your location on the transect tape pick the closest rock that is between 30-70cm.
 - GENTLY turn the rock over and use Intertidal Organisms ID card identify, count, and record on the data sheet all the organisms you see.
 - Count all organisms under and attached to the rock.
 - When all organisms have been counted GENTLY turn the rock back over.
 - o Move to the next 10-meter section of the transect tape
 - (Example: Group 1 goes to 10-20 m and Group 2 goes to 80-90 m).
 - o Repeat the above process until you have surveyed the entire transect.
- Transect 2:
 - o Repeat the protocol for your second transect (low tide transect goes to high tide transect and vice versa).

While collecting data:

1. Have students switch roles regularly.
 - Data recorder (1):
 - o Records information on data sheet from Data Collectors.
 - o Roles 10-sided die and determines which rock the team will collect data from.

- Data Collector (2):
 - Identify an organism and count the total number under or on rock.
 - Both Data Collectors must come up with an amount of organisms that is within two of each other or a recount must be done.
 - Example: If Data Collector 1 says: 3 brittle stars and Data Collector 2 says: 6 brittle stars – a recount must be done.
 - Example: If Data Collector 1 says: 15 sea slugs and Collector 2 says 16 sea slugs – no recount is necessary: record the average: 15.5 sea slugs.
 - Repeat for a new organism.
 - Continue until all organisms under or on the rock have been identified and counted.
- 2. Stop 1-2 times along the transect for students to take out science notebooks and record questions and observations.
- 3. Ask questions:
 - What observations/questions do you have?
 - Why do you think we didn't count every organism along the whole transect?
 - Why do we use random numbers to find places on the transect to collect data?
 - Why do we turn the rock back over when we are finished counting organisms?
 - Do you think sea-level rise will impact animals that live along the coast? Why or why not? M