**Durney Key intertidal Profile**

**Pre-Trip Activities**

* **Orientation**: Students should familiarize themselves with the area that they will be visiting.
* **Practice Profile**: Students should have the opportunity to practice making a profile to familiarize themselves with the equipment and methods of profiling. Have the students make a profile of a hilly area of the schoolyard. As an extension of this activity, students can graph the data collected from a profile conducted on a virtual field trip.

**Intertidal Profile**:

A profile is made of the intertidal zone to monitor how it changes over time. By looking at profiles that are made over many years, we can determine if the area is eroding or growing and if the sea floor is rising or falling. A profile is a diagram that measures the depth of the sea floor and elevation of the shoreline as we move towards the mean high-water line (MHWL). It shows the intertidal sea floor from it’s lowest point and shoreline from the highest point at the MHWL. Your completed profile will be a cross-sectional view of Durney Key’s intertidal zone.

To determine the degree of change in the intertidal zone, you will survey by taking depth or elevation measurements. After you’ve completed your data collection, you will convert (if necessary) and plot your data on graph paper to get your intertidal profile.

**Equipment**:

2 poles

Transect Line (marked at premeasured intervals)

Clipboard/ Pencil

Line level

Data collection table

Tape measure

GPS

Measuring stick

Ruler

Sea grass identification guide.

**Procedure:**

The transect line has premeasured interval tags on it. Once this line is level you record the difference in depth or elevation between the two spots in the intertidal zone, identify any seagrass along the transect line, record soil depth 2 meters towards the shoreline from any seagrass. Gently press ruler into substrate, rock back and forth with minimum pressure and record depth.

1. You will have to work as a team to collect this data accurately. Assign one person (A) as the project coordinator. This person will coordinate everyone else in the group to ensure that quality data is being collected. Person A will also record the data and get the GPS coordinates of each pole. Assign two people (B & C) as pole holders. These people will ensure that poles are properly spaced, always vertical. Assign a fourth person (D) as the line leveller. This person ensures that the transect line is level between the two poles. Person (E) is going to use the measuring sticks at each of the premeasured intervals along the transect line. Person (F) will be looking for any seagrass along the transect line and soil depth. The leveller (D) can also be person (F).

*(A) Coordinator and data recorder, clipboard and GPS. (B) MHWL pole, compass (C) Intertidal*  *pole, transect line. (D) Line leveller. (E) Interval measurements, measuring stick. (F) Seagrass*  *and soil, ruler.*

1. You will be working from the MHWL in a straight line (or a line that is perpendicular to the shoreline edge). Person B, place one pole at the MHWL and the string at the height of the shoreline. Person C, using the string, measure out 20 meters into the intertidal zone. Stretch out the string until it is taught. Align the poles along the line that is perpendicular to the shorelines edge and make sure that each pole is standing vertical (upright). The poles are now 20 meters apart.
2. Person D, attach the line level to the string around 10 meters. Tell person C to move the string on pole #2 (the one in the intertidal zone) up or down until the bubble on the level is in the center. The line is now level.
3. Person E, take measurement at the first interval mark from the shoreline and record it on your data sheet. Continue moving towards the intertidal pole noting the differences in elevation or depth for each of the interval tags until you reach the intertidal pole.
4. Person F, starting from the shoreline identify any seagrasses along the transect line as you move towards the intertidal pole. Measure soil depth 2 meters away from the seagrass towards the shoreline.

**Analysis:**

1. Shore Profile
   1. Now that you have completed taking the measurements needed to make your intertidal profile, plot the data you gathered. You’ll be making an X/Y graph of your data. The X-axis will be the distance in meters (the length of the intertidal zone) and the Y-axis will be the height difference in meters.
   2. When geologists and surveyors profile a beach, they start from a known elevation point on stable land that is known as a benchmark. Our starting point is sea level, so at 0 meters on the x-axis the depth difference is 0 meters. Once you’ve plotted the positions along the intertidal zone and their depth differences you will have a profile of what Durney Key intertidal zone looked like on the day you made your measurements. Remember when you are plotting your data that the only value that starts at zero is the MHWL pole position, which started at sea level. All the rest of the depth differences are the depth change in the intertidal zone.

**Durney Key Intertidal Profile, Substrate, and Seagrass Data Sheet**

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ School \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Profile (P1-P9) \_\_\_\_\_\_\_

MHWL pole location \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Intertidal pole location \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(GPS coordinate) (GPS coordinate)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Interval (m) | Depth change (cm/meters) | Substrate  X = sand  S = shell  R = rock | Seagrass  P= present | If seagrass is present. Soil depth (cm)  -2 meters towards shoreline |
| **0m sea level** | **0** |  |  |  |
| **1m** |  |  |  |  |
| **2m** |  |  |  |  |
| **3m** |  |  |  |  |
| **4m** |  |  |  |  |
| **5m** |  |  |  |  |
| **6m** |  |  |  |  |
| **7m** |  |  |  |  |
| **8m** |  |  |  |  |
| **9m** |  |  |  |  |
| **10m** |  |  |  |  |
| **11m** |  |  |  |  |
| **12m** |  |  |  |  |
| **13m** |  |  |  |  |
| **14m** |  |  |  |  |
| **15m** |  |  |  |  |
| **16m** |  |  |  |  |
| **17m** |  |  |  |  |
| **18m** |  |  |  |  |
| **19m** |  |  |  |  |
| **20m** |  |  |  |  |



