BREEF Teacher Training Workshop

Subject Biology
Grade Level 10-12
Date August 2006
Time Variable - Field Activity

Lesson Title Sandy Shore—Beach Profile and Comparative Study

Lesson Purpose/Rationale:
To allow students as active participants, to develop a greater awareness of the coastal environment, the formation and existence of beaches, the natural and man-made factors contributing to their development or erosion and how they can be protected. To equip students with the necessary skills to produce statistical data with the help of specific apparatus, and to be able to analyse the data and make inferences and positive recommendations where necessary.

Objectives:
At the end of the lesson, students will be able to:

1. Make and use the necessary equipment to carry out a beach profile e.g. transect line, metre pole etc.
2. Measure the decline of coastal or beach area and discussing reasons why beach erosion occurs.
3. Calculate and produce as well as analyse a set of data and display the data in a logical manner.
4. Design their own experiment based on the information learned and make modifications to it where necessary.

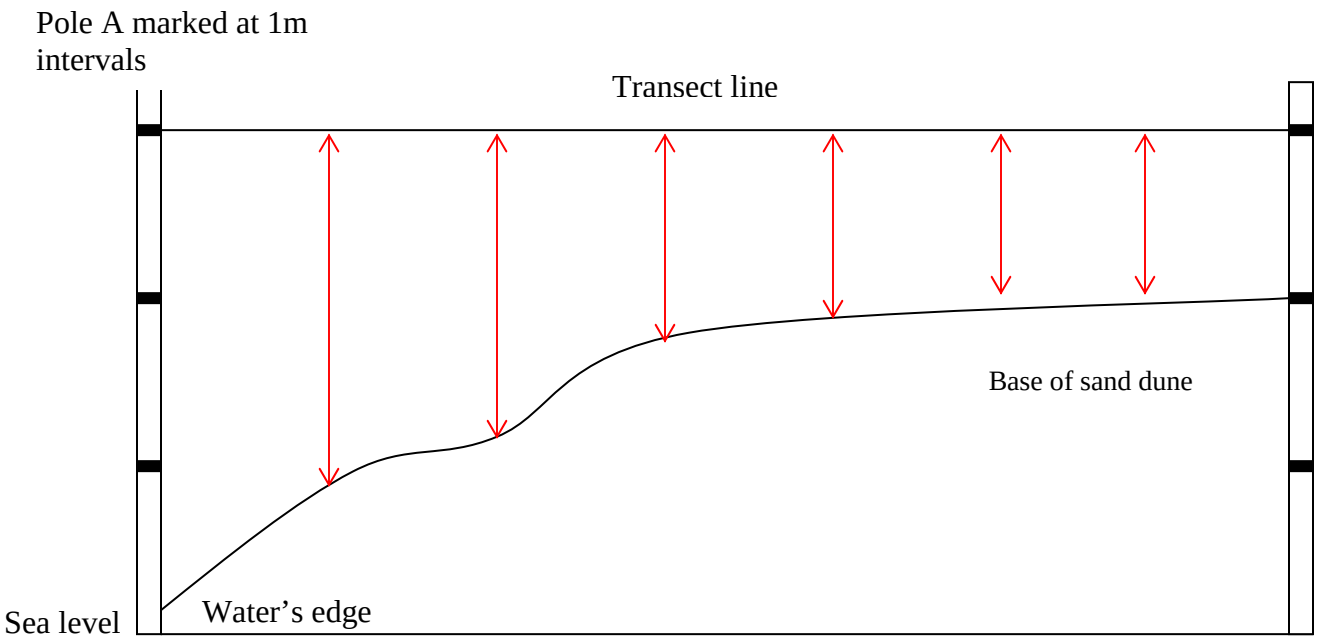
Resources:
(4 groups of students), Four (4) transect lines, Eight (8) metre poles, Four (4) clipboards or notepads, Four (4) measuring tapes, Pencils, Four (4) levels

Development:

1. Divide students into -groups should be no less than three (3) and no more than five (5)]
2. Based on instructions given, students will be required to:
    a) Sketch a map of the area to be studied
    b) Describe the local features such as accessibility to man, the direction faced by the coast and the prevailing winds.
3. Select a specific area along the coastline to investigate.
4. Using equipment determine the width of beach to be studied (shoreline to sand dune if one exists).
5. Place one metre poles at base of shoreline (Pole A) and the other at beginning of sand dune (Pole B) (make sure poles are firmly anchored).
6. Attach transect line to top of metre poles. Use a level to ensure that the line is horizontal between poles A and B.
7. Mark the transect line with flagging tape at 1 m intervals.
8. Begin measuring height of the transect line above the exposed sand using measuring tape at 1 meter intervals.

Diagram: Determination of a beach profile

Pole B marked at 1m intervals



9. Record measurements at each metre interval
10. Perform calculations to determine the height of the sand at each point above sea level
11. Record data in a logical manner.
12. Construct a line graph to show the beach profile (slope) i.e. height of sand vs. distance from the water's edge.
13. Use the same method and survey another area along the same beach.
14. Compare and contrast your findings.

Assessment:

1. Allow each group to explain to the class how they carried out their experiment noting the differences and how they could have improved upon them.
2. Allow the various groups to design other experiments adding new concepts e.g. the zonation of the sandy shore, the distribution of flora and fauna, also using other equipment e.g. quadrat.
3. The students could carryout this activity as a (BGCSE) skill, with set objectives for A-D skills.

Extension Activities:

1. Students can carry out comparative studies between different beaches or islands in The Bahamas and compare changes on a wider scale.
2. They can also conduct a comparative study of the leeward and windward sides of an island or islands.
3. They can compare and contrast the type of vegetation and organism populations found in a variety of areas.
4. Write research papers stating some of the factors contributing to the changes on beaches, as it relates to findings and the distribution of sand and extent of beach erosion.