

Beach Survey



Objectives

The student will conduct a beach transect survey to collect data, and will analyze results within student groups.

Materials

For each student:

- copy of Beach Zone funsheet
- pencil

For each student group:

- clipboard
- Species Tally funsheet
- pencil
- local beach field guide
- 30' string with knots every 5 feet.
- 8 in. string
- 12 in. ruler
- two 3' or taller stakes or poles (old broom handles work well)

Background

Estimating the number and kinds of plants and animals within large areas such as beaches, meadows, sand dunes, or coastal scrub can be done using “transects.” Transects are predetermined areas along a line that extends through the area. Beach transects are usually arranged from the backbeach to the waterline. Evenly spaced sample sites along the transect will give a “snap shot” of the types and numbers of animals that live on the beach.

Estimates can then be made for the complete beach area. For example, 10 beach hoppers were found within a 12 square-inch (1 sq. ft.) sample area. If the beach is 100 sq. ft., then an estimate of 1,000 beach hoppers could be given.

Preparation

1. Prepare for beach field trip with a classroom discussion about beach ecology.
2. Distribute Beach Zone funsheet showing different beach “zones” from above the high tide mark to the waterline. (NOTE: Area of zones may vary depending on the slope and length of the beach you are visiting.)
3. After students complete worksheet, brainstorm a list of animals, plants, and other elements (rocks, cobbles, sand) that students expect to find at the beach.)



Action

1. On the day of the field trip, divide class into groups of 5 to 8 students. Designate a student in each group to be responsible for 1) transect lines and poles, 2) clipboards, funsheets, and pencils, 3) leading or coordinating group.
2. At the beach, select an area for each group to sample. Stake one pole at the water line and the other as far up the beach as possible (to 30'). Tie the string between the two poles so that it is 6 inches from the sand.
3. At each knot, have students etch a 12 to 16 in. circle in the sand using the knot as the center. Students can use the 8 in. piece of string, pencil, and ruler to etch the circle. The circles are the sample areas.
4. Starting at the water's edge, each student group should record the animals found within their 6 in. circle. Remind students to look at the surface and dig below the sand. Sample each circle using the same procedure. Record the animals and numbers of individuals found.
5. At the beach or back at the classroom, have student groups present their findings.

Note if there were different animals at different beach zones. Also compare animal assemblages horizontally along the beach, those sampling more north (or left) verses those sampling more south (or right).

Funsheet Answers

- | | |
|---------------------|--------------|
| 1. high tide | 6. backbeach |
| 2. low tide | 7. dunes |
| 3. longshore bar | 8. berm |
| 4. longshore trough | 9. berm |
| 5. forebeach | |

Beach Transect Species Tally



Animals found in sample area 3: _____

Animals found in sample area 4: _____

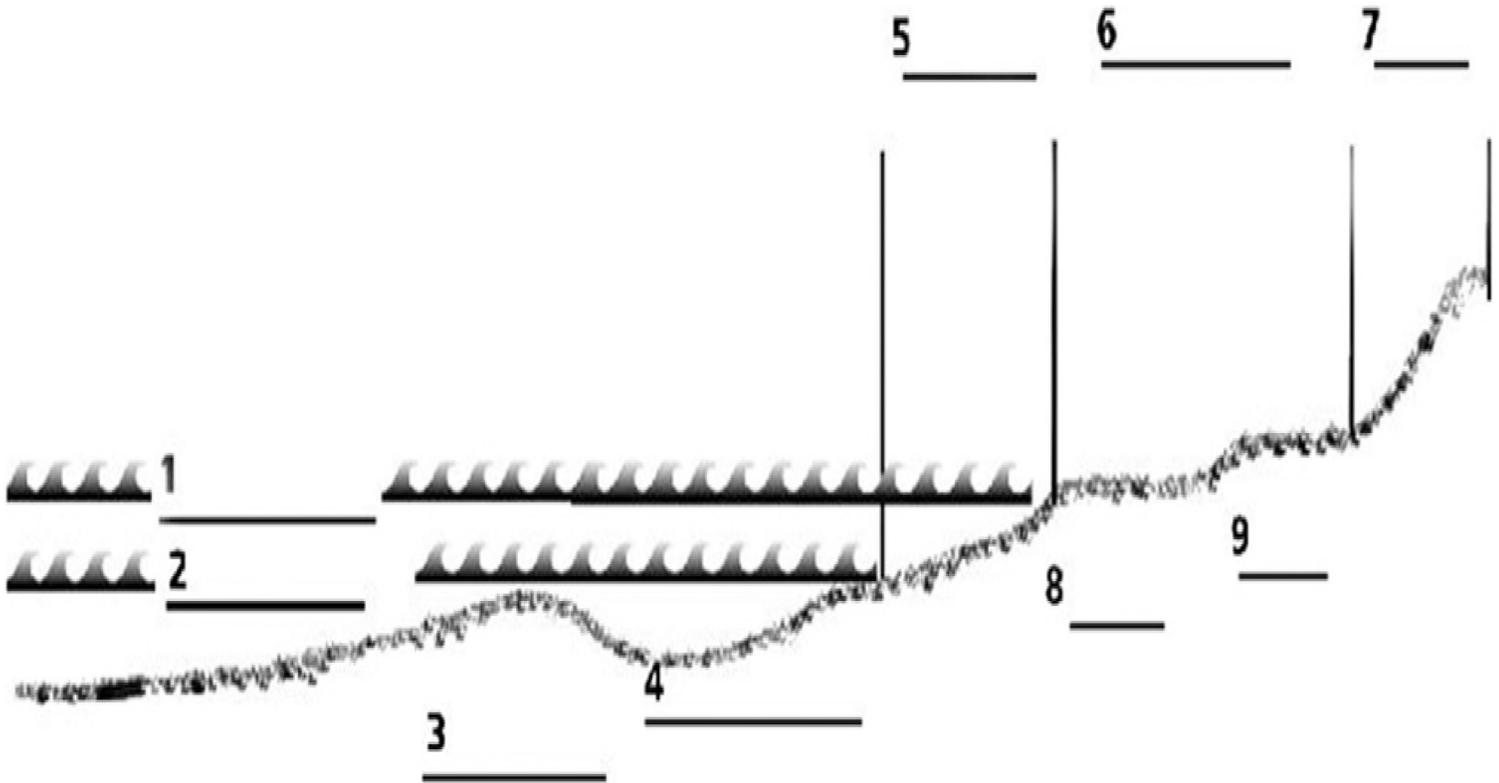
Animals found in sample area 5: _____

Animals found in sample area 6: _____

Beach Zone Funsheet



Read the beach zone definitions, then write the correct zone on the answer line in the illustration.



Beach zone definitions

forebeach: area between high and low tide

backbeach: downward sloping area above high tide mark

dune: gathering of sand that waves never reach

berm: area that only highest storm waves reach

high tide: upper reach of water

low tide: lowest recession of water

longshore bar: build up of sand deeper than low tide

longshore trough: removal of sand due to along shore currents