

Barrier Island Habitats

Teacher's Guide

Subject: Integrated Science (Life; Earth-Space; Physical)

Topics: Natural Communities, Transects, Ecotone, Habitat

Summary: Students will create a cross section or profile of the island between the Gulf and the Bay and measure key physical (landform, hydrology) and biological characteristics (vegetation) along the way, in order to identify different community types (habitats). Special attention will be given to identifying where one community type ends and another begins.

Objective(s): After completing the field lab, students will be able to:

1. Identify different barrier island habitats/Create an island profile
2. Mark GPS waypoints

Ecosystem(s): Beaches/Dunes; Coastal Wetlands; Scrub; Upland

Equipment:

- 3 x GPS units
- Digital Camera (optional)
- Waders
- Vegetation type reference chart
- Data sheet & clipboard

Background:

- **Vocabulary:** Ecotone, habitat, barrier island, dunes, transect
- **Reference Material:**
 - Louisiana: Gulf Barrier Islands <http://www.challenge.state.la.us/wetlands/lessons/barrierles.html>
 - Barrier Islands of Northwest Florida (UWF): <http://www.uwf.edu/rsnyder/ffnwf/barrier/barrier.html>
 - Barrier Island Ecology (How stuff Works): <http://www.howstuffworks.com/barrier-island2.htm>
 - Flora and Fauna <http://www.uwf.edu/rsnyder/ffnwf/barrier/footprints/tracks.html>
- **Equipment Training:** Marking GPS Waypoints

Procedure (Engage; Explore; Explain)

1. Students begin their Island profile/transect on the boardwalk.
2. Start by asking students why they can walk along the beach and notice very little change, but when they walk across the island they see a lot of change in a short distance. Remind students of the different non-living things that affect plants and animals. Compare the island to a submarine sandwich. Explain that instead of putting the ingredients one on top of the other, they are placed side by side. Now cut the submarine sandwich to illustrate the profile of the island. The ingredients represent the habitats.
3. Students should be divided into three groups. Within each group students should be assigned a specific role (marking waypoints with GPS, describing plants and other conditions, measuring waypoints).
4. Move slowly along the boardwalk observing (on the right or Northeast side of the trail the conditions (slope, substrate, plants, etc.) listed in the first column of the data sheet.
5. When the conditions change, Mark your location using the GPS.
6. Make sure your team completes a description (e.g., bare sand, bare dune, dunes with grass, dunes with shrubs, flat areas with shrubs, wet marshy areas) for each of the conditions listed in the table under the appropriate habitat segment.
7. Each time you feel you have entered a new habitat, enter a waypoint and be sure to record the conditions between that point and the previous point.
8. Continue until you reach the end of the boardwalk. Because the last segment of habitat extends into the water, only one person accompanied by staff should continue beyond the boardwalk with the GPS to Mark the end of that habitat.
9. The rest of the group should share their results with the others so everyone will have a complete data sheet.

Sunshine State Standards

Science: SC.D.1.3.1,3,4; SC.D.2.3.2; SC.F.1.3.7; SC.G.1.3.2,3,4; SC.G.2.3.4; SC.H.1.3.7; SC.H.2.3.1; SC.H.3.3.6,7

Language Arts: LA.A.1.3.3; LA.B.2.3.1; LA.C.1.3.1

Social Studies: SS.A.6.3.2; SS.B.2.3.6; SS.B.2.3.9

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Student Data Sheet

General Information

Full Name:		Date:	
School (teacher):		Time:	
Latitude:		Longitude:	

Student Hypothesis and Rational

I hypothesize that the change between habitats on the island will be (Choose one: gradual/ abrupt) because ...

Field Observations/Measurements/Data

	001-----002	002-----003	003-----004	004-----
Habitat Name				
Slope (flat, hilly/rolling, steep)				
Substrate (sand, silt/mud, other)				
Plants (flowers, grasses, plants with large leaves, shrubs, pine trees, broad leaved trees, palms, other)				
Animals (direct sightings or evidence of)				
Wind				
Water (yes/no)				
Distance				

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Assessment

1. Between waypoints 002 and 003 what types of vegetation were found? What is the name of this ecotone?

2. Why is it difficult to identify a specific boundary between two different habitats?

3. What role does wind play in determining where habitats are located?

4. In the space below, draw a profile of your transect starting from the Bay side on the left to the Gulf side (right)

Be sure to Label the habitats by name (see front of data sheet).

5. What is the role of Sea Oats, Beach Grass, Pennywort and Beach Rosemary on the sand dunes? What will happen to the dunes if people trespass and walk among the dunes? Why are the sand dunes important?
