

SIM ISLE

Lesson Focus: The impact of coastal development on economic and environmental issues.

Learning objectives: To gain the perspective of a variety of stakeholders on development of barrier islands. Students will exercise environmental decision-making, critical thinking, creative thinking, and problem solving.

Enduring understandings for the lesson: Issues concerning the future of any land are interwoven among physical, economical, political, and environmental concerns.

Georgia Performance Standards Addressed:

S6CS6 Students will communicate scientific ideas and activities clearly.

- c. Organize scientific information using appropriate tables, charts, and graphs and identify relationships they reveal.

S6CS7 Students will investigate the characteristics of scientific knowledge and how it is achieved.

- a. Question claims based on vague attribution or on statements made by people outside the area of their particular expertise.
- b. Recognize that there may be more than one way to interpret a given set of findings.

S6E3 Students will recognize the role of water in earth processes.

- a. Explain that a large portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice.
- b. Relate various atmospheric conditions to stages of water cycle.
- c. Describe the composition, location, and subsurface topography of the world's oceans.
- d. Explain the causes of waves, current, and tides.

S6E5 Students will understand how the distribution of land and oceans affects climate and weather.

- f. Explain the effects of physical processes on geological features including oceans.
- i. Explain the effects of human activity on the erosion of the earth's surface.
- j. Describe methods for conserving natural resources such as water, soil, and air.

Grade level: 6th, but can be adapted for grades 4th-8th

Materials:

- Map of Georgia
- Name tags to identify roles
- Up for Grabs Committee Decision-Making Grid

Optional: Poster boards, markers, computer access for presentations and research

Time needed: 1 week

Background information: Barrier islands are fragile ecosystems important to coastal geology and ecology. They are long, narrow offshore deposits of sand or sediment paralleling the coast line and are separated by narrow tidal inlets. Barrier islands are separated from the mainland by a shallow body of water such as a sound, a bay, or a lagoon. A typical barrier island consists of a salt marsh, mudflat, dunes, beach, and open water. The main function of the islands is to protect the coastline from storms. They are the shock absorber to tidal surges caused by storms.

Barrier islands are also popular vacation destinations. Vacation homes, condominiums, and tourism are being developed on these islands. In the past to accommodate the buildings, sand dunes were leveled and salt marshes and barrier flats are filled. The development posed danger to the ecosystems and increased risk of property damage from hurricanes and tropical storms. The natural erosion process on barrier islands is in continuous conflict with human inhabitation. Erosion of the barrier islands can have a negative impact on the physical, economic, and political aspects of the area. Even though laws were passed to prevent destruction of the sand dunes and damage to the salt marshes, human activities still impact these ecosystems.

Vocabulary: Barrier island, culture, ecologist, economy, environment, environmentalist, erosion, legislature, mainland, marsh, wetland, wholesale,

Learning Procedure:

1. Discuss the location of Georgia's barrier islands and their importance to the coast and mainland.

2. Explain to students they are going to participate in a role play looking at Coastal Georgia issues. Assign the following roles to students:

Politicians: City council, mayor, head commissioner for the department of public utilities, the head commissioner for the department of roads and bridges

Fishermen: Clam, crab, shrimp, packaging plant, wholesale seafood business

Environmentalist: aquatic life ecologist, beach ecologist, marsh ecologist, water quality environmentalist, and marine biologist

Developers: commercial real estate agent, construction business owner, condo developer, hotel chain expansion manager, private land owner, real estate agent, restaurant owner (fast food and seafood), small business owner, time-share condominium developers

Up For Grabs Committee: Three state legislators will come to a decision based on the arguments of each group. The teacher may want to be part of this committee and ask other adults to participate, either parents or other teachers.

3. After students are assigned roles, have them research what their job might be in relation to the barrier islands. Students need to develop an argument either for development or against development based on their role. Each large group should have 3-5 reasons to support their cause.

4. When students have completed research and established an argument, have the students develop a presentation for the Up For Grabs Committee. Students may use props such as drawings, diagrams, T-shirt designs, logos, signs, brochure, Power Point slide show, etc. The presentation mode can be extended or shortened depending on the amount of time allowed for the activity. Presentations must include the 3-5 reasons to back up their argument. Evidence of critical thinking and creative thinking will be evaluated as part of the presentation. (See rubric attached).

5. The Up for Grabs Committee will keep a record of the points earned by each team for or against development on the "Up for Grabs Committee Decision Making Grid" (attached). At the end of the presentations the side with the greatest number of points will determine if Sim Island will remain undeveloped or developed.

6. Present to the students the real case currently facing Jekyll Island and discuss. The Jekyll Island Authority is feeling economic pressures to develop parts of the island for tourism, recreation, and lodging while still preserving the natural environment and island ecology. More information can be found at the Center for a Sustainable Coast website: www.sustainablecoast.org

Evaluation: Each group will be judged using the attached rubric. Evidence of critical thinking and creative thinking will be evaluated as part of the presentation.

Extensions: Weather conditions can be added for extensions. Sim Isle can have sustained extensive damage after a recent category 4 hurricane. In another extension Sim Isle has been infested by an insect invasion, which has destroyed most of the trees on the island.

Resources:

Books:

Hansen, G. (1996). *Islands at the edge of time: A journey to America's barrier islands*. Island Press.

Pilkey, O., & Fraser, M. E. (2003), *A celebration of the world's barrier islands*. Columbia University Press.

Web resources for further information on barrier islands

Fruedenrich, C. C. (n.d.) *How barrier islands work*. Retrieved October 17, 2007, from <http://travel.howstuffworks.com/barrier-island.htm>

Kyler, D. C. (2006). Jekyll Island request for information response. Retrieved November 27, 2007, from www.sustainablecoast.org/pressroom

Land cover and land use. Retrieved October 17, 2007, from <http://www.csc.noaa.gov>

Assessing environmental impacts of development & redevelopment. Retrieved October 17, 2007, from www.jekyllislandauthority.org

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This activity is a product of the Rivers to Reef Teacher Workshop sponsored by the Georgia Aquarium and Gray's Reef National Marine Sanctuary that the author participated in. For more information about this workshop, Georgia Aquarium, or NOAA Gray's Reef National Marine Sanctuary, please visit our websites at www.georgiaaquarium.org or <http://graysreef.noaa.gov/>



Sim Isle Proposal Presentation Rubric

Evaluator circles the appropriate number on a scale of 1-5. One is the lowest rating and five is the highest rating.

1. Students developed an argument with a minimum of three reasons for their proposal to the UFG Committee.

1 2 3 4 5

2. Students used visuals in their proposal.

1 2 3 4 5

3. Students used appropriate rationale to develop an argument

1 2 3 4 5

4. Evidence of critical thinking was used in the presentation.

1 2 3 4 5

5. Evidence of creative thinking (how unique) was used in the presentation.

1 2 3 4 5

6. Presentation was convincing

1 2 3 4 5

Rubric total number of points _____

