

Eco-Logical: A Coastal Logic Problem

North Carolina and National Curriculum Standards

North Carolina Science-1999 Grade Level(s): 4

Status: This curriculum is currently implemented by DPI but is not yet tested. Refer to an earlier version for the currently tested curriculum.

- 1 The learner will build an understanding of animal growth and adaptation.**
- 1-1 Relate structural characteristics and behavior of a variety of animals to the environment in which they are typically found.
- 1-2 Determine animal behaviors and body structures that have specific growth and survival functions in a particular habitat.
- 1-3 Evaluate living and nonliving things that affect animal life:
- Other animals.
 - Plants.
 - Climate.
 - Water.
 - Air.
 - Location.

North Carolina Science-1999 Grade Level(s): 5

Status: This curriculum is currently implemented by DPI but is not yet tested. Refer to an earlier version for the currently tested curriculum.

- 1 The learner will build an understanding of the interdependence of plants and animals.**
- 1-1 Assess a variety of ecosystems (communities of organisms and their interaction with the environment).
- 1-2 Determine the function of organisms within the population of the ecosystem: producers, consumers, and decomposers.
- 1-3 Evaluate the variety of organisms an ecosystem can support.
- 1-4 Relate the role of light, range of temperatures, and soil composition to an ecosystem's capacity to support life.
- 1-5 Evaluate the major source of energy for ecosystems (sunlight) and how it is passed from organism to organism in food webs.
- 1-6 Assess the interaction of organisms within an ecosystem.

National Academy of Sciences

Life Science

CONTENT STANDARD C:

As a result of activities in grades K-4, all students should develop understanding of

☼ The characteristics of organisms ☼ Life cycles of organisms ☼ Organisms and environments

Vocabulary

barrier island	marsh
beach	salty
communities	sound
dune	windy
logic	habitat
maritime forest	

Objectives

- To be able to describe basic characteristics of coastal communities.
- To be able to order communities from the sound to the ocean.
- To be able to compare and contrast the five communities.
- To be able to place a plant or animal species in the correct community it lives.

Materials

- one set of logic clues and community cards per group
- Optional:*
- set of Estuarine Plant and Animal Fact Sheets (web-based or printouts)
 - access to EstuaryLive streaming video

Procedure

Cut apart the logic clues and community and place in an envelope. Each group of four to six students should get one envelope. Read these directions:

Your group has been given a set of logic clues and community cards. One person should open the envelope and give out the large logic clues (without looking at the clues) until everyone has one or two clues. Place the smaller community cards in the middle of the table. Each person should take turns reading their clues aloud. You may read your clue aloud as many times as you like. You may not show your clue to another person.

Use all the clues to determine the order of the communities. To check your answer when you are done, everyone should read their clues again to see if all the clues fit.

Discussion Questions

- Were there clues that didn't help you solve the problem? If so, which ones?
- Which community is the driest? Why?
- Think about animals that live on the coast. Can you name an animal that could live in more than one of these communities?
- Which would be saltier, the marsh or the sea? Why?

Extensions

- Make up your own logic problem using the zonation that occurs at the edge of a forest and a pond. (or possibly the changes you see from a meadow to a forest)
- Ask each student in the group to become an expert on one of the communities. After researching the characteristics of the community, each expert makes a report to the team.
- Build a large mural and illustrate it with pictures of the animals that are found in each community. Use some of the graphics from the Estuary Plant and Animal Fact sheets.

Additional Resources

- *Use the Estuary Plant and Animal Fact sheets* (these are available on the Internet at <http://www.estuarylive.org>) to enhance the discussion of the five communities that the students

learned about and placed in the correct order by using the clue cards. These Fact sheets include some of the major plant and animal species that occur along the North Carolina coast. Special interest should be given to the two animals mentioned on the clue cards: fiddler Crab and ghost crab. You may want to use the blank clue card to add an additional plant or animal species.

- **Use the EstuaryLive streaming video** (this is available on the Internet at <http://www.estuarylive.org>) to enhance the discussion of the five communities that the students learned about and placed in the correct order by using the clue cards.
 - If you participate during the live broadcast during the National Estuaries Day in the fall or use the archived footage on the above webpage, students will be able to see many of the communities, plants and animals studied during this lesson.

History of EstuaryLive (from <http://www.estuaries.gov/welcome.html>)

- EstuaryLive, an interactive field trip through our nation's estuaries over the Internet, was the featured event for National Estuaries Day 2002.
- On October 3 and 4, 2002, teachers and students of all ages toured 13 estuaries, learning about these dynamic coastal ecosystems, the different types of estuaries that can be found along the coasts, the plants and animals that call these habitats home, and about the commercial and recreational importance of estuaries. Approximately one million viewers watched EstuaryLive on October 3 and 4.

During the program, naturalists from NOAA's National Estuarine Research Reserves and U.S. EPA's National Estuary Program led live tours through seven estuaries, including Pamlico Sound, in North Carolina; South Slough, in Oregon; Salish Sea, in Washington; North Inlet, in South Carolina; Charlotte Harbor, in Florida; Great Bay, in New Jersey; and Jug Bay in Maryland. Elmer's Island in Louisiana was scheduled to air live on October 3, but was cancelled because of Hurricane Lili.

Assessment

- Have students put away their community cards and ask them to draw the five communities in the correct order on a blank sheet of paper. Ask them then to draw a plant or animal that lives in each of those communities.

This activity is from the North Carolina National Estuarine Research Reserve publication **Sound Ideas**, It is revised in August 2003, by NC National Estuarine Research Reserve and the Albemarle-Pamlico National Estuary Program for use with EstuaryLive, live interactive Internet programs about North Carolinas estuaries.



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