



The Hurricane's Coming

Adapted from LA Department of Natural Resources Model and BTNEP/LSU AgCenter: *Functions, Values, and Economic Resources*

Focus/Overview

Wetlands are one of nature's best filters and protectors. This activity is a demonstration that models the function and value of wetlands in storm protection.

Learning Objective

The learner will...

- model the function and value of wetlands in storm protection.

Louisiana Grade Level Expectations (Science)

8: GLE-28	Use historical data to plot the movement of hurricanes and explain events or conditions that affected their paths (ESS-M-A12).
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Materials List

- artificial turf (plastic doormat)
- two large shallow pans or trays
- marbles
- blocks of wood or other objects to raise one end of the pans
- two small model houses (make from wood or Lego blocks)

Background Information

Wetlands offer several protective functions to those living within their boundaries: water filtering and purification, storm protection and flood control and erosion control.

Storm Protection, Flood Control

Coastal wetlands buffer the effects of storms coming ashore. The most damaging effects of a hurricane come from storm surge and high winds. Each mile of vegetated wetlands across which a storm passes reduces the storm surge one foot by absorbing wave energy. This has important implications for the protection of lives and property in the our estuary.

A wetland provides valuable flood protection to human lives and property by acting as a sponge and absorbing excess waters. Unfortunately, some urban development activities have resulted in the draining of wetlands. This has actually created flooding problems in some cases. The floodwater-holding capacity of wetlands is now more often recognized by urban planners, and wetland areas are more likely to be retained as flood buffer zones. In extended dry weather, wetlands also release the store water slowly, reducing the effects of drought in the adjacent areas.

Erosion Control

Wetland vegetation holds the soil in place and prevents erosion. The best example of this is on the banks of waterways where wakes from boats cause erosion and widen the waterways. Planting native plants in high energy areas helps stabilize the shorelines and prevent further erosion. Vegetation planting projects are one of the least expensive methods of wetland restoration. Students can take part in these projects and contribute to the restoration effort

NOTE: This activity is probably best done as a demonstration. The simulation will show how marsh dissipates the energy of a hurricane, while when the storm passes over open water and hits building sitting directly on the shore, it does far more damage. Set the model up before class by cutting the artificial turf material (representing marsh) to fit one tray. The other tray has no marsh, and

BTNEP Connection

Water Quality

Grade Level

8

Duration

1 class period

Subject Area

science

Setting

classroom

Vocabulary

storm protection

Original Source

Adapted from LA Department of Natural Resources Model and "The Hurricane's Coming! Your Place or Mine" in BTNEP/LSU AgCenter: *Functions, Values, and Economic Resources*, Activity 12.



the area represents open water of the Gulf of Mexico. The hurricane is represented by a handful of marbles that roll down the slope of the trays, which are elevated at one end. Place the "house" in the same position, at the bottom end of both trays.

Advance Preparation

1. Cut a piece of Astroturf (or doormat) into a size that fits within the tray you will be using.
2. Have students build two houses out of wood or Legos.
3. Make sure you have enough marbles to run the simulation at the same time in both trays.

Procedures

1. Review the information found in the Background Section of this activity.
2. These two models represent an area of marsh with a house on one side and an area of open water with a house on the shore. The second model could depict the scene after the marsh has eroded away, leaving open water. Suppose there is a strong hurricane approaching with wind of over 100 miles per hour. Which house would you rather be in? The one next to the water, or the one in the marsh? Why? (Ask for two volunteers to release the marbles)
3. Now we are going to simulate the effects of a hurricane. When I say go, release the marbles all at once and let them roll toward the houses. (Volunteers let the marbles go.)
4. What happened? (Students will observe that the marbles had more energy and did more damage when they rolled over the smooth tray surface, as opposed to over the rough turf, or marshy area. Adjust the slope, number of marbles and other variables to give the best effect. You can repeat the demonstration and let other student volunteers release the marbles.)

Blackline Master

none

Assessment

- Students can create a concept map about the protective nature of the marsh during storms.

Resources

BTNEP Resources:

Tradebooks:

Simon, Seymour. 2003. **Hurricanes**. HarperCollins Children's Books. 32pp. ISBN: 0688162916
Discusses where and how hurricanes are formed, the destruction caused by legendary storms, and the precautions to take when a hurricane strikes. Age Range: 3 to 8.

Sherrow, Victoria. 1998. **Hurricane Andrew: Nature's Rage**. Enslow Publishers, 48 pp. ISBN: 0766010570

Details the course of Hurricane Andrew, which hit the southeastern United States in 1992, and describes the recovery efforts that followed the storm. Age Range: Young Adult.

Dixon, Dougal. 2004. **Hurricane Destruction**. School Specialty Children's Publishing. 32pp ISBN: 1577688686

A brutal hurricane season has just begun in the Caribbean. Follow a young journalist as he joins meteorologists preparing for the storm by plotting the path of anticipated destruction. Will they and the town get blown away in the storm? Age Range: 7 to 11.

CDs

Louisiana Wetland Functions and Values CD developed by LSU AgCenter's Extension Service in conjunction with the U.S. Geological Survey's National Wetlands Center and the Louisiana Department of Natural Resources (DNR). To receive a copy, contact DNR (800/ 267-4019) or order on the Internet at <http://www.lacoast.gov>.

References:

Longshore, David. 2000. **Encyclopedia of Hurricanes, Typhoons and Cyclones**. Facts on File, Inc. 372pp. ISBN: 0816042918.

Over 200 entries cover hurricanes in science, history and culture, and folklore, including how storms have appeared in literature, music, and the visual arts. For many of the storms described, the author provides maps of their course, detailed chronologies of their progress, photographs of their aftermath, and comments about them from firsthand observers. Topics covered include meteorological terms, geographical terms, and methods of hurricane tracking and data analysis. Other entries: meteorological instruments; named storms; descriptions of storm activity by region; meteorological terms, and the role of animals as harbingers of weather to come.