

Grade 4th

Title: Understanding our Wetlands

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Student Learning Objective(s):

The students will be able to name at least two properties of Wetlands.

The students will be able to name at least two benefits from the Wetlands.

The students will be able to explain at least one way they can help the fight against coastal erosion.

LA GLE's

Grade: 4 # 1: Ask questions about objects and events in the environment (e.g., plants, rocks, storms) (SI-E-A1)

Grade: 4 # 2: Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations (SI-E-A1)

Grade: 4 # 3: Use observations to design and conduct simple investigations or experiments to answer testable questions (SI-E-A2)

Grade: 4 # 4: Predict and anticipate possible outcomes (SI-E-A2)

Grade: 4 # 7: Predict Use the five senses to describe observations (SI-E-A3)

Grade: 4 # 60: Identify various types of weather-related natural hazards and effects (e.g., lightning, storms) (ESS-E-A4)

Materials needed: (for about 10 groups containing 2 children each)

Book: "*What are Wetlands?*" by Bobbie Kalman (1 Book, group activity)

Molding clay(about 10 pieces/enough to fill ½ of a small aluminum pan)

Small shallow aluminum pan (about 10/one per each group)

Sponge cut into long strips (about 10/one per each group)

Small Watering Cans (about 10/one per each group)

Muddy Water (enough to fill each watering can half way)

Straws (about 20/enough for each person to have)

Science Journals (one for each student)

Name tags (one for each student)

Before and After pictures of Louisiana Coast (see attached photos and URLs)

Detailed Procedure. Describe what the students will do in each stage. Include guiding questions you might ask to help students.

1. Engage:

Science Process Skills Indicate which science process skills students will develop in this part of the lesson.

- Observation Classification Communication Measurement Estimation Prediction Inference
 Identifying Variables Controlling Variables Defining Operationally Forming Hypotheses
 Experimenting Graphing Modeling

1. The teacher will begin the lesson by asking the following questions:

“Who can tell me some things that they know about a Wetland (i.e. characteristics, importance, restoration, etc.)?” The teacher will also ask to see if anybody has ever visited the Louisiana Wetlands, and if so, the teacher will ask that student to volunteer anything she saw or did on his/her visit.

2. The teacher will record all the answers on the board.

3. The teacher will then read the story, “What are Wetlands?” by Bobbie Kalman to the class and then ask the children about the book when finished.

4. The teacher will then pose a very important question to the class, “What would happen if our wetlands disappeared?” The teacher will give the students a few moments to think and journal about what they think will happen.

2. Explore:

Science Process Skills Indicate which science process skills students will develop in this part of the lesson.

- Observation Classification Communication Measurement Estimation Prediction Inference
 Identifying Variables Controlling Variables Defining Operationally Forming Hypotheses
 Experimenting Graphing Modeling

1. The teacher will divide the students into groups of 2 or 3 depending on class size.

2. The teacher will go over all the directions with the students on how to build their very own replica of the wetlands. The teacher will explain how to make it, but needs to refrain from telling her students what the purpose of the experiment and what the results will be. The students will need to figure this out on their own.

3. The teacher will then pass out all of the materials to the groups.

4. The students will perform the following steps:

a. Each group will create an elevated piece of land (made out of the molding clay) on one side of their shallow pan. The land needs to fill the entire half of the pan while sloping towards the middle of the pan. The other side of the pan needs to remain empty and will symbolize a body of water. (For our case we will look at the land as being the coast of Louisiana slightly above sea level and the body of water being the Gulf of Mexico.)

b. Each group will then have to predict what they think will happen if they pour the muddy water (Rain) over the land. They will record their predictions in their science journals. What will happen: the muddy water will run right off the land and into the body of water and remain very dirty.

c. Each group will then have to take their piece of sponge and place it at the base of the land. This sponge will represent the wetlands. They will then need to predict what will happen this time when they pour the muddy water over the land (Rain). They will record their predictions in their science journals. What will happen: The muddy water will roll off the land and hit the sponge (Wetlands). The sponge (Wetlands) will act as a filter and collect all the dirt and clean water will run into the body of water at a slower pace.

d. Each group will then have to take what they observed and write why the wetlands are so important to the land and water.

e. While the students are performing this activity the teacher will be walking around to the different groups and asking questions about what they are observing and assessing their understanding of the information.

3. Explain:

1. *The teacher will ask the class as a whole what they predicted vs. what they observed.*
2. *The teacher will ask the students to think about how our lives would be different if our wetlands disappeared.*
3. *The teacher will ask the students to think about some things that might affect the wetlands and what we can do to stop disappearance of these lands.*
4. *The teacher will show the students a photo of how much land the Louisiana Coast has lost and how much it is predicted to lose by 2050, if restoration projects are not carried out.*

4. Expand:

Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*

- Observation Classification Communication Measurement Estimation Prediction Inference
 Identifying Variables Controlling Variables Defining Operationally Forming Hypotheses
 Experimenting Graphing Modeling

1. *The teacher will then ask the students to think about how much our Wetlands protect us from hurricanes.*
2. *The teacher will have the students predict what they think would happen if they took away the sponge from their model and took a straw and blew a heavy force of wind into the water representing a hurricane. As a class they will discuss their predictions and carry the experiment out. What will happen: The water will rush into the land because it is not protected by any barrier.*
3. *The teacher will then have the student replace their Wetlands (sponge) and then have them predict what they think will happen when they blow a heavy force of wind into the water representing a hurricane. They will discuss their predictions and carry out the experiment as a class. What will happen: The Wetlands act as a barrier and protect the land from the heavy wind and storm surge.*
4. *The teacher will then discuss with the class the importance of the Wetlands to the Louisiana coast during the hurricane season.*

5. Evaluate:

What exactly will you do, or what evidence/data will you collect, to ascertain whether the students can achieve the objectives you listed at the top of this lesson?

1. *The teacher will assess prior knowledge by asking the students to name some things they already know about the Wetlands.*
2. *The teacher will ask questions about the book after reading it to the class.*
3. *The teacher will ask the students to predict what will happen before they carry out their experiments and have them write their predictions into their science journals.*
4. *The teacher will walk around to the various groups during the expand process and ask the students various questions about what they are observing to assess understanding.*
5. *The teacher will follow up with a class discussion about their finding from their experiment with the Wetlands model.*
6. *The teacher will have a class discussion about what they have learned about the importance of our wetlands during the hurricane season.*

Brain Compatible Learning Strategies Used in This Lesson:

- Brainstorming/Discussion Drawing and Artwork Field Trips Games Graphic Organizers
 Humor Manipulatives, Experiments, Labs, Models Metaphors, Analogies, and Similes
 Mnemonic Devices Movement Music, Rhythm, Rhyme, and Rap Project/Problem-Based Instruction
 Reciprocal Teaching, Cooperative Learning Role Plays, Drama, Pantomimes Storytelling
 Technology (student use) Visualization/Guided Imagery Visuals Writing/Journals

Lesson Source:

Kalman, Bobbie. What are Wetlands?. New York: Crabtree Publishing Company, 2002.

Wetlands in a pan. Jon Mykut. June 5, 2008. Penn State. April 1, 2009.

< <http://sfrtc.cas.psu.edu/LessonPlans/Water/WetlandPan.html> >.

Land Loss animations of Coastal Louisiana. La Coast. Gov. April 2, 2009.

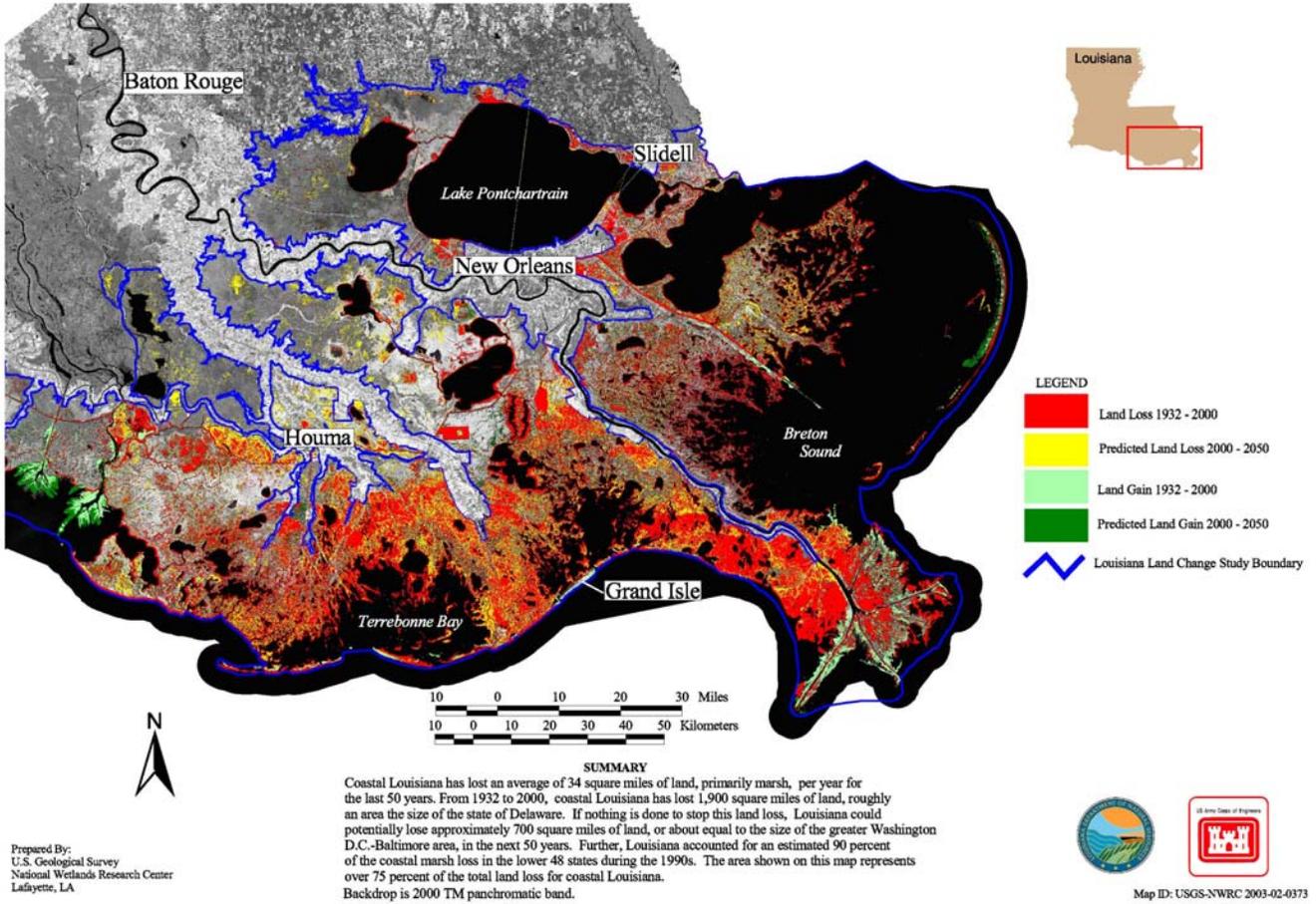
<<http://www.lacoast.gov/maps/animations/index.htm>>

100+ Years of Land Change for Southeast Coastal Louisiana. La Coast. Gov. April 17, 2009.

<<http://www.lacoast.gov/maps/2003landloss/landloss8X11.pdf>>



100+ Years of Land Change for Southeast Coastal Louisiana



<http://www.lacoast.gov/maps/2003landloss/landloss8X11.pdf>

Making Your Very Own Wetland...Instructions

Step 1:

- Create an elevated piece of land (made out of the molding clay) on one side of their shallow pan.
- The land needs to fill the entire half of the pan while sloping towards the middle of the pan.
- The other side of the pan needs to remain empty and will symbolize a body of water.

(For our case we will look at the land as being the coast of Louisiana slightly above sea level and the body of water being the Gulf of Mexico.)

Step 2:

- Predict what you think will happen if they pour the muddy water (Rain) over the land.
- Record your predictions in your science journals.

Step 3:

- Take your piece of sponge and place it at the base of the land. This sponge will represent the wetlands.
- Predict what will happen this time when they pour the muddy water over the land (Rain).
- Record their predictions in their science journals.

Step 4:

- Each group will then have to take what they observed and write why the wetlands are so important to the land and water.