Save Our Swamp (SOS)

Background Information for Teachers

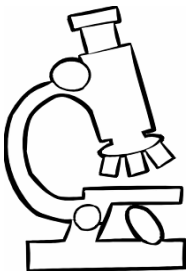
Now that your students have completed the curriculum, it is time to bring all their knowledge together and look to the south Louisiana's future and their place in it. Unfortunately, today coastal south Louisiana is disappearing at a rate of 1 acre every 34 minutes! If you review how deltas are formed by river sediments washing down and creating new land, you can easily understand how land is being lost. By creating levees surrounding the Mississippi River and not allowing it to overflow and nourish the land, the land is sinking – SUBSIDENCE - and the ocean is washing it away – ECRETION. The question then becomes what can we do about it. Believe it or not, we can do a lot!

We can become aware of the problem
We can promote ecologically sound options
We can become active stewards and do things like plant marsh grass on the islands surrounding south Louisiana
We can help other people become aware of the problem.
We can help educate people so they will appreciate this special area enough to help save it

For the last part of the curriculum, your class will create posters that explain why swamps are important. Your students now become the teachers!

Image Credit: Mississippi River Birds-foot Delta, NASA

Time to Experiment: FIGURING OUT HOW MUCH LAND IS BEING LOST



Materials: (you must provide materials unless otherwise noted)
Student Worksheet (provided)
Crayons/pens/pencils

Procedure:
1. Read the "How Much Land is Being Lost" sheet and allow your students to calculate and see for themselves how much of south Louisiana is being lost to the Gulf of Mexico.
2. Have your students mark how much land is disappearing with tape in your classroom or chalk on the sidewalk.

Extensions:
Go visit the Barataria Preserve of Jean Lafitte National Historical Park and Preserve and see what the swamp really looks like. Compare the size of the preserve with how long it would take for the entire preserve to disappear!

Conclusions:
Your students should have a much deeper understanding about how much land is being lost every day.

Background Information

FOLLOW THE RIVER AND YOU'LL FIND THE SEA (Old French proverb)

Washing down through the heartland of the United States, streams and brooks enter rivers which eventually empty into the Mississippi River. Its meandering course is set by the river's propensity to travel through soft loose geologic deposits, avoid obstructions in its path, and maneuver around its own creation and destruction of bars, shoals, and levees. The river does all this so it can find the shortest way to the sea.

Once the Mississippi River reaches its destination, it releases the precious cargo of sediment that its carried for thousands of miles. The sediment forms a vast network of wetlands reaching outward toward the Gulf. Nurturing its creation, the river gently washes over and lays down rich deposits to build and fortify the new land.

Over time, the coastal and riverine ecosystems mature and evolve into more complex systems. More plants colonize the rich organic substrate the river deposited, more animals travel onto the new land to take advantage of new resources, and the environment itself may push the limits of survival, causing plants and animals to adjust and adapt to new challenges.

Once the new land is built up enough, the restless Mississippi River will move on, exploring lower areas and looking for the path of least resistance in its endless search for the ocean. The old channels are abandoned and over time the sheer weight of the coastal sediments compact themselves and the land begins to sink. The river, feeling for a new shallower path, may rediscovers its forgotten courses and return, replenishing the land that has ebbed away.

Ever since the French arrived in Louisiana, the construction of levees, channels, and jetties in the Mississippi River has blocked the spring flood from nourishing the delta. Expanding agriculture and development led to cleared and drained swamps. Canals for drainage, navigation and for the logging and oil and gas production that helped build the nation forever changed the way water flows through the delta, tipping the delicate balance between fresh and salt water.

These changes were made with good intentions, but severely damaged the wetland ecosystem. But deltas are by their nature physically and ecologically fluid and changeable. Restoration is possible. The challenge today is to protect what remains and to make alterations that will promote the growth of new land.

"Louisiana's wetlands are twice the size of Everglades National Park, funnel more oil into the United States than the Alaska Pipeline, sustain one of the nation's largest fisheries, and provide vital hurricane protection for New Orleans. And they are disappearing under the Gulf of Mexico at the rate of 33 football fields a day." —Joel K. Bourne, Jr., *National Geographic*, 2004

Name: Date:

How Much Land is Being Lost?

Student Observation Sheet: How much land is being lost?

One acre of south Louisiana is being lost every 34 minutes:

Write or draw the answers in a step by step process:

1 Acre = 43,560 sq. feet 1 sq. foot = 208 feet

How many feet are in an acre?

43,560 * 208 =

Try rounding it:

40,000 * 200 =

That's an approximation.

If 9,060,480 feet are being lost every 34 minutes,
then how many feet are being lost every minute?

9060480 / 60 =

Try rounding it:

9,000,000 / 60 =

That's an approximation.

If 151,008 feet are being lost every 1 minute,
then how many feet are being lost every second?

151,008 / 60 =

Try rounding it:

150,000 / 60 =

That's an approximation.

EXTENSION PROBLEM:

If one acre of south Louisiana is being lost every 34 minutes
and the Barataria Preserve has 20,000 acres,
how long will it take before the preserve disappears?

20,000/34 minutes =

Try rounding it:

20,000 / 30 =

Instructor Sheet: How much land is being lost?

1 acre = 43,560 sq. feet 1 sq foot = 208 feet

The students can write or draw the answers in a step by step process:

1 Acre = 43,560 sq. feet 1 sq. foot = 208 feet

How many feet are in an acre?

43,560 * 208 = **9,060,480**

Try rounding it:

40,000 * 200 = **8,000,000**

That's an approximation.

If 9,060,480 feet are being lost every 34 minutes,
then how many feet are being lost every minute?

9060480 / 60 = **151,008 feet per minute are being lost**

Try rounding it:

9,000,000 / 60 = **150,000**

That's an approximation.

If 151,008 feet are being lost every 1 minute,
then how many feet are being lost every second?

151,008 / 60 = **2516.8 feet per second**

Try rounding it:

150,000 / 60 = **2,500**

That's an approximation.

EXTENSION PROBLEM:

If one acre of south Louisiana is being lost every 34 minutes
and the Barataria Preserve has 20,000 acres,
how long will it take before the preserve disappears?

20,000/34 minutes = **588.235**

Try rounding it:

20,000 / 30 = **667**

Time to Experiment: SAVE OUR SWAMP POSTER PROJECT –

Materials: (you must provide materials unless otherwise noted) Art Poster Worksheet [provided] Poster paper Crayons/pens/pencils Certificates [provided]

Procedure:

1 Have your students review the directions for making a poster.

2 Have your students design a poster to help Save Our Swamp.

3 For all the students that created a poster there is a certificate of participation that you may copy and handout (certificate enclosed).

Conclusions:

Your students should be able to identify reasons why the swamps of Louisiana are important.

Extensions:

You can visit Jean Lafitte National Historical Park and Preserve on a field trip check out our website at http://www.nps.gov/jela/index.htm

Name: Date:

Student Directions Sheet: Save Our Swamp Poster

STEP 1: Describe what you love about the swamp (animals, plants, flowers, insects, etc.) WRITE OR DRAW IT HERE:
STEP 2: Describe what you would say about why the swamp is so important WRITE OR DRAW IT HERE:
STEP 3: Put it all together – describe how the thing you love and what you would say about the swamp should go together (this is called layout – how things should look on paper). WRITE OR DRAW IT HERE:

Certificate of Excellence

Student's Name

Allyn Rodriguez

Instructor's Name

National Park Service Ranger

Certificate of Participation

Awarded To:

Student's Name

Allyn Rodriguez

Instructor's Name

National Park Service Ranger

Benchmarks and Grade Level Expectations

Benchmarks K-4

Science as Inquiry

A. Abilities Necessary to do Scientific Inquiry

SI-E-A1	asking appropriate questions about organisms and events in the environment.
SI-E-A2	planning and/or designing and conducting a scientific investigation.
SI-E-A3	communicating that observations are made with one's senses.
SI-E-A6	communicating observations and experiments in oral and written formats.
SI-E-A7	utilizing safety procedures during experiments.

B. Understanding Scientific Inquiry

SI-E-B5	presenting the results of experiments.
SI-E-B6	reviewing and asking questions about the results of investigations.

Life Science

A. Characteristics of Organisms

LS-E-A2	distinguishing between living and nonliving things;

Earth and Space Science

A. Properties of Earth Materials

ESS-E-A1 understanding that earth materials are rocks, minerals, and soils;

ESS-E-A5 observing and communicating that rocks are composed of various substances;

Language Arts: Reading

ELA-1-E1	Gaining meaning from print and building vocabulary using a full range of strategies (e.g.,self-monitoring and correcting, searching, cross-checking), evidenced by reading behaviors using phonemic awareness, phonics, sentence structure, and meaning
ELA-1-E2	Using the conventions of print(e.g., left-to-right directionality, top-to-bottom, one-to-one matching, sentence framing)
ELA-1-E3	Adjusting speed of reading (e.g., appropriate pacing, intonation, expression) to suit the difficulty of materials and the purpose for reading (e.g., enjoying, learning, problem solving)
ELA-1-E5	Reading, comprehending, and responding to written, spoken, and visual texts in extended passages (e.g., range for fiction passages-450-1,000 words; range for nonfiction-450-850 words)
ELA-1-E6	Interpreting (e.g., retelling, summarizing) texts to generate connections to real-life situations

Language Arts: Writing

ELA-2-E3	Creating written texts using the writing process
ELA-2-E4	Using narration, description, exposition, and persuasion to develop compositions (e.g., stories, letters, poems, logs)
ELA-2-E5	Recognizing and applying literary devices (e.g., figurative language)
ELA-2-E6	Writing as a response to texts and life experiences (e.g., journals, letters, lists)
ELA-3-E1	Writing legibly, allowing margins and correct spacing between letters in a word and words in a sentence
ELA-3-E2	Demonstrating use of punctuation (e.g., comma, apostrophe, period, question mark, exclamation mark), capitalization, and abbreviations in final drafts of writing assignments
ELA-3-E3	Demonstrating standard English structure and usage by writing clear, coherent sentences
ELA-3-E4	Using knowledge of the parts of speech to make choices for writing
ELA-3-E5	Spelling accurately using strategies (e.g., letter-sound correspondence, hearing and recording sounds in sequence, spelling patterns, pronunciation) and resources (e.g., glossary, dictionary) when necessary

Language Arts: Critical Thinking

ELA-7-E1	Using comprehension strategies (e.g., sequencing, predicting, drawing conclusions, comparing and contrasting, making inferences, determining main ideas) to interpret oral, written, and visual texts
ELA-7-E2	Using basic reasoning skills, life experiences, and available information to solve problems in oral, written, and visual texts
ELA-7-E3	Recognizing an author's purpose (reason for writing), and viewpoint (perspective)
ELA-7-E4	Using basic reasoning skills to distinguish fact from opinion, skim and scan for facts, determine cause and effect, generate inquiry, and make connections with real-life situations

Visual Arts

CE-1VA-E1	Explore and identify imagery from a variety of sources and demonstrate visual representation (1, 2)
CE-1VA-E2	Explore techniques and technologies for visual expression and communication (2, 3)
CE-1VA-E3	Use art vocabulary and the elements and principles of design to communicate the language of art (1, 2)
CE-1VA-E5	Work individually and as a group member in a responsible and productive manner (1, 5)
CE-1VA-E6	Understand relationships among the arts and other disciplines outside the arts (4)

Historical Perspective

HP-3VA-E2	Express how visual symbols communicate a universal language (1, 4, 5)
HP-3VA-E3	Explore and discuss art images from the past and the present (1, 3, 4)
HP-3VA-E5	Describe ways the visual arts are used in daily life (1, 2, 4, 5)

Grade Level Expectations K-4

Science as Inquiry

Abilities Necessary to do Scientific Inquiry

K	1	2	3	4	
1	1	1	1	1	Ask questions about objects and events in the environment
2	2	2	2	2	Pose questions that can be answered by using students' own observations, scientific knowledge, and testable scientific investigations
4	5	6	6	7	Use the five senses to describe observations
6	7	8	8	9	Select and use developmentally appropriate equipment and tools (e.g., magnifying lenses, microscopes, graduated cylinders) and units of measurement to observe and collect data
7	8	9	9	10	Express data in a variety of ways by constructing illustrations, graphs, charts, tables, concept maps, and oral and written explanations as appropriate
8	9	10	11	12	Use a variety of appropriate formats to describe procedures and to express ideas about demonstrations or experiments (e.g., drawings, journals, reports, presentations, exhibitions, portfolios)
9	10	11	12	13	Identify and use appropriate safety procedures and equipment when conducting investigations (e.g., gloves, goggles, hair ties)

Understanding Scientific Inquiry

K	1	2	3	4	
			13	14	Identify questions that need to be explained through further inquiry
			14	15	Distinguish between what is known and what is unknown in scientific investigations
				20	Determine whether further investigations are needed to draw valid conclusions

Life Science

Characteristics of Organisms

K	1	2	3	4	
22	28				Classify objects in a variety of settings as *living (biotic)* or *nonliving (abiotic)*

Physical Science

Properties of Objects and Materials

K	1	2	3	4	
	16				Observe and describe common properties of solids, liquids, and gases
	17				Sort and classify objects by their state of matter
		22			Investigate and explain conditions under which matter changes physical states: heating, freezing, evaporating, condensing, boiling

Earth and Space Science

Properties of Earth Materials

K	1	2	3	4	
	37				Illustrate how water changes from one form to another (e.g., freezing, melting, evaporating)
	35				Examine soils to determine that they are often found in layers
	39				Identify the characteristics of soil, according to color, texture, and components, including *living (biotic)* and *nonliving (abiotic)* substances
		36			Observe and record the properties of rocks, minerals, and soils gathered from their surroundings (e.g., color, texture, odor)
		45			Recognize and describe that rock is composed of different combinations of minerals
		46			Describe earth processes that have affected selected physical features in students' neighborhoods (e.g., rusting, weathering, erosion)
				55	Recognize that sedimentary rocks are composed of particles that result from weathering and erosion (e.g., sandstones, conglomerates)

Language Arts

Standard 1 – READING

K	1	2	3	4	
1,5	1-5	1,2,4,5	1-6	1-3	ELA-1-E1
6,7	9				ELA-1-E2
9,10	15	10	10	5,7	ELA-1-E5
11	16	11	11	6	ELA-1-E6

Standard 2 – WRITING

K	1	2	3	4	
19,20	26				ELA-2-E1
21	27		23	22	ELA-2-E2
23	28				ELA-2-E3
25	29		25		ELA-2-E4
	30		26		ELA-2-E5
27	31		27	26	ELA-2-E6

Standard 3 – GRAMMAR

K	1	2	3	4	
28-30	32	27	28	27	ELA-3-E1
31	33,34	28,29	29,30	28	ELA-3-E2
	35-38	30	31	30,31	ELA-3-E3
	39	31,32	32		ELA-3-E4
32	40-43	33-35,37	33,34,36	32	ELA-3-E5

Standard 7 – CRITICAL THINKING

K	1	2	3	4	
	22		17	14	ELA-7-E1
		22	18	15	ELA-7-E2
	24		19,20	16	ELA-7-E3
	25	24	21	19	ELA-7-E4