

America's Amazon

Part Three: Looking Ahead

AL Science COS Standards Addressed:

- Biology COS #14: Trace biogeochemical cycles through the environment, including water, carbon, oxygen, and nitrogen.
 - Relating natural disasters, climate changes, nonnative species, and human activity to the dynamic equilibrium of ecosystems
- Environmental Science COS #1: Identify the influence of human population, technology, and cultural and industrial changes on the environment.
- Marine Science COS #11: Describe positive and negative effects of human influence on marine environments.

Notes:

1. The above are high school standards. Most of the activities would also fulfill middle school standards. Also, be aware the current science COS is in a new DRAFT stage.

<http://www.alsde.edu/dept/coss>

2. The film is also addresses Social Studies Standards. Link to the Alabama COS for Social Studies is

http://alex.state.al.us/staticfiles/2010_AL_Social_Studies_Course_of_Study.pdf

Learning Outcome: Students will obtain information about protecting the Mobile-Tensaw Delta, and clearly communicate it to peers following examples set during class. Students will integrate the concepts of protecting habitats and biodiversity with protecting ecosystem services.

Materials

For the class: “Always, Sometimes, or Never” worksheets, access to the library and the Internet for research

For the teacher: movie “America’s Amazon” (classroom edition), projector, AL maps from previous lessons

Engage (Time varies with age and engagement of students.)

1. Ask students to review some of the most interesting or important things they have learned so far about “America’s Amazon.”
2. Ask the students to reflect on their local watershed or a specific watershed they are familiar with. Apply what they have learned from “America’s Amazon” to the second

watershed of choice. Guide them to think about biodiversity, intact habitats, human impacts, and ecosystem services.

3. Discuss ecosystem services that occur as a consequence of intact habitats. Apply those concepts to what they learned from the film. What conclusions can they draw about impacted habitats and the continuity of ecosystem services?
4. Give each student an “Always, Sometimes, or Never” worksheet. Ask them to predict the best answer for each statement by lightly checking the box beside the word “always,” “sometimes,” or “never.”

Choose vocabulary/concept words appropriate to the COS you are following. Ask the students to predict connections between the words. Present the list to the students so they can gather supporting evidence while watching the video segment.

Evaluate: Check worksheets and vocab lists to assess their prior knowledge.

Explore

1. Instruct students to watch the remaining section of the video, keeping the statements on their worksheet in mind. Begin the video at 41:52.
2. During or after the movie, students are to mark their final answer choice for each statement, and provide justification for their answers based on the movie.
3. Check the students’ understanding of the chosen vocabulary/concept words.

Evaluate: Circulate during the movie and spot check their notes. Stop the movie and hold class discussions to clarify confusion if needed.

Explain

1. Students discuss their answers with the members of their group. Expect some disagreement on answers.
2. As students are working, circulate among the groups. Ask students what words in the questions make it difficult for to determine one right answer.
3. Conduct a class discussion on their answers. Guide students to address the ambiguity built into the statements by including words such as *enough*, *adequately*, *useless*, *nothing*, *many*, *lots*, and *help*.
4. Instruct students to rewrite the statements on the back of their worksheet in such a way to move them toward “always true.” The following statements are examples.
 - The Mobile Bay empties every 48-72 hours, which dilutes pollution.
 - Concerned citizens are building artificial reefs in an effort to bring back the oyster population.
 - The Coastal Land Trust was established to protect the delta, and so far 17,000 acres have been protected.
 - Nutrition pollution occurs when nutrients flowing into the bay boost the growth of algae to the point that it depletes the water of oxygen when the algae die.
5. Allow students to share their rewritten sentences. Guide students to evaluate their own and each other’s sentences. Ask them to compare their understanding of the vocabulary/concept words.

6. Follow a River:

- Divide the student into groups.
- Assign major rivers in AL to different groups.
- Find cities, industries, agricultural areas, forests, etc. along the river.
- Research the environmental history of each of the rivers in the “Surf My Watershed” feature on the www.epa.gov site. Look for specific impacts that violate federal water protection guidelines. A secure Internet site may reveal other local incidents of impacts.
- Use the www.usgs.gov site or Alabama Water Watch organization to investigate water quality parameters like dissolved oxygen, pH, and turbidity.
- Include any historical events.
- Create a presentation that tells the story and status of the river.
- Present to the class. Choose the best one to share with a target audience.

Evaluate: Check students’ rewritten sentences for clarity. If their sentences are ambiguous, question them about their word choice to guide them. Listen to students as they comment on each other’s statements encourage them to keep the discussion on the statements and not anything personal.

Extend (2 choices)

1. Research:

- Students research one of the factors protecting the MTD. Examples include environmental laws, funding, reef building, education, organizations such as *Forever Wild*, and the development of a Natural Park. This research can be a mini-research, completed in one class period, or it can extend to a research project.
- Provide parameters or a rubric to clarify your expectations of them.
- Stress the use of clear sentences, as practiced in class, when presenting their findings.

2. Literary Extension:

- Locate the series of articles in Nov/Dec, 2014 written by Ben Raines, They are archived at www.al.com .
- Divide the articles between students.
- Investigate the articles and discuss how the articles deepen the student understanding of “America’s Amazon” precepts.

Evaluate: Based on the parameters or rubric you provide, assess their research presentation.

Name: _____

Date: _____ Class: _____

Always, Sometimes, or Never

Directions: Before viewing Part 3 of “America’s Amazon,” read each statement and lightly check the box you feel best describes how true that statement is. As you watch Part 3, rethink your answers and check the appropriate box under each statement with your final answer. Jot down any points from the movie that justify your final answer.

Statement	Justification
<p>There is enough water flowing through the Mobile Tensaw Delta to dilute pollution adequately.</p> <p><input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never</p>	
<p>It is useless to try and restore the oyster population. Their impact on water quality is small and nothing can be done to help them now.</p> <p><input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never</p>	
<p>Many citizens living in and around the Mobile Tensaw Delta are concerned about protecting it.</p> <p><input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never</p>	
<p>When lots of nutrients flow into a body of water, it helps the fish and the plants living there.</p> <p><input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never</p>	
<p>Changes to the land surrounding a river have no impacts on the river.</p> <p style="text-align: center;">Always Sometimes Never</p>	
<p>Siltation from upland watersheds carry pollutants to the MTD, but they do not have an effect.</p> <p style="text-align: center;">Always Sometimes Never</p>	
<p>Some species are not important to ecosystem services.</p> <p style="text-align: center;">Always Sometimes Never</p>	

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America's Amazon was produced by **Mary Riser**, **Lynn Rabren** and **Ben Raines** and can be purchased through the Alabama Nature Partners website at <http://americasamazon.net>.

The Teachers Guide was a collaborative effort among the film's producers, **Dr. Tina Miller-Way** of the **Dauphin Island Sea Lab's Discovery Hall** educational program, and Environmental Sciences teacher **Janet Ort** of Hoover High School.