

Lesson #7: Conservation

Introduction/Rationale

Now that students have a basic understanding of coral reefs and the purpose of remote sensing of them, they need to know what to do with this knowledge. The purpose of this unit is to illustrate the ways that our actions can affect the health of coral reefs, directly and indirectly.

Lesson Concepts and Skills

Destructive fishing practices

Materials

DVD player

"Finding Nemo" DVD with bonus feature "Exploring the Reef with Jean-Michel Cousteau."

One copy of "Coral Quotations" paper

Access to computer lab

Copies of the Time for Kids article Can Coral Reefs Be Saved? for each child, from the Introduction to Coral Reefs lesson, found at <http://www.timeforkids.com/TFK/magazines/story/0,6277,59687,00.html>.

The following materials are needed for each group of students:

- Large pan
- Water
- Cooking oil
- Drinking straw
- Sand
- Cotton balls
- Paper towels

Teacher Preparation

Print the "Coral Quotations" paper and cut apart each quote.

Teachers are strongly encouraged to read the coral reefs fact sheet found at <http://www.aquarium.usm.edu/old/coralreef/01.pdf> before presenting the PowerPoint presentation "Threats to Coral Reefs."

Teaching Strategies Employed

Direct instruction

Time Frame

One 60-minute class period plus three to five subsequent class periods to allow students to complete their PowerPoint presentations for the Evaluation.

Target Audience

Grade five

Behavioral Objectives

Students will create background knowledge of natural and anthropogenic threats to coral reefs by reading for information.

Students will disseminate information about coral reefs and conservation by creating a PowerPoint presentation.

Engagement

In the bonus features of the "Finding Nemo" DVD, play the "Exploring the Reef with Jean-Michel Cousteau" movie (seven minutes). Ask students which topics were mentioned that they have already learned about in this unit (coral bleaching, symbiosis). Ask them what did the movie mention that they have not studied yet? (Humans' responsibility in the health of coral reefs. Tell students that the coral reproduction will not be included in this lesson.)

Exploration

Divide students into groups of four or six. Distribute the materials for the "Oily Mess" activity. Circulate to assist students in their exploration.

Ask students to brainstorm how the activity connects to coral reefs. (Pollution is a big risk to coral reef health.) Have students share the techniques they used to clean the oil spill, and discuss which worked better than others.

Ask students to brainstorm other factors that would harm coral reefs. Hold a class discussion so that students may share their answers.

Explanation

Refer back to the *Time for Kids* article "Can We Rescue the Reefs?" from the introduction to coral reefs lesson.

<http://www.timeforkids.com/TFK/magazines/story/0,6277,59687,00.html>

As a class, read the sections "Precious Underwater Habitats" and "Sucking the Life out of the Reefs," which were skipped in the earlier lesson.

Display the PowerPoint presentation "Threats to Coral Reefs." (Teachers are strongly encouraged to read the coral fact sheet found at <http://www.aquarium.usm.edu/old/coralreef/01.pdf> since it aligns closely with the content in the PowerPoint presentation. This will aid a great deal in filling in the gaps from the presentation.)

The site <http://www.publicaffairs.noaa.gov/25list.html> contains a list of 25 things people can do to save the coral reefs.

<http://www.coralreefalliance.org/aboutcoralreefs/help.html> details conservation whether living near a reef or far removed from one. Either have students visit the sites, print a hard copy for them, or display the web page. Read and discuss them as a class.

Extension

Divide students into eight groups. Randomly give each group one "Coral Quotation." Give students approximately five minutes to read and discuss their quote. Call on groups one at a time to share the quote with the whole class and relate the meaning of it.

Evaluation

Have students create a PowerPoint presentation that integrates what they've learned about coral bleaching and conservation. Decide whether you want students to work individually or in small groups. Instruct them that the presentation should be appropriate for fourth grade students as well as adults. (If possible, make arrangements for presentations to be given in the auditorium to the fourth grade and school principal and assistant principal.)

Students might want to visit

<http://www.onr.navy.mil/focus/ocean/habitats/coral3.htm> for background on risks to corals.

Assessment

Use the rubric below to score the students' PowerPoint presentations from the Evaluation part of the lesson.

Bibliography

Castaldo, N. F. (2002). *Oceans: An activity guide for ages 6-9*. Chicago: Chicago Review Press Incorporated, 114.

NOAA. (2004). *Coral health and monitoring program: Quotations*. Retrieved <http://www.coral.noaa.gov/quotations.shtml>, July 23, 2004.

Zike, D. (1993). *The earth science book*. New York: John Wiley & Sons, Inc. pp. 67.

Coral Reef PowerPoint Presentation Rubric

	Points Possible	Points Earned
Presentation included important <u>facts</u> about coral reefs	4	
Any animations or images added to the presentation's message and did not distract	4	
Presentation included essential information about coral reefs <i>and</i> conservation	8	
Spelling, grammar, and mechanics (punctuation, capitalization)	4	
Slides hold the attention of the audience	2	
TOTAL	22	

Comments:

Coral Reef PowerPoint Presentation Rubric

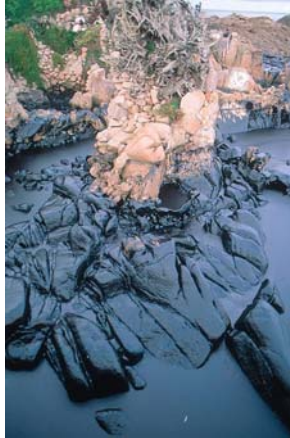
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Presentation included important <u>facts</u> about coral reefs	4	
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Presentation included essential information about coral reefs <i>and</i> conservation	8	
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Slides hold the attention of the audience	2	
TOTAL	22	

Comments:

Oily Mess activity Can You Clean It Up?

Materials

Large pan
Water
Cooking oil
Drinking straw
Sand
Cotton balls
Paper towels



Procedure

1. Pour water into the dishpan until it is filled halfway.
2. Carefully pour enough cooking oil to create a complete layer on top of the water. *The oil represents an oil spill.*
3. Explore the best way to clean up the oil spill using the materials you were provided. Record the results below.

Results

A. What material(s) did you use to clean the spill? _____

How did you use the material(s)? _____

Explain how well this technique worked. In other words, did you get rid of the oil? Tell what happened to it.

B. What material(s) did you use to clean the spill? _____

How did you use the material(s)? _____

Explain how well this technique worked. In other words, did you get rid of the oil? Tell what happened to it.

C. What material(s) did you use to clean the spill? _____

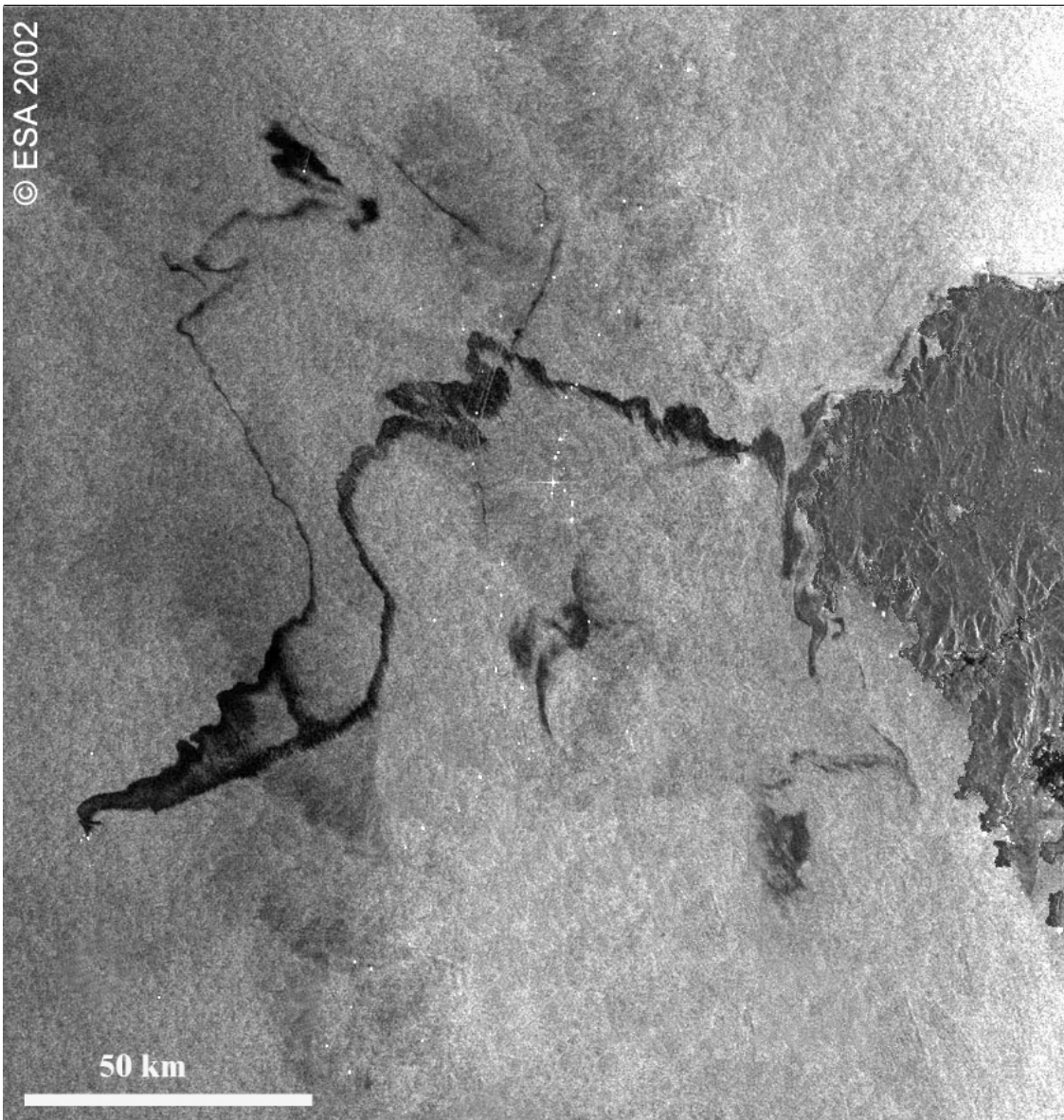
How did you use the material(s)? _____

Explain how well this technique worked. In other words, did you get rid of the oil? Tell what happened to it.

D. What material(s) did you use to clean the spill? _____

How did you use the material(s)? _____

Explain how well this technique worked. In other words, did you get rid of the oil? Tell what happened to it.



Threats to Coral Reefs presentation



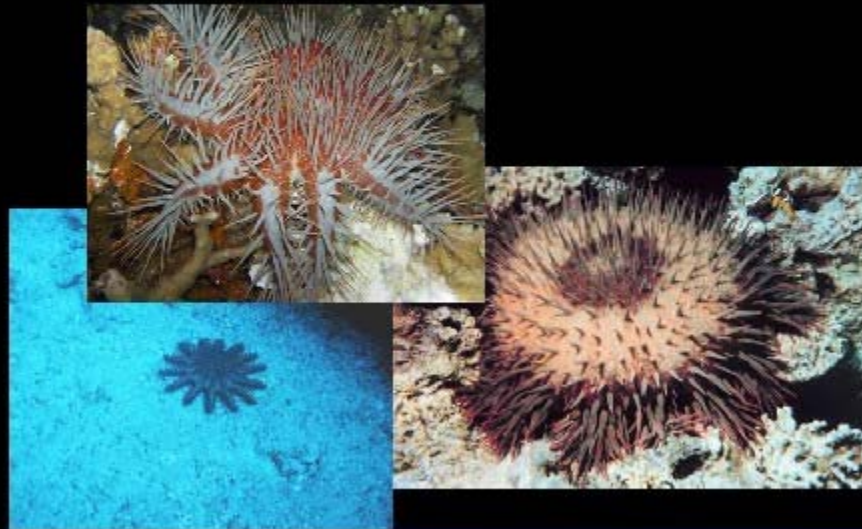
Threats from Nature

- Unusually strong waves such as those from a hurricane
- Water temperature changes
- Dramatic changes in saltiness of water
- Predators, such as snails and crown of thorns starfish
- Overgrowth of algae

Coral-eating Snails



Crown of Thorns Starfish



Threats from Humans

- Pollution
 - *Sediments* block light from zooxanthellae
 - *Chemicals* either poison corals or allow too much algae to grow
- Power plants
 - Filter water and kill fish and plankton
 - Releasing hot water kills organisms

Pollution



Power Plants



More Threats from Humans

- Deforestation
 - Causes erosion which clouds the water
 - Burning of trees could be a factor in climate change
- Destructive fishing
 - Blasting with dynamite
 - Cyanide poison
 - Boats running aground, anchors
 - Overfishing

It's up to Us to Save Coral Reefs



Be Responsible.

Coral Quotations

"If enough species are extinguished, will the ecosystems collapse, and will the extinction of most other species follow soon afterward? The only answer anyone can give is: possibly. By the time we find out, however, it might be too late. One planet, one experiment."

(E. O. Wilson, "The Diversity of Life." Cambridge, MA: The Belknap Press of Harvard University Press, 1992.)

The problem is not to manage the reefs but to manage human population and their activities."

(Bernard Salvat, The International Coral Reef Initiative: Partnership Building and Framework Development, report of the ICRI Workshop, Dumaguete City, The Philippines, 29 May-2 June 1995.)

"In the end we will conserve only what we love; we will love only what we understand; and we will understand only what we are taught."

(Baba Dioum, 1968.)

"A coral reef cannot be properly described. It must be seen to be thoroughly appreciated."

(Sidney Hickson, 1889, quoted in Whitten, Anthony, et. al. "The Ecology of Sulawesi." Yogyakarta, Indonesia: Gadjah Mada University Press: 1987.)

"An unprejudiced observer might well be fearful that in the not too distant future our children may be able to learn about the coral reefs only from books and documentary films, for one of nature's most unique habitats will have vanished from the face of the Earth."

(Voss, 1973)

"Coral reefs are the rain forests of the sea."

"Coral reefs are the cities of the sea."