Source: **Coral Reef Teacher's Guide**, produced by the World Wildlife Fund, 1250 Twenty-Fourth St. NW, Washington, DC 20037-1175. Used with permission.

50. THE CORAL CONSERVATION GAME

Adapted from a game by Roseanne W. Fortner, Ohio State University

Goal: to show students the many factors that must be balanced to conserve a natural resource with commercial and other values.

Objectives:

Students will be able to name four ways that coral reefs benefit people.
Students will be able to name four ways that people damage coral reefs and corals.
Students will be able to discuss important factors in "managing" a coral reef.
Students will be able to debate: give pro and cons of exploiting commercial uses of coral reefs.

Time: 45 minutes to one hour

Materials:

Game boards (You may duplicate the enclosed game board by copying its folded quarters and taping it together. Make enough game boards for four players per game.)
One piece of notepaper per student, and pen or pencil.
Make copies in the following quantities:
*Game Board: one board per game (four students)
*Chance Cards: one set per game
*Option, Spinner, Token page: one per game
*Game Summary sheet: one per game
*Currency: twenty pages per game

Student Background:

Today you will play a game called The Coral Reef Game. On the game board you will use, the game is drawn on the outline of a coral that looks something like elkhorn coral—a rapidly-growing coral... [illustrations of elkhorn coral appear on the cover of this manual and on page 80].

In this game, you are a fisherman who makes at least part of your living from coral. You have a problem shared by nearly all fishermen—if you take lots of coral, you make good money at first. But if you and others do this for too long, the coral will not be able to grow back fast enough. Then, there will be none, or very little, and you will have lost the source of your business.

The secret, of course, is wise use and protection of the natural resource you make a living from. And that is no easy task, as you will see from the game you are about to play.

The object of this game is to arrive at the FINISH space with the most coral. Coral grows on offshore reefs around the island and amounts of coral are measured in centimeters. Players may also gain centimeters of other types of coral, such as the valuable but delicate black coral.

Players should keep a record of all the centimeters of coral they gain or lose throughout the game. Use the tally sheet you have been given. You should also carefully control the amount of money you have. As the game starts, assume that one inch of coral is worth about $500.

Procedure:

1. Prior to class assign background reading. [E.g., **Coral Reef Coloring Book** written and illustrated by Katherine Orr, © 1988, Stemmer House Publishers, Inc. This coloring book is derived from a project funded by World Wildlife—U.S. Encourage students to color the illlustrations.]

2. This game requires copying, if the entire class is to play the game at once. If you cannot make copies, have students play the game in groups of four, during several class periods. Use your judgement as to whether to have students help you assemble Game Boards, cut Chance and Option cards, assemble spinners and tokens (glued on cardboard, for best use), and cut up currency.
3. Divide the class into groups of four. Have them move desks together to play.
4. Distribute game boards, spinners, tokens, and currency (20 sheets of money per game, $2,000 per player). Give each student an Option Card also. Keep spare currency on the side, "in the bank" for payments to players.
5. Read **Background** and remaining instructions (5-11) to students.
6. Begin at the **START** space with $2,000 and 25 centimeters of coral. Shuffle the **CHANCE** cards and place them face down near the board. Now, write down your beginning assets on a sheet of notepaper.

Organize your notepaper like this: (**Show on blackboard. . .**)

	Coral	Money
Start:	+25 cm	+2,000
Turn 1	. . . .	. . . . .
Turn 2	. . . .	. . . . .
Etc.	. . . .	. . . . .

7. Two to four players may play at one time. Spin the spinner to see who moves first. The player with the highest number will move first. Play then goes around the board to the left.
8. Move around the games board by moving your token the number of spaces shown on the spinner. Change your amount of money and coral as the board and **CHANCE** cards direct.
9. Early in the game you will have to choose which path you wish to take around the board. The regular path may be followed, or you may choose the "High Finance Bypass" and take extra risks in order to finish earlier. You may not back-track after choosing one path or the other.
10. If you spin **CHANCE** or land on a **CHANCE** space, pick up the top CHANCE card and do as it instructs. Then put the card back on the bottom of the deck.
11. Each player receives on **OPTION** card as the game starts. This card gives you an opportunity to make a deal with other players, buying or selling any amount of coral for which a price can be agreed. Once you have used your option card, you must give it up.
12. You cannot go "in the red" and spend more than you have, and if you run out of money, you are no longer a competitor for coral. The same rule applies to running out of coral. You may continue to play in hopes of gaining more money or coral, but if you should be required to spend money or lose centimeters that you do not have, you are out of the game.
13. You must land exactly on the **FINISH** space to complete the game. The first player to reach **FINISH** earns an additional $1,000, but the game is not over until all players have finished or been eliminated. The winner is the person having the most coral. It is possible that there will be no winner!
14. After each group has finished their game, fill out the Game Summary Sheet together.
15. Discuss the Game Summary with the class. If you live in a coral reef area, be sure to discuss important negative and positive influences going on nearby.

Summary Sheet

1. In the chart on the following page, list human and natural factors your group encountered in the game.
2. For each factor, note below its positive or negative effect on the amount of coral (+ or - cm) and its positive or negative economic impact (+ or - dollars).
3. Discuss how the results of human factors change. Can people alter natural events as well? How, and with what impacts?

Natural Factors

Type of Factor	Effects on Coral	Effects on Economics
e.g. Hurricane	-5 cm	-$800

Human Factors

Type of Effect	Effects on Coral	Effects on Economics
e.g. Island Festival	-4 cm	+$350

CHANCE CARDS

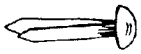
(Paste on light card and cut out)

Island officials decide not to dredge the harbors this year. Silting of reefs is prevented, but trade drops off. Lose $2,000 and gain 5 cm of coral.	Fertilizers from fields wash into water. Excessive algae growth threatens coral. Spend $1,000 for runoff control, or lose 8 cm.
Hurricane Adam bypasses the island, and expected rains do not come. Fresh water can kill coral, but this time disaster was prevented. Take another turn.	Loss of species diversity (fewer types of animals) makes the reef more susceptible to ecological disturbances. All players lose 5 cm.

People all over the Caribbean watch a television program about the importance of coral reefs. Surveys show increased knowledge and improved attitudes. All players gain 5cm.	**Stop to visit the underwater park. Skip one turn.**
Coral reefs break the force of waves and prevent destruction of beach property when violent storms come. Collect $3,000 for protecting the coastline.	**A harbor festival brings in new customers for coral. You may exchange up to 10cm and receive $500 per 3cm.**
Warm waters and gentle waves in the coral lagoons encourage more tourists to visit these areas. All players earn an extra $1,000.	**Classrooms teach children about the value of the reef. Protection allows 5cm more to grow for all players.**
The price tourists will pay for good coral specimens goes up 25%. You may sell up to 25cm to other players if a price can be agreed upon.	**Brain corals resist damage better than branching forms. Take another turn.**
The island hosts a water festival, drawing many tourists. Great damage to reefs from anchors, hull-dragging, and unlicensed collectors. All players lose 12cm.	**Parrotfish eat algae that competes with coral. You gain 3cm.**
Barracudas eat most of the queen triggerfish. Urchin population explodes and coral loses 5cm. If you choose to skip one turn, 3 cm of coral can grow back.	**Dead coral skeletons are inhabited by sea anemones that compete with live corals. Lose one turn.**
Island-hopping. Exchange places with any player you choose.	**Corals provide shelter for cleaning shrimp. Take another turn.**
Scuba divers with spearguns take many groupers from the reef. Spend $500 for protection against this.	**Toxic chemical spill is caused by the player on your left. Collect $2,000 in damages from that player.**

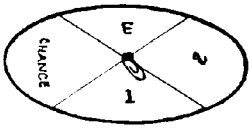
OPTION	**OPTION**
OPTION	**OPTION**

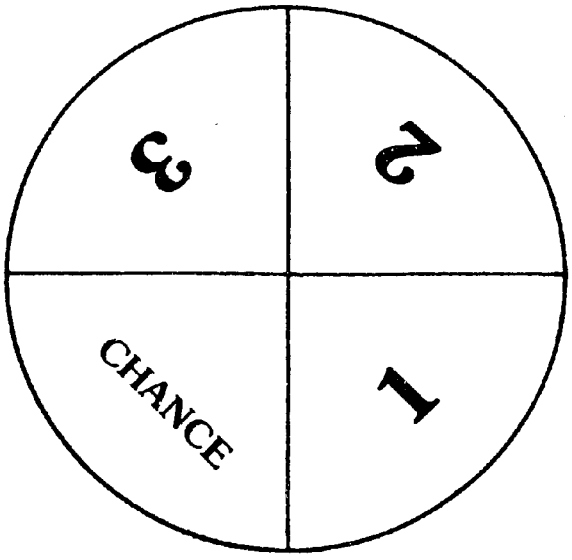
Paper clip



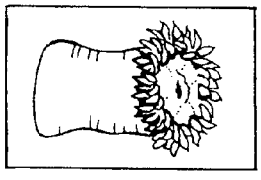
Paper fastener

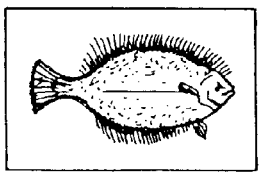
Spinner
Cut out the spinner and paste it on a piece of cardboard. Punch a hole in the center and put a paper fastener through the hole so it will hold the paper clip and allow it to spin.

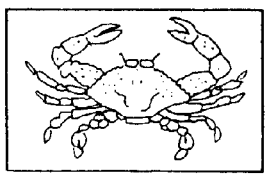


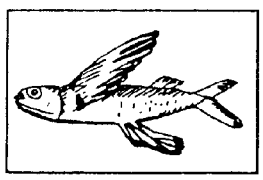


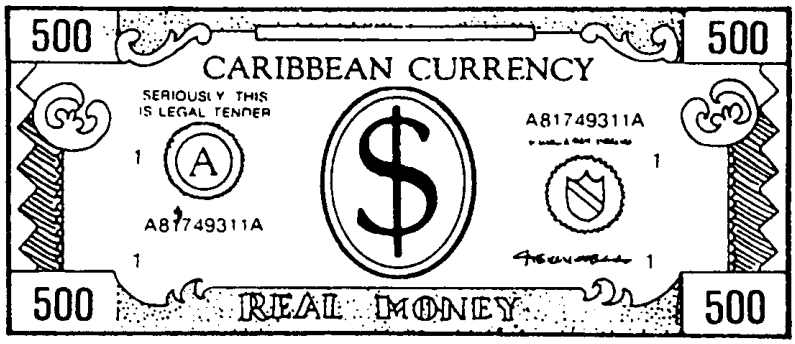
TOKENS (Cut out and color)







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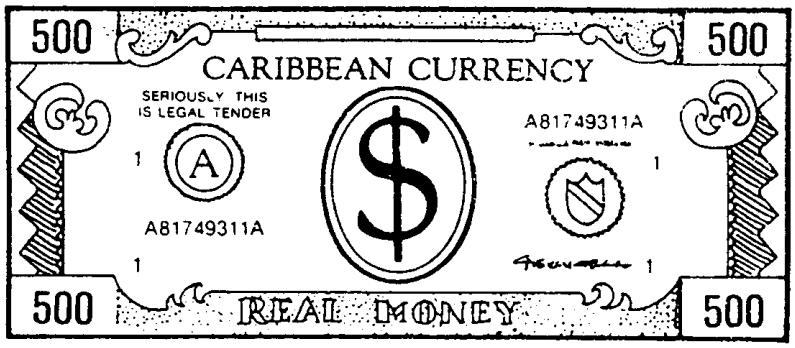
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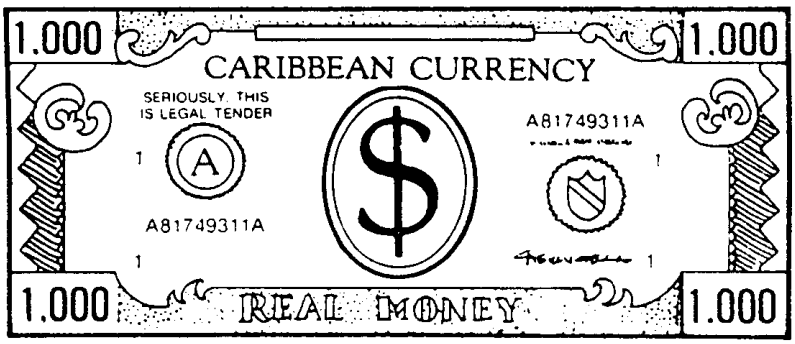
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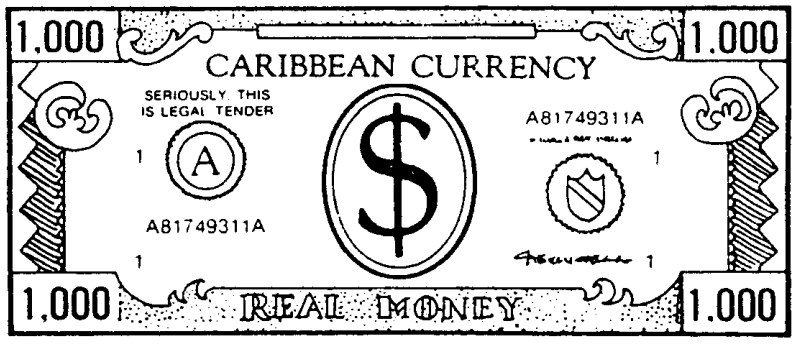
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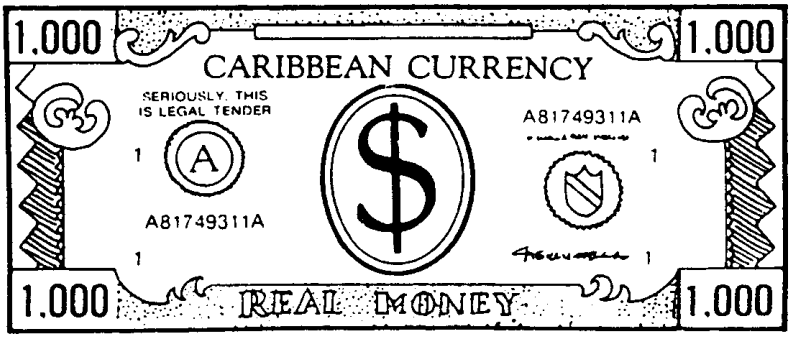
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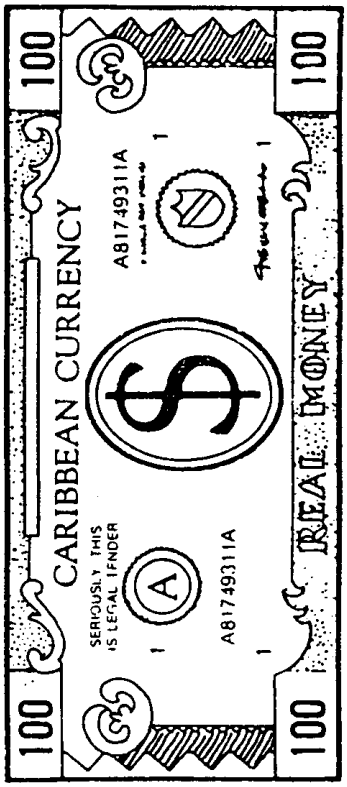
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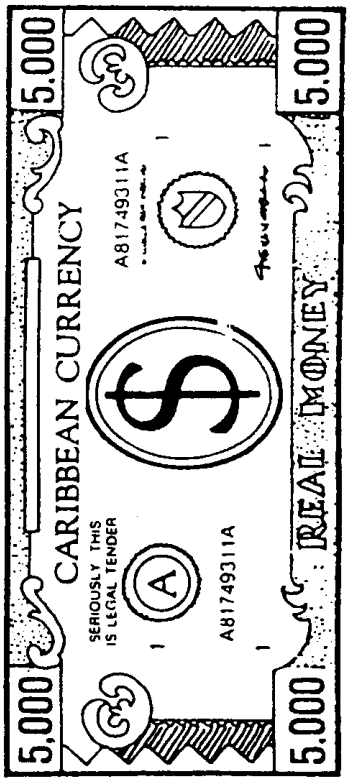
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Correlation to National Standards from McREL (http://www.mcrel.org) :

Life Sciences

6. Understands relationships among organisms and their physical environment

Geography

8. Understands the characteristics of ecosystems on Earth's surface
14. Understands how human actions modify the physical environment
16. Understands the changes that occur in the meaning, use, distribution and importance of resources