

The Race



Focus: Endangered marine turtles

Grade Level: 2-8

Connection to other Subjects: Reading; Language Arts

Correlation to National Standards:

National Science Education Standards (NSES):

Grades 2-4: Life Science: Characteristics of Organisms
Science in Personal and Social Perspectives: Changes in Environments

Grades 5-8: Life Science: Populations and Ecosystems

American Association for the Advancement of Science (AAAS):

Grades 3-5: The Scientific Enterprise
Interdependence of Life

Grades 6-8: Interdependence of Life

Focus Question: What are the threats to hatchlings? How do they affect the survival of the species?

Learning objectives: To be able to describe the threats hatchling turtles face and how this affects the marine turtle population.

Materials:

- The Kid's Times pages for the Loggerhead, Kemp's Ridley, Leatherback, Olive Ridley, Green and Hawksbill turtles
- Trade books for marine turtles (see suggested list)
- Large die made from cube-shaped cardboard boxes (4 for a class of 24-28)
- Game spaces printed onto 8.5x11" paper or larger and laminated (4 sets for a class of 24-28)
- Adult volunteers to help run the games
- School field or gym to lay out the game board
- Counters

Teaching Time: several classes of 45 minutes

Key Words:

Threatened Endangered Species
Threat Predator



Background:

About Marine Turtles: Marine turtles, air-breathing reptiles with streamlined bodies and large flippers, are well adapted to life in the marine environment. They inhabit tropical and subtropical ocean waters throughout the world. Of the seven species of sea turtles, six are found in U.S. waters: loggerhead, leatherback, green hawksbill, Kemp's ridley, and olive ridley. Although sea turtles live most of their lives in the ocean, adult females must return to beaches on land to lay their eggs. They migrate long distances between foraging grounds and nesting beaches. Ensuring their return and keeping the beaches free of hazards are very important steps to the recovery of sea turtle species.

Female sea turtles can lay well over 100 eggs in one clutch (nest), but only a few survive for a variety of reasons. The embryos in some of the eggs in the clutch never develop and therefore, never hatch. Scientists do not know the cause of this. Those that hatch climb over each other to reach the surface, and in the process some turtles suffocate under their siblings. When the surviving hatchlings reach the surface of the beach, they are faced with a number of impediments to reach the ocean, including natural predators and human-caused factors.

Major Threats to Sea Turtles: Major threats include, but are not limited to: destruction and alteration of nesting and foraging habitats; incidental capture in commercial and recreational fisheries; entanglement in marine debris; and vessel strikes. The game board spaces list the common threats encountered by hatchlings on their way to the sea.

To reduce the incidental capture of sea turtles in commercial fisheries, NMFS has enacted regulations to restrict certain U.S. commercial fishing gears (gillnets, longlines, pound nets, and trawls) that have a known, significant bycatch of sea turtles. Management measures include time/area closures, required fishing gear modifications, and safe sea turtle handling practices. Examples of required fishing gear modifications include: the use of Turtle Excluder Devices (TEDs) in shrimp and summer flounder trawl fisheries; the use of specific hook and bait types in longline fisheries; mesh size requirements in gillnet fisheries; and pound net leader mesh size requirements. To effectively address all threats to marine turtles, NMFS and the USFWS have developed recovery plans to direct research and management effort for each sea turtle species.

Marine Turtle Conservation and Management: All six species of sea turtles occurring in the U.S. are protected under the Endangered Species Act of 1973. The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) recovery of sea turtles in the marine environment and USFWS on nesting beaches.



Introduction:

Have the kids think about what it is like to be a baby. They can then draw, list or chart what a baby needs to survive and what would happen if the baby was left alone to survive (the threats it would face). The class can share these. Then explain that many animals face similar threats and that this is particularly a problem for threatened and endangered species, specifically marine turtles. They will experience what it is like to be a hatchling marine turtle.

Lesson:

1. Divide the class into groups of no more than five or six and pair with an adult facilitator with each group. The game board pieces should be laid out in a curving manner because the hatchlings in this game take a circuitous route from the clutch to the ocean. In the absence of threats or barriers, hatchlings actually take a direct route to the ocean. Students can cut out, color, and assign their hatchling to a species. They can carry this with them during the game. The children will have an opportunity to read and learn and learn about the various marine turtle species after the game. Each student should also carry 25 counters to represent the clutch for their species.
2. Have each student roll the die to determine the first person to play and proceed through the game following the directions on each space.
3. Once all the games have been completed, debrief the activity. Discuss how many hatchlings survived and why many did not. Chart the threats encountered during the game. Highlight the most common problems the turtles encountered and how humans can reduce those threats.
4. Explain to the students that they will be participating in expert groups, where they will teach their team members about their species, based on the species they chose for their turtle game piece. If your students are not familiar with expert groups, you may want to take some time to model the process. Have all the kids with the same species group together to read and discuss (you can use guided questions) *The Kid's Times* and other information about their species. They can answer the questions, make notes, or create drawings as age-appropriate to help them remember what they are going to tell their group.
5. Regroup children with one of each species represented. Have each student teach the other members of the group about their species, highlighting the threats to the turtles and what they can do to help. The children can formulate their own ideas about how they can help the turtles or use those suggested in *The Kid's Times*.

Adaptation:

1. Older students can research the threat to marine turtle hatchlings on their own and create the games.
2. If space is limited, this game can be adapted into a board game.

Closure: Revisit the activity and the expert groups. Have students reiterate what threats hatchlings face and what can be done to help them reach the ocean.



Evaluation:

- The students can each create a poster directed toward other students informing about their species of turtle and the threats hatchlings face.
- Each student can create a page for a class marine turtle conservation book giving information about and illustrations of their species. These can be copied for each child and/or placed in the school media center.

Resources:

- The Kid's Times by NOAA Fisheries Office of Protected Resources
- The Office of Protected Resources website: www.nmfs.noaa.gov/pr/
- www.seaturtle.org
- www.cccturtle.org

Related Children's Literature and Video:

Turtle in the Sea (Jim Arnosky)

One Tiny Turtle (Nicola Davies)

Sea Turtles (Martha E.H. Rustad)

Into the Sea (Brenda Z. Guiberson)

Sea Turtles: A Watcher's Guide (M. Timothy O'Keefe)

Interrupted Journey: Saving Sea Turtles (Kathryn Lasky)

Sea Turtle: An Ecological Guide (David Gulko and Karen Eckert)

Video: "Sea Turtles: Ancient Nomads" by Robert Nixon



NOAA's National Marine Fisheries Service
Office of Protected Resources

www.nmfs.noaa.gov/pr/

Molly Harrison 2005



Game Board Spaces

Dog dug up nest - lose 5 hatchlings
Start digging out of nest
Dark and cool outside—move ahead 1
Keep going
Raccoons got into nest—lose 10 hatchlings
Bright lights up ahead
Turtle picture
Confused by bright lights—move back 2
Going in circles—miss one turn
Bright lights cause you to go wrong way—10 hatchlings hit by car
Stuck in vegetation—lose 5 hatchlings
Laws passed that keep lights off the beach—move ahead 2
Turtle picture
Back on track
Pause to rest—miss a turn
Smooth sailing
Uh-oh! Crabs on beach
Turtle picture
Nearly caught by a crab—miss a turn
Crabs attack—lose 7 hatchlings
Watch out!
Beach cleaning machine disturbs nest - lose 10 hatchlings
Turtle picture
Almost in the clear
Got away from crabs—move ahead 3 spaces
Out of danger—Whew!
Turtle picture
Uh-oh! People on the nesting beach with flashlights
Picked up by beachcomber as souvenirs—lose 5 hatchlings
Getting closer
Rock pile in the way—miss a turn
Caught in rocks—lose 2 hatchlings
Turtle picture
Rocks moved out of the way by scientist—move ahead 3
More people on beach
Hurry up!
Turtle picture
Making progress
Moon is out
You are on your way!
Beach chairs in the way—move back 2 spaces



Coast is clear
Ocean up ahead
Turtle picture
Uh-oh! Vehicles on the beach
Almost hit by a car driving on the beach—move back 3 spaces
Safe for now
Caught in a tire rut—lose 5 hatchlings
Back on course
Turtle picture
Getting there
Uh-oh! Another crab wants to make a meal of you—lose 2 hatchlings
Turtle picture
Laws passed to keep vehicles off beach—move ahead 1 space
You are really close now!
Turtle picture
Out to sea!

(57 spaces)



