

Sea Turtle-O Bingo

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Organization:	Audubon Aquarium of the Americas
Subject area	Science
Grade	4, 5, 7
Lesson Length	45-90 minutes



Focus/Overview of the lesson: Students create definitions of scientific terms, relate them to sea turtles specifically, and then review the term definitions through a game of bingo. This is a good way to introduce a larger lesson on the oil spill in relation to its impact on endangered wildlife.

Student Learning Objective(s):

The students will....

...become familiar with scientific terms affiliated with sea turtles, their anatomy and the environmental issues they face.

Louisiana SCIENCE Grade Level Expectations

GRADE LEVEL	TARGET GLEs
4: Inquiry GLE 1	Ask questions about objects and events in the environment (e.g., plants, rocks, storms) (SI-E-A1)
4: Inquiry GLE 14	Identify questions that need to be explained through further inquiry (SI-E-B1)
4: GLE 41	Describe how parts of animals' bodies are related to their functions and survival (e.g., wings/flying, webbed feet/swimming) (LS-E-A3)
4: GLE 53	Identify the habitat in which selected organisms would most likely live and explain how specific structures help organisms to survive (LS-E-C2)
5: GLE 29 (middle school)	Describe adaptations of plants and animals that enable them to thrive in local and other natural environments (LS-M-D1)
5: GLE 49 (middle school)	Identify and give examples of pollutants found in water, air, and soil (SE-M-A3)
5: GLE 50 (middle school)	Describe the consequences of several types of human activities on local ecosystems (e.g., polluting streams, regulating hunting, introducing nonnative species) (SE-M-A4)
7: GLE 32	Describe changes that can occur in various ecosystems and relate the changes to the ability of an organism to survive (LS-M-D2)
7: GLE 34	Explain how environmental factors impact survival of a population (LS-M-D2)
7: GLE 39	Analyze the consequences of human activities on ecosystems (SE-M-A4)

Materials needed (list quantities per student or group)

- Bingo board (blank)– 1 per student
- Blank bingo cards (**Blackline Master #1**)
- Markers or pens
- Paper
- List of terms
- Copies of definition cards
- Prizes for winners
- Recommended books and links for student investigation

Advance Preparation

1. Prepare bingo call slips by copying the student definitions of turtle terms onto individual slips of paper (Explore – Step 7).
2. Decide how many definitions each student or group of students must do and make the appropriate number of copies of **Blackline Master #1** (the student definition cards). There are two cards on the blackline master.
3. Make copies of **Blackline Master #2** (the blank bingo board) – one per student.

Procedure

1. Engage (Introduction)

1. Ask students to bring in clippings from newspapers, magazines, and/or web news sources about the oil spill's impact on the wildlife of the Gulf of Mexico. Ask them to pay particular attention to articles or sources that contain information about sea turtles.
2. Use the student clippings to lead a general discussion about the oil spill's impact on the animals that live or migrate through the Gulf. Have students focus on topics related to how the oil affects sea turtles in particular, and the health problems these animals can face as a result of encountering the oil.
3. Broaden the discussion to include other issues sea turtles face, using the following discussion questions:
 - a. *Why do you think is there such a big focus on saving sea turtles specifically in the oil spill?*
 - b. *What are some of the reasons sea turtles were endangered even before the spill?*
 - c. *As you were reading the articles or discussing them in class, were there any words or phrases that you did not understand?*
 - d. *As a class brainstorm terms related to sea turtles and write the list on the board*

2. Explore/Explain (Activity)

1. Explain to students that in order to study something, we first need to have a basic understanding of some of the terms and definitions scientists use to talk about these animals, their health, and the oil spill.
2. Break students up into small groups and give each group some of the terms from the list provided. Have each group complete a definition card for each term assigned, incorporate terms students brought up.

Suggested Turtle Terms:		
Carapace	Migration	Olive Ridley Sea Turtle
Invertebrate	Plastic	Kemp's Ridley Sea Turtle
Plastron	Protected Area	Climate Change
Conservation	Petroleum	Chemical Dispersant
Hatchling	Beach Nesting	Turtle Excluder Device
Hydrocarbons	Pollutant	Loggerhead Sea Turtle
Contaminate	Endangered Species	Green Sea Turtle
Absorb	Hawksbill Sea Turtle	Hydrocarbons

3. Explain to them that they need to not only define the word, but they must also explain how the term relates to or has an impact on sea turtles.
4. Allow students to use a variety of sources to define each word, and give them books, articles and links to explore resources online to find out more about turtles (see resource list).
5. For each term assigned, the groups will need to complete a definition card (**Blackline Master #1**). These terms have been defined for the teacher and are available on **Blackline Master #3** (term key).
6. When all groups are finished, have each group share their research with the class and submit their terms for approval.

7. Compile the entire list and redistribute to the whole class for review. Prior to class, place each definition on a slip of paper (one definition per slip of paper) and place them in a hat, basket, bowl, etc. These will be used during the bingo game.
8. Distribute blank bingo boards to each student (**Blackline Master #2**) and have them randomly fill in their cards in pen. The cards should not be identical, and each term can be used only once.
9. Explain to students that they will be playing a game of bingo to review the terms they defined. Explain that you will randomly select a definition out of the bowl and read the definition to the class. They will then have to mark the correct term on their bingo cards. The first student to get bingo wins. Play several rounds until all definitions are used.
10. Distribute prizes to the winners of each game. (optional)

3. *Expand (Apply or Practice)*

To make the game a little more of a challenge, you could ask a sea turtle related quiz question to each student who gets bingo. If they don't get the questions correct, they don't win bingo and have to go back and finish the game until someone wins bingo and can correctly answer the question.

4. *Evaluate*

Student definitions can be evaluated.

Recommended links and sources:

Sea Turtle Conservancy

www.conserveturtles.org/seaturtleinformation.php?page=oilspills

You can also download the Sea Turtle Conservancy's Educator's Guide after registering with the site (registration is free)

Audubon Nature Institute

<http://www.auduboninstitute.org/gulf-oil-spill-resources>

Louisiana Wildlife and Fisheries

<http://www.wlf.louisiana.gov/oilspill/>

NOAA Office of Restoration and Response

<http://response.restoration.noaa.gov>

U.S. Fish and Wildlife Service

<http://www.fws.gov/home/dhoilspill/index.html>

NOAA Fisheries Service

http://www.auduboninstitute.org/sites/default/files/NOAA_impacts.pdf

NOAA Office of Protected Resources

<http://www.nmfs.noaa.gov/pr/species/turtles/>

NOAA Fisheries Service – Sea Turtle Curriculum (has an entire list of more sites and recommended books)

<http://swfsc.noaa.gov/uploadedFiles/Education/Sea%20Turtle%20Curiculum%20Complete-10-26-09.pdf>

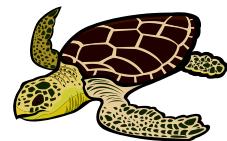
This lesson was developed by Audubon Aquarium of the Americas in response to the BP Deep Water Horizon blowout in partnership with Louisiana teachers, Louisiana Sea Grant College Program, Louisiana Wildlife and Fisheries, LSU Department of Education Theory, Policy and Practice, UNO Pontchartrain Institute for Environmental Studies, LSU Agriculture Center, SELU Department of Teaching and Learning, Barataria Terrebonne National Estuary Program and Louisiana Universities Marine Consortium.

Blackline Master #1 Bingo Cards

Turtle-O Bingo Definition Cards

Complete one of these cards for each term you have been assigned.

Name: _____



Term: _____

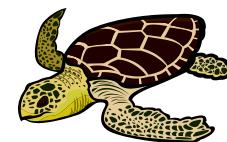
Definition: _____

How is this term related to sea turtles? How does it benefit or hurt sea turtles?

Turtle-O Bingo Definition Cards

Complete one of these cards for each term you have been assigned.

Name: _____



Term: _____

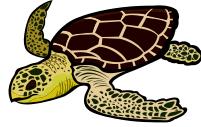
Definition: _____

How is this term related to sea turtles? How does it benefit or hurt sea turtles?

Blackline Master #2 Bingo

Sea Turtle-O Bingo

Write the turtle terms your teacher gives you in the spaces on your bingo board. You can place the terms in any order you wish, just make sure you have only one term in each space.

B	I	N	G	O
		FREE SPACE 		

Blackline Master #3 Key

<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Carapace</u></p> <p>Definition: <i>The dorsal or upper portion of a turtle's shell.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>Having a shell benefits turtles because the shell provides the animal protection from predators and other hazards.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Invertebrate</u></p> <p>Definition: <i>Animals lacking a backbone or spinal column (crabs, insects, jellyfish, sea stars, etc.).</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>Invertebrates are a big part of sea turtle diets, and sea turtles are dependent on them as a plentiful food source. If invertebrates are killed off due to the oil spill then turtles will lose a major food supply. Also, if these invertebrates are contaminated with oil and are then eaten by turtles, the turtles could get sick or die.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Plastron</u></p> <p>Definition: <i>The lower or ventral portion of a turtle's shell.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>Having a shell benefits turtles because the shell provides the animal protection from predators and other hazards.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Conservation</u></p> <p>Definition: <i>Planned management of a natural resource to prevent exploitation, destruction or neglect.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>All wildlife, including sea turtles, is a natural resource. Despite being an important part of the ocean food web, sea turtles are endangered due to multiple threats. Their populations are now managed and protected in U.S. waters through laws and enforcement and protection agencies within the state and federal governments.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Hatchling</u></p> <p>Definition: <i>A baby animal newly hatched from an egg. Baby sea turtles are called hatchlings.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>Healthy numbers of sea turtle hatchlings each year will help increase the number of sea turtles in the wild. This ensures the survival of the species and may even help reduce the likelihood of extinction.</i></p>

<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Leatherback Sea Turtle</u></p> <p>Definition: <i>The only species of sea turtle that lacks a hard shell, it can reach lengths of up to 8 feet and 1,300 pounds. It is the largest species of sea turtle and it can dive deeper than of any other species. It is an endangered species.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles?</p> <p><i>Invertebrates are a big part of sea turtle diets, and sea turtles are dependent on them as a plentiful food source. If invertebrates are killed off due to the oil spill then turtles will lose a major food supply. Also, if these invertebrates are contaminated with oil and are then eaten by turtles, the turtles could get sick or die.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Contaminate</u></p> <p>Definition:</p> <p><i>To soil, stain, corrupt or infect by contact or association.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles?</p> <p><i>Sea turtles and other wildlife in the Gulf can become contaminated with oil, which can affect their breathing, digestion, eyesight, skin problems and cause other health problems.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Absorb</u></p> <p>Definition:</p> <p><i>To suck up or take up.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles?</p> <p><i>Sea turtles can absorb oil either by direct contact with the oil or through eating plants and animals that have been contaminated with oil. Absorbing the oil into their bodies can cause them to have serious digestive problems as well as other health issues.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Migration</u></p> <p>Definition:</p> <p><i>The act of moving from one place to another.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles?</p> <p><i>Sea turtles migrate hundreds or even thousands of miles from feeding grounds to nesting beaches. Some species of sea turtles migrate across the Gulf of Mexico, which means they have to travel through areas of the Gulf affected by the spill. This puts them at risk of becoming contaminated with oil.</i></p>

<p>Turtle-O BINGO Definition Cards</p> <p>Term: <u>Plastic</u></p> <p>Definition: <i>Plastic is the general common term for a wide range of synthetic or semi synthetic solid materials used in the manufacture of industrial products.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles?</p> <p><i>Plastic is a main source of marine debris (litter) in the ocean. Sea turtles often mistake plastic bags for jellyfish and eat them. Eating plastics can cause sea turtles to become sick and can sometimes cause death when they block the turtle's digestive system which can cause them to be unable to eat or pass wastes.</i></p>	key
<p>Turtle-O BINGO Definition Cards</p> <p>Term: <u>Protected Area</u></p> <p>Definition:</p> <p><i>An area of habitat set aside for wildlife to use freely without interference from hazards and human interaction.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles?</p> <p><i>Protected areas provide sea turtles safe areas to nest, lay eggs, find food and reproduce. Without these areas, sea turtles would be in constant danger from predators, humans, and other hazards. If these areas are impacted by the oil spill it could affect the number of turtles hatched and the number of sea turtles that are able to live in the Gulf of Mexico.</i></p>	key
<p>Turtle-O BINGO Definition Cards</p> <p>Term: <u>Petroleum</u></p> <p>Definition:</p> <p><i>An oily flammable liquid that is a complex mixture of hydrocarbons and other substances. It is processed into gasoline as well as a variety of other products.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles?</p> <p><i>Petroleum and the petroleum and gas industry have a strong presence in the Gulf of Mexico through oil rigs, oil refineries and other petroleum industries. It can be toxic to a variety of fish and invertebrates, although different species are affected by to various degrees depending on the species. The oil spills affect on a large number of plants, fish and invertebrates in the Gulf will reduce the food supply of sea turtles.</i></p>	key
<p>Turtle-O BINGO Definition Cards</p> <p>Term: <u>Beach Nesting</u></p> <p>Definition: <i>The act of utilizing a beach area in order to build a structure made for laying and incubating eggs.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>Sea turtle females need healthy, safe beaches in order to lay their eggs. Without beaches, the females are unable to build their nests and incubate their eggs. When beaches are affected by the oil spill, females can become ill if contaminated when they land on the beach, and if eggs are exposed to oil, they will either not hatch, or the hatchlings will have developmental deformities.</i></p>	key

<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Pollutant</u></p> <p>Definition: A substance that contaminates an environment, usually man-made.</p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? Sea turtles are impacted by all sorts of pollution: marine debris, toxic substances, and pathogens are some of the pollutants that can affect turtles. The oil spill is a very large toxic substance spill that may have a far-reaching impact on sea turtle populations, as it not only effects them directly, it also impacts their habitat and their food supply.</p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Endangered Species</u></p> <p>Definition: An organism that is in danger of becoming extinct</p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? All species of sea turtle are considered endangered. Whether through habitat destruction, pollution, trade in wildlife products, or other factors, sea turtles are in danger of becoming extinct unless they continue to be protected and preserved. The oil spill has a direct impact on all sea turtle species in the Gulf, and will make it more difficult for those species to increase their populations.</p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Hawksbill Sea Turtle</u></p> <p>Definition: One of the smaller species of sea turtles, it measures 30-36 inches in length and weighs 100-150 pounds. They are noted for the beautiful shell pattern and their hawk-like facial features.</p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? Hawksbill sea turtles are endangered mostly because people kill them for their beautiful shells which they then turn into jewelry and other products. Although they rarely nest in the U.S. They are found in U.S. waters including the Gulf of Mexico, and are a species that might be impacted by the spill.</p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Olive Ridley Sea Turtle</u></p> <p>Definition: One of the most common of all sea turtles found worldwide, they measure around 30 inches in length and can weigh close to 100 pounds. Their carapace is a greenish gray color while the plastron is yellowish.</p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? Olive Ridley numbers are in decline from the direct harvesting of adults and eggs as a food source, and the accidental capture of these turtles in fishing nets and the loss of their nesting habitat.</p>

<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Kemp's Ridley Sea Turtle</u></p> <p>Definition: <i>The most endangered of all sea turtle species. They are also the smallest, measuring about 24 inches in length and weighing between 77-100 pounds. The carapace is an olive green and the plastron is yellowish in color</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>These turtles nest in only one small strip of beach in Rancho Nuevo, Mexico in mass groups called arribadas. Their nesting occurs between April and June of each year, and since the spill occurred in April, these turtles could be impacted as they migrate to and from their nesting site.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Climate Change</u></p> <p>Definition: <i>Any change in global temperatures and precipitation over time due to natural variability or human activity.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>As the climate changes and if sea temperatures rise, sea turtles and all marine life will be impacted by the loss of habitat and food sources as coral reefs, and all ocean wildlife are negatively impacted.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Hydrocarbon</u></p> <p>Definition: <i>An organic compound containing only oxygen and hydrogen and often occurring in petroleum, natural gas and coal.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>When sea turtles ingest oil they are ingesting hydrocarbons in larger than normal amounts, which could adversely affect their health.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Turtle Excluder Device (TED)</u></p> <p>Definition: <i>A device attached to a shrimp net to allow sea turtles and other large organisms to escape from the net while allowing shrimp to be caught.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>Before TEDs were used by shrimpers, often sea turtles lost their lives in shrimp nets. These devices allow the fishermen to continue to shrimp, while protecting the turtles from getting caught themselves.</i></p>
<p>Turtle-O BINGO Definition Cards</p> <p style="text-align: right;">key</p> <p>Term: <u>Chemical Dispersant</u></p> <p>Definition: <i>A substance used to help break down and disperse the oil in an oil spill.</i></p> <p>How is this term related to sea turtles? How does it benefit or hurt sea turtles? <i>While these chemicals are helping to break up the oil in the spill, they are being used in such large quantities that there is some concern that they may have a harmful effect on the wildlife in the Gulf, including sea turtles.</i></p>

Turtle-O BINGO Definition Cards

key

Term: Loggerhead Sea Turtle

Definition: Of all sea turtles in the U.S. the loggerhead is the one seen most often. They can get up to 350 pounds and grow to 41 inches in length. Their carapace is a reddish brown, with a dull brown to yellow plastron.

How is this term related to sea turtles? How does it benefit or hurt sea turtles? While the loggerhead is more numerous than other sea turtle species, it is still listed as threatened and is still in danger of extinction. Like all the other species of turtle, this one too is at risk from the spill.

Turtle-O BINGO Definition Cards

key

Term: Green Sea Turtle

Definition: Greens grow to about 3-5 feet in length and can weigh about 300 pounds. They are called green sea turtles because their body fat is a bright rich green color.

How is this term related to sea turtles? How does it benefit or hurt sea turtles? While Greens are endangered around the world, they do nest in large numbers along Florida's coastline and spend time in the Gulf, putting them too at risk from the oil spill.