

## Unit 4: Coastal Reptiles

### Lesson Objectives:

- This chapter introduces students to sea turtles.
- Students will become familiar with the several different kinds of sea turtles, their nesting habits and conservation.
- Students will learn what they can do to help protect the sea turtle.

### Lesson I : Sea Turtles

Turtles are reptiles (cold-blood creatures) that have roamed the Earth for more than 185 million years. They were around during the times of their reptilian cousins, the dinosaurs. As the Earth's climate changed, so did turtles, finding ways to adapt and survive. Some turtles (called tortoises) live solely on

land, while some turtles



adapted to live in the water. We will focus on the sea turtles.

### Physiology



The turtle's most distinctive feature is its hard shell that encompasses its body and protects its organs. All turtles, even the sea turtles, have these bony shells, although some may be soft-shelled. The top part of the shell is called the **carapace** and has distinctive markings and patterns, according to different turtle species. This

pattern is determined by the arrangement of a layer of thin horn-like material made up of scales or plates called **scutes**. The carapace has a second layer of tightly joined bones underneath the scutes, forming the frame of the upper shell. The carapace attaches to the bottom shell, called a **plastron**.

All reptiles, including turtles, are cold-blooded. Since they have no internal temperature regulation to keep their

temperature constant, their the same temperature as whatever environment they are in.

A sea turtle's shell is a little different from the land turtles. It is streamlined, with a flatter carapace, to help it move through the water. Also, the shell tends to be a little lighter and more flexible, containing fewer bones, which also aids in swimming. The sea turtle also adapted its limbs into paddle-shaped flippers, rather than the clawed legs that the land dwellers of the species have. Unlike the land species which can completely withdraw into their shells when threatened, the sea turtles can only withdraw slightly into their shell. They tend to swim away from danger rather than hide in their shells, as the land turtles do.

Male sea turtles spend their entire lives in the sea, while the females leave the safety of the sea and come ashore only to lay their eggs. When they swim, sea turtles rely mainly on their front flippers, moving both of them forward at the same time. Although they also use their hind flippers to aid in swimming, they are also used as rudders to steer and as brakes. Sea turtles are

body's temperature adjusts to graceful and fast swimmers, some clocked up to 20 miles per hour. When the females come onshore to lay eggs, however, they are clumsy and slow, pulling themselves along with their front flippers. Rather than walking, they drag themselves along the ground, leaving huge tracks in the sand. They do not have the ability to back up; they must go in a circle if something impedes their path.

Sea turtles have excellent vision underwater, which not only helps them in their search for food, but also helps them spot predators at a distance. While on land, however, sea turtles are quite near-sighted. Their vision improves at night, when they can actually see better than humans. This is not



much of a

detriment, since the females only come out of the water to lay her eggs at night. Some people think that turtles cry. In reality, they have special glands near the tear ducts in their eyes to excrete the excess

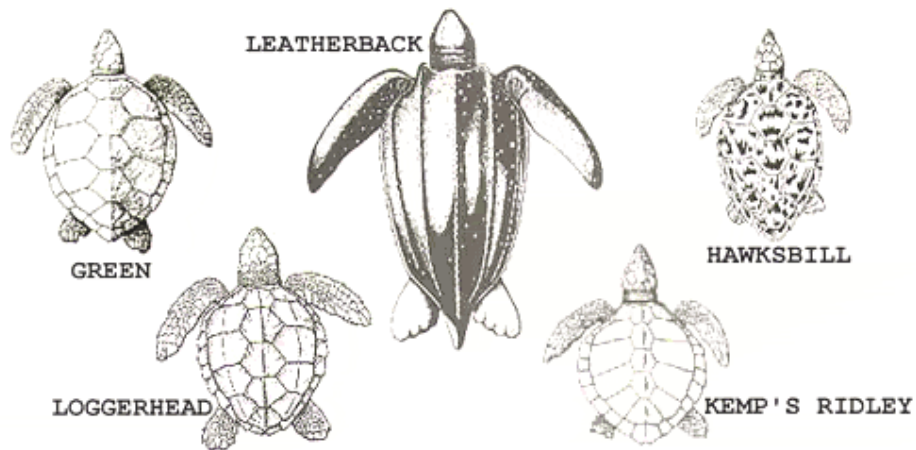
salt the turtle takes in from the sea.

The sea turtles are “earless” creatures that have no external ear structure. A layer of skin covers and protects their internal eardrums. Turtles hear lower frequencies best.

Sea turtles are air breathing creatures. Since they inhale large quantities of air at a time, they can go for long periods of

time without surfacing to breathe. Turtles drop to the bottom to sleep, and since they are under no stress, they can actually stay under water longer than if they are searching for food. They also utilize less oxygen in colder waters.

Sea turtles have no teeth; some species cut their food by using their sharp beaks while others use their powerful jaws to crush the food



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## Breeding and Nesting

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Sea turtles come close to the shore to mate, although they do not mate every year. The female will then come ashore several times during the spring and summer to lay her eggs. Often, they will return to the exact spot where they hatched, sometimes swimming thousands of miles to find the right beach. Scientists believe that a turtle has some identifying marks imprinted on her when she was hatched that cause her to return. Those marks might be low-frequency sound (such as surf noise), smell (turtles have wonderful senses of smell), magnetic fields or the currents. The location of the nest is critical to the species' survival and the development of the eggs. If the nest is too close to the water, the seawater will saturate the eggs and halt development, or the tide will wash them away. If it is too far up the beach, beach vegetation roots invade the nest. Also, animals such as raccoons and birds are more likely to find the nest and eat the eggs. Once she finds a spot, the female digs a large hole in the sand with her front flippers. She then lays

anywhere from 50 to 150 eggs, which look similar to ping-pong balls. Once she is done, she covers the hole with sand and drags herself back to the sea. It takes a lot of energy for her to drag herself ashore, dig her nest and lay her eggs, and she is usually exhausted by the time she is finished.

The sand acts as an insulator, keeping the eggs at a proper temperature to incubate. It takes about six weeks for the eggs to hatch. Once the baby turtles hatch, using its sharp beak to break the egg, they then must find their way back to the sea. They not only face the danger of being attacked by predators, but face a man-made hardship as well. The turtles are attracted to the bright lights of development on the beach, and tend to walk toward civilization rather than towards the light that reflects off the ocean. Only about ten percent of the hatchlings make it to the sea. Once in the water, the baby turtles face the danger of being eaten by crabs, sharks or large fish.

The sea turtle population has been thinned by its most dangerous predator -- humans. Sea turtles have been hunted not only for their tasty meat (considered a delicacy), but also for their shells. Sea turtles are all listed as endangered, and many nations forbid their capture and killing. Sea turtles in Florida are protected through Florida Statutes, Chapter 370, and by the United States Endangered Species Act of 1973. Of those species that nest on Florida's beaches, green and leatherback sea turtles are listed officially as

endangered and the Florida population of loggerhead sea turtles are considered threatened. Briefly, these laws state that: "*No person may take, harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or attempt to engage in any such conduct to marine turtles, turtle nests, and/or turtle eggs.*" Any person who knowingly violates any provision of the act may be assessed civil penalties up to \$25,000 or a criminal penalty up to \$50,000 and up to one-year imprisonment.

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## What to do if you see a Turtle

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If you observe an adult sea turtle or hatchling sea turtles on the beach, please adhere to the following rules and guidelines:

1. It is normal for sea turtles to be crawling on the beach on summer nights. DO NOT report normal crawling or nesting (digging or laying eggs) activity on the published SEA TURTLE HOTLINE unless the animal is in a dangerous situation (on a road, in a parking lot, etc.) or has wandered well of the beach.
2. Stay away from crawling or nesting sea turtles. Although the urge to observe closely will be great, please resist the urge. Nesting is a critical stage in the sea turtle's life cycle. Please leave them undisturbed.
3. DO REPORT all stranded (dead, injured, or apparently healthy) turtles to the SEA TURTLE HOTLINE. Report all turtles that have not moved for 30 minutes or longer.
4. Never handle hatchling sea turtles. If you observe hatchlings wandering away from the ocean or on the beach, call the SEA TURTLE HOTLINE immediately.

SEA TURTLE HOTLINE: To report a sea turtle sighting, stranding or death please call our hotline: 1-800-628-9944

Because sea turtles nest on land, jurisdiction over them is shared between NMFS and the U.S. Fish and Wildlife Service. For more information please contact:

### **Sea Turtle Coordinator**

U.S. Fish and Wildlife Service  
6620 Southpoint Drive South, Suite 310  
Jacksonville, FL 3216

### **Great web sites:**

<http://www.dnr.state.md.us/animals/turtles.html>

<http://www.nhgs.tec.va.us/ptoption/LEDA.HTML>

<http://seaturtleinc.com/sti.html>

<http://www.co.broward.fl.us/bri00600.htm>

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## Activity 1-1. Classroom Discussion Questions

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1. What steps can be taken to help the sea turtles' nesting? Discuss how to protect the eggs and the hatchlings' during their journey to the sea. Discuss what steps are being taken to protect the beaches that are known turtle nesting sites. Local beaches will block off areas where nesting has taken place. This is to protect them from being stepped on by humans. Beach communities turn off their beachfront lighting so not to confuse the turtles. The turtles are attracted to the bright lights of development on the beach, and tend to walk toward civilization rather than towards the light that reflects off the ocean.
2. Can sea turtles breathe under water? Sea turtles are air breathing creatures. Since they inhale large quantities of air at a time, they can go for long periods of time without surfacing to breathe. Turtles drop to the bottom to sleep, and since they are under no stress, they can actually stay under water longer than if they are searching for food. They also utilize less oxygen in colder waters.
3. What defenses does a sea turtle have against predators? Baby sea turtles have no defense. Once in the water, the baby turtles face the danger of being eaten by crabs, sharks or large fish. As they grow larger, adult sea turtles have a hard shell to protect them, and

## Activity 1-2. What you can do to help



4. As much as possible, refrain from walking on the beach at night during the summer months (April through August). No matter how quiet, humans will often, and unknowingly, frighten nesting sea turtles back into the sea.
5. Never keep sea turtles in aquariums. They may survive, but without the proper permits, this is a violation of the law.
6. Keep bright lights from shining onto the beach. If you have security or safety lights near the beach, build shades around the light so the beach is not directly illuminated. Hatchlings will be disoriented by bright lights.
7. If you see someone harassing a sea turtle or poaching a nest, call the local police or the Florida Marine patrol.
8. Do not dispose of plastic bags in the ocean. Plastic bags in the ocean very closely resemble a favorite food of sea turtles (jellyfish) and will cause death or illness to the turtle that eats them.
9. Stay clear of marked sea turtle nests on the beach.

**DISTURBING A SEA TURTLE NEST IS A VIOLATION OF STATE AND FEDERAL LAWS.**



# Student Information Sheet 1: Sea turtle species



There are many types of sea turtles:

**Loggerhead** (*Caretta caretta*),  
**Green** (*Chelonia*

*mydas*), **Leatherback** (*Dermochelys coriacea*), **Ridley** and **Hawksbill**, to name a few of the more common ones. Most of the sea turtles live in the world's warm waters of the world, because they are cold-blooded. Therefore, they tend to be found in the southern states along the Atlantic Ocean and the Gulf of Mexico, with many different species found along the coasts of Florida.

10. Kemp's Ridley
11. Hawksbill
12. Loggerhead
13. Green
14. Leatherback

The loggerhead turtle, named for its large head, is the most common turtle in Florida. They are large turtles, weighing 200

to 350 pounds. They have powerful jaws, which enable them to crush crabs and other crustaceans. The green turtle is named for the greenish color of its body fat. They weigh about 300 pounds. When they are young, they are carnivorous and eat jellyfish. As they mature, they feed on algae and sea grasses on the shallow flats. Leatherbacks are the largest sea turtles, weighing from 1,000 to 1,300 pounds. Their shell can grow to nine feet in length. The carapace is quite distinctive, having a smooth scaleless back with seven raised white ridges running down the length. Ridleys are the smallest sea turtles and have several variations. There's Kemp's Ridley (also known as the Atlantic Ridley) the most rare sea turtle; the Pacific Ridley and the Olive Ridley. Most adult Ridleys weigh less than 100 pounds. The carapace is round or heart-shaped. The hawksbill is also a small turtle, but the most agile.