Sea Turtle Lesson Plan for Middle School Students

**Introduction**

To begin the lesson, the instructor should allow time for the students to read the handout independently. The handout is attached on the second page. The teacher should give time at the end of the reading to allow for questions. The goal of this handout is to provide the students with some background knowledge on sea turtles’ diet, habitat, and importance to their ecosystem in the US Virgin Islands, and then explain why the turtles are endangered and what can be done to help them.

**Hands on Activity**

The following five activities are visual demonstrations to help reinforce the new knowledge for the students. The students should be encouraged to interact with the props.

Activity #1- Sea Turtle Skeleton

The first prop is a sea turtle skeleton that should be used to demonstrate the size of a full-grown sea turtle and show that their salt glands occupy a large part of the skull.

Activity #2- Plastic Bag Compared to a Model Jellyfish

The instructor should give the students the opportunity to compare the model jellyfish to the plastic bag in a basin of water. Explain to them how this could be problematic for sea turtles that mistake a plastic bag as a jellyfish.

Activity #3- Globe with Sea Turtle Locations

The next prop is a globe that shows where different species of sea turtle can be found throughout the world. On the globe, different colored pins should correspond with different species of sea turtles. It should also show how the sea turtles migrate using pins and string that show their trajectory through the open sea.

Activity #4- Model Sea Turtle Egg

The model sea turtle egg should be used to explain the process of a boil and the challenges facing hatchlings.

Activity #5- Flashlights

The instructor should turn off the lights and hold the two flashlights up. The first light should be a typical fluorescent bulb, while the second light should be an amber light bulb. The instructor should explain the way regular light confuses the hatchling’s instinct to follow the light of the moon’s reflection to the ocean, and why the amber light is a good alternative.

**Ending Class Discussion**

*What’s the most interesting thing you learned today about sea turtles?*

*What negative effects would the extinction of sea turtles have on our ecosystems?*

*Why is it essential that we protect sea turtles?*

*What things can we do to protect the sea turtles in the government?*

*What things can you do to protect the sea turtles?*

**Sea Turtles: Importance and Endangerment**

There are seven different species of sea turtles in the world, but only two of them are found on the US Virgin Islands: the Hawksbill Sea Turtle and the Green Sea Turtle. The Hawksbill Sea Turtle is a small to medium sized sea turtle that can weigh up to 200 pounds. The adults live in healthy coral reef communities, which allows them to feed primarily on certain types of ocean sponges. The Hawksbill received its name from its narrow head and sharp bird-like beak used for cracking into crevices of coral reefs while it looks for food. The Green Sea Turtle lives in warm coastal waters of the tropical and subtropical oceans. The pigment from their green diet colors their fat, which gives them their common name. Both species migrate long distances to feed and nest, but most of the time can be found in shallower waters due to the abundance of sea grass and algae to feed on.

Sea turtles are a keystone species because they are necessary for maintaining a healthy and balanced marine ecosystem, especially in sea grass beds where they “mow” the grass. Short, maintained sea grass beds are needed for use by other fish, particularly juveniles. Also, dune vegetation on beaches is able to grow and become stronger with the presence of nutrients from sea turtle eggs that do not hatch or survive. The Hawksbill sea turtle helps to maintain the population of sponges, which it feeds upon. Without these turtles, the marine ecosystem of coral reefs could become overpopulated with sea sponges, disrupting the balance of life.

Only 1 in 1,000 to 10,000 hatchlings will survive to adulthood and reproduce, so the odds are stacked against them from the beginning. There are many natural threats, such as predation, but it is the human threats that are driving them to extinction. Six of the seven sea turtle species are endangered or threatened, with two of those being critically endangered, the Hawksbill and the Kemp’s Ridley. There has been a drastic decline in sea turtle populations, which has warranted their labeling of endangered. Just one example is the decline of about 25,000 nesting female leatherbacks to about 2,300 in the span of 20 years in the entire world- a decrease of over 90%.

So what’s causing this population decline? First of all, commercial fishing is a major threat to sea turtles. They become entangled in the nets and traps, dragging them along the ocean floor so that they drown. Over 250,000 sea turtles in the US each year are harmed or die from fishing methods. Additionally, poaching poses a problem in a lot of Southeast Asian cultures, where their use in ceremonies and traditional practices in integral to the culture. Despite laws against all poaching of sea turtles, enforcement is less than ideal and trade across borders is difficult to monitor. Furthermore, there’s a lot of pollution in our oceans, including oil, run-off, metals, chemicals, and plastics. This can cause immediate harm when a turtle comes in contact with a chemical or becomes entangled in plastic, or long-term harm when pollution destroys their habitat. Turtles often mistake plastic bags for jellyfish and try to eat them, only to harm their digestive systems. Beach development also becomes a problem when construction causes beach erosion, beaches are polluted, and sand is brought in to replenish the beach, all of which hinder nesting for a female. Also, light pollution confuses sea turtle hatchlings. Hatchlings are driven towards the light of the moon on the ocean, but lights from houses confuse them and they go the wrong way. Finally, climate change in general poses threats to turtles. Sea level rise and storms cause erosion to beaches, hotter temperatures on land will affect incubation temperatures of nests, and hotter temperatures in the water will result in the loss of corals, a major habitat for turtles. Additionally, a change in ocean currents could affect a turtle’s ability to migrate, as they rely on the currents to travel and return to beaches to nest.

The Endangered Species Act was a law passed in 1973 to enforce rules to help protect threatened species from human activity and prevent extinction. All US sea turtles are protected under the ESA, and listed as endangered or threatened. It aims to protect sea turtles by reducing injury in commercial fishing through Turtle Excluder Devices (TED’s) and preserving nests. TED’s allow turtles that are caught by a fisherman’s net to escape through an opening in the net. A TED device is required of fishermen by US law and all importers to the US of seafood, but it is difficult to enforce. Many fishermen tie the hatch shut so that turtles cannot escape, maximizing their catch.

Some local ordinances have been put in place to help sea turtles. One is the use of amber lights instead of regular lights, because these lights are undetected by hatchlings and therefore do not confuse them. There are also many volunteer forces that work to monitor nests, taking data and protecting them from human interference. Many hatchlings and adult turtles are also tagged to track their movements and potentially rescue them. Many rehabilitation centers exist dedicated solely to treating injured turtles and raising weak hatchlings so that they can be released in the wild. Generally, sea turtle populations are decreasing, but in the US the revival of sea turtles in some regions is occurring. Both Florida and North Carolina have seen increases in sea turtle populations and nests each fall, indicating that some efforts to protect this species is paying off.