



You Make the Crawl

Created by the NC Aquarium at Fort Fisher Education Section

Essential Question:

How do scientists identify which sea turtle species has crawled up on a beach?

Lesson Overview:

Students will learn about the tracks sea turtle mothers leave on the beach by making models of these tracks in sand or clay. Students will then identify the tracks (crawls) made by other groups and discuss the threats to sea turtles on the beach.

Learning Objectives:

By the end of this lesson, students will be able to:

- Identify a sea turtle track
- Create different turtle tracks.

North Carolina Standards:

Kindergarten:

Art:

- **K.V.2** Apply creative and critical thinking skills to artistic expression.
 - **K.V.2.2** Use sensory exploration of the environment as a source of imagery.
- **K.V.3** Create art using a variety of tools, media, and processes, safely and appropriately.
 - **K.V.3.1** Use a variety of tools safely and appropriately to create art.
 - **K.V.3.2** Use a variety of media to create art.
- **K.CX.2** Understand the interdisciplinary connections and life applications of the visual arts.
 - **K.CX.2.2** Identify relationships between art and concepts from other disciplines, such as math, science, language arts, social studies, and other arts.
- **K.CR.1** Use critical analysis to generate responses to a variety of prompts.
 - **K.CR.1.1** Identify the lines, colors, and shapes in works of art.

Science:

- **K.P.1** Understand the positions and motions of objects and organisms observed in the environment.
 - **K.P.1.2** Give examples of different ways objects and organisms move (to include falling to the ground when dropped):
 - Straight
 - Zigzag
 - Round and round
 - Back and fourth
 - Fast and Slow



North Carolina Aquariums Education Section

- **K.L.1** Compare characteristics of animals that make them alike and different from other animals and nonliving things.
 - **K.L.1.1** Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.
 - **K.L.1.2** Compare characteristics of living and nonliving things in terms of their:
 - Structure
 - Growth
 - Changes
 - Movement
 - Basic needs

First Grade:

Art:

- **1.V.3** Create art using a variety of tools, media, and processes, safely and appropriately.
 - **1.V.3.1** Use a variety of tools safely and appropriately to create art.
 - **1.V.3.2** Execute control of a variety of media.
- **1.CX.1** Understand the global, historical, societal, and cultural contexts of the visual arts.
 - **1.CX.1.3** Classify art into categories, such as landscapes, cityscapes, seascapes, portraits, and still life.
- **1.CX.2** Understand the interdisciplinary connections and life applications of the visual arts.
 - **1.CX.2.2** Identify connections between art and concepts from other disciplines, such as math, science, language arts, social studies, and other arts.

Science:

- **1.L.1** Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.
 - **1.L.1.1** Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment.
 - **1.L.1.2** Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.

Second Grade:

Art:

- **2.V.1** Use the language of visual arts to communicate effectively.
 - **2.V.1.3** Understand the “story” in works of art.
- **2.V.2** Apply creative and critical thinking skills to artistic expression.
 - **2.V.2.2** Use personal point of view of the environment as a source of imagery.
 - **2.V.2.3** Create art from real and imaginary sources of inspiration.
- **2.V.3** Create art using a variety of tools, media, and processes, safely and appropriately.
 - **2.V.3.1** Use a variety of tools safely and appropriately to create art.



North Carolina Aquariums Education Section

- **2.CX.1** Understand the global, historical, societal, and cultural contexts of the visual arts.
 - **2.CX.1.5** Understand that artists use natural resources in creating art.
- **2.CX.2** Understand the interdisciplinary connections and life applications of the visual arts.
 - **2.CX.2.2** Understand relationships between art and concepts from other disciplines, such as math, science, language arts, social studies, and other arts.
 - **2.CX.2.3** Recognize that some artists work in teams to create art.
- **2.CR.1** Use critical analysis to generate responses to a variety of prompts.
 - **2.CR.1.1** Use art terminology to describe art in terms of subject and physical characteristics.

Science:

- **2.L.1** Understand animal life cycles.
 - **2.L.1.1** Summarize the life cycle of animals:
 - Birth
 - Developing into an adult
 - Reproducing
 - Aging and death

Fourth Grade:

Art:

- **4.V.2** Apply creative and critical thinking skills to artistic expression.
 - **4.V.2.2** Use ideas and imagery from North Carolina as sources for creating art.
- **4.CX.2** Understand the interdisciplinary connections and life applications of the visual arts.
 - **4.CX.2.2** Apply skills and concepts learned in other disciplines, such as math, science, language arts, social studies, and other arts, in the visual arts.
- **4.CR.1** Use critical analysis to generate responses to a variety of prompts.
 - **4.CR.1.1** Use visual clues to interpret the content of art.

Science:

- **4.L.1** Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.
 - **4.L.1.2** Explain how animals meet their needs by using behaviors in response to information received from the environment.

Time Frame:

Preparation: 20 minutes

Activity: 45 minutes

Clean up: 10 minutes



Supplemental Background Information for Teachers:

A sea turtle's life begins on the beach. Sea turtles nest, or lay eggs, throughout the summer. Nesting season usually lasts from May to September, reaching peak activity in late June and July. The female loggerhead comes ashore at night and drags her body far up the beach above the high tide line. Here she digs a hole about 18" deep with her rear flippers and begins laying her eggs. The nesting process is a complex and vulnerable time for a mother sea turtle. She carefully selects a nest site and may sometimes be frightened away by bright lights and beach activity. Predators such as foxes, raccoons, and ghost crabs abound on the beach and may devour her eggs even as they are deposited into the nest.

On average, 120 golf ball-sized, tough, leathery eggs are laid in the nest. The turtle covers her eggs completely with sand and returns to the sea. The average female may nest three to five times during the summer months at roughly two-week intervals. Since most nesting occurs at night, scientists rely on using trails and tracks to identify where a nest has been laid and by what species. A track is an impression of a single flipper. Long lines of tracks showing an animal's movement and behavior are called trails. Scientists measure the width of a sea turtle's track, called the straddle, as well as note the crawl pattern of each species to tell what kind of turtle laid a nest.

Unfortunately, sea turtles are threatened by people and their activities in coastal areas. What were once long stretches of open beach where turtles could nest are now developed areas. Bright lights discourage females from coming ashore at night, and confuse young turtles after they leave the nest. Debris and other ocean pollution also create life-threatening problems for these ancient reptiles. Although sea turtles have always fascinated people, we still know little about their migrations, nesting habits, and life spans.

If you see a sea turtle nesting or hatching:

- Enjoy this event from a distance. Many turtles scare easily and may stop the nesting process and return to the sea, which will stop the development of the eggs.
- Take note of the location and report it to the local police department. They will contact the area's sea turtle coordinator.
- Please do not take flash photos of her! Scientists use infrared cameras to get photos so they do not disrupt her night vision.
- Do not put your hands on or near the turtle. Any distractions may frighten and disorient her, causing her to return to the ocean before completely covering and camouflaging her nest.
- Also please refrain from giving out the location of a nesting turtle to anyone other than the authorities.
- If you see a nest hatching, leave them alone. You can report it to the local police department. They will contact the area's sea turtle coordinator to assist in the hatching.



Materials:

- Crawl identification sheet
- Flat container/tub
- Sand
- Dowel rods or other implements for drawing in sand
- Data sheet

Preparation:

Print the crawl identification sheets for each group.

Pour sand into a tub for each group.

Print one data sheet per group.

Activity:

1. Begin by reviewing the sea turtle life cycle as a class (See our lesson “Sea Turtle Timeline”).
2. Next, review the three species of sea turtles that commonly nest in North Carolina: loggerhead, green, and leatherback.
3. Divide students into groups. Assign each group one of the species of sea turtles that nest in North Carolina.
4. Using the “Crawl Identification,” have each group discuss the pattern created by their turtle.
5. Have the students create a crawl at least 12-16 inches long in a tub full of sand. This will be a miniature version of the actual crawl. Have the students calculate the size they must make their crawl so that 4 inches = 1 foot.
6. Once each group has finished, have them trade places. Have them measure the width and identify each crawl.
7. The students should write the identification of each nest on their data sheet. They should include the identifying characteristics they used to determine the species of turtle that made the crawl.
8. When the groups are back to their own crawl, have them share the identity of their turtle and discuss their crawls.

Discussion:

1. What predators do sea turtles have to watch for as they come up to nest? What about when they hatch?
2. What human impacts may be a problem for sea turtles during nesting and hatching? Discuss issues such as beach chairs, tents, sand castles, and holes on the beach.
3. What can we do to increase their survival rate in each stage of their life cycle?



Summary:

Sea turtles must come on land to nest. When they do, they are faced with a variety of issues such as predators and human impacts. Many groups have taken action to reduce the stress on female turtles as they are nesting. It is very important that we help take care of our sea turtles.

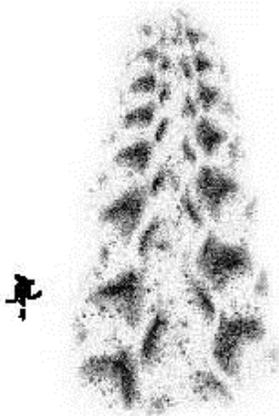
Extensions:

1. Instead of using sand, you can use clay or other material to make the tracks permanent. You could also make molds by pouring plaster onto the tracks once the students are done.
2. Research the crawls created by the other species of sea turtles. How do they differ from the three that nest in North Carolina? Repeat the activity and include all 7 species of sea turtle.
3. Visit the Florida Fish and Wildlife Conservation Commission's Crawl Identification Guide: http://myfwc.com/media/201274/CRAWL_Identification_Guidelines.pdf. Review the information on false crawls. What information from their environment might cause a turtle false crawl?
4. Research groups, such as the Pleasure Island Sea Turtle Project, help monitor nests. What do they do to help protect turtles? How can you get involved?

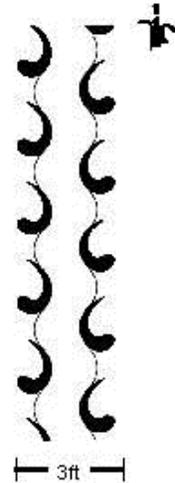


Crawl Identification- Student Sheet

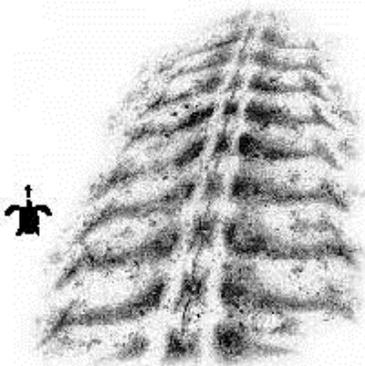
LOGGERHEAD



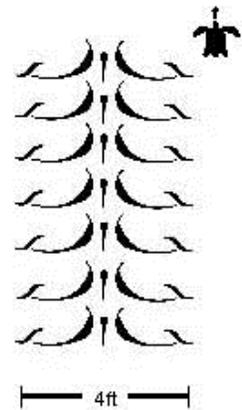
- A. Alternating comma-shaped flipper marks
- B. Wavy and smoothed track center with no thin, straight, and well-defined tail-drag mark
- C. No regular marking from front flippers at the margins of the track



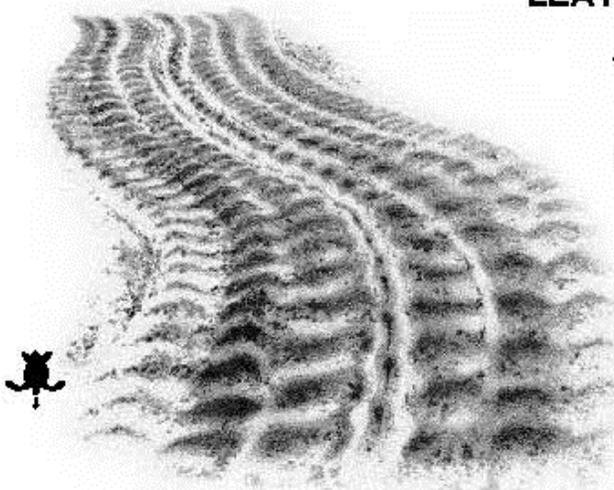
GREENTURTLE TRACK



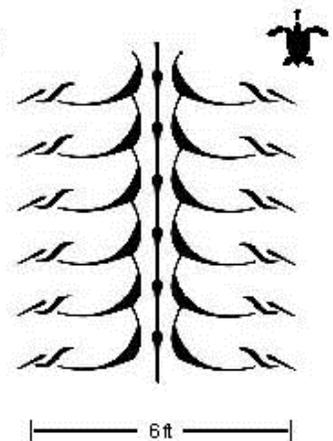
- A. Parallel flipper marks as from a "butterfly-stroke" crawling pattern
- B. Ridged track center with a thin, straight, and well-defined tail-drag mark that is punctuated by tail-point marks
- C. Regular marking from front flippers at the margins of the track



LEATHERBACK



- A. Parallel flipper marks as from a "butterfly-stroke" crawling pattern
- B. Ridged track center with a thin, straight, and well-defined tail-drag mark that is punctuated by tail-point marks
- C. Extensive marking from front flippers at the margins of the track And extending the total track width to 6 - 7 feet



Reprinted with permission from the Florida Department of Environmental Protection
For the complete guide visit: http://myfwc.com/media/201274/CRAWL_Identification_Guidelines.pdf



Nesting Data Sheet

	Species	Identifying Characteristics
Our Nest		
Group 1		
Group 2		
Group 3		
Group 4		
Group 5		

Nesting Data Sheet

	Species	Identifying Characteristics
Our Nest		
Group 1		
Group 2		
Group 3		
Group 4		
Group 5		