Cetaceans 4 Grade Curriculum—Lesson 12: Identifying Individual North Atlantic Right Whales[1]

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Description

Students will learn about the New England Aquarium's right whale database and try to match photographs of individual right whales.

Objectives

By the conclusion of the activity, students will:

- Be able to explain how scientists use photographs to identify individual North Atlantic right whales
- Be able to describe different types of callosity patterns
- Be able to draw callosity patterns on a data sheet and use their drawing to identify a specific whale in the North Atlantic right whale catalog

What You Will Need

- Ability to project PowerPoint presentation
- Lesson 12: Identifying Individual Right Whales PowerPoint (this can be downloaded from https://www.flseagrant.org/education/cetaceans/)
- Downloaded *Right Whale Matching Game* PowerPoint (this can be downloaded from https://www.flseagrant.org/education/cetaceans/)
- Copies of *Right Whale Identification Data Sheet* (pages 12-4 and 12-5)—one per student
- Internet access (optional)
- Laptops or other wireless devices (optional)

Standards

Florida Sunshine State Standards

Science

- **SC.4.N.1.6** Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.

Procedure

Use the script below in conjunction with the PowerPoint presentation to teach students about identifying individual North Atlantic right whales. This presentation contains background information on the New England Aquarium, North Atlantic right whale catalog and database, and right whale identifying methods.

Teacher Script

Slide 1: Today we are going to learn more about how scientists identify individual North Atlantic right whales.

Slide 2: As you may recall from earlier lessons, researchers use small airplanes to spot and photograph right whales. They may also take photographs from land using cameras with powerful zoom lenses.

Slide 3: The photographs are sent to the New England Aquarium, where they are added to the North Atlantic right whale catalog. This collection of photographs is viewable online at the New England Aquarium's website [http://rwcatalog.neaq.org/Terms.aspx].

Slide 4: Scientists study the photographs carefully and try to figure out if the whale in the picture is one that they already have in the catalog, or if it is a "new" whale (one that has not previously been reported). If it is a new whale, they will assign it a number and add it to the catalog. This helps scientists and managers keep track of the number of right whales remaining.

Slide 5: Sometimes, scars and color patterns can be used to identify individual right whales. However, most right whales are identified by the callosity pattern, which is as individual as our fingerprints.

Slide 6: Callosities are places where the skin on the head is thickened and rough. Each pattern is unique to only one whale. The skin itself is dark, but small, white, shrimp-like animals called cyamids or whale lice move into these areas. The cyamids make the callosities look white and allow right whales to be identified from their photographs.

Slide 7: There are several different locations on the whale where callosities can be found. They are mostly on the head. Scientists look for callosities that form different patterns on different whales, allowing identification of individuals. The "bonnet" describes callosities located on the top of the rostrum, or front part of the head, the chin, and the lips. The "coaming" refers to callosities located on the area right in front of the blowhole, the area just behind the blowhole, and the area over the eye.

Slide 8: Here we can see each of the different callosity types. Remember that the shapes and sizes of the callosities will vary from whale to whale. Also, not every whale has all of the different types of callosities.

Slide 9: The bonnet and coaming are sometimes joined together. Sometimes they are separate. When they are joined together, the pattern is called continuous. When they are separate, they form a broken callosity pattern. Which of these two whales has a continuous callosity pattern? [Answer: the one on the right. Note that the whale on the left looks a little different because it is swimming with its mouth open—probably feeding!]

Slide 10: Whales that have continuous callosities on the head may have "peninsulas" within the callosities—these are small, round callosities that look like bulges in the callosities. Whales with a broken callosity pattern often have these round callosities as well, but we call them islands because they are not attached to a larger callosity. [*Point out the peninsulas and islands on the whales in the two pictures.*]

Slide 11: Sometimes whales have scars. These scars look white. Scars usually come from ship strikes or from entanglement in rope or other fishing gear. Researchers can sometimes use scars to help identify right whales. The scars on the whale in this picture were made by the propeller of a boat. [*Point out the parallel white lines on the whale on the left side of the photo.*]

Slide 12: Some right whales have unique color patterns that help scientists identify them. This whale has a mostly white belly. Some right whales have bellies that are completely black. If scientists can get a good look at the belly, they can sometimes use the pattern there to help identify the whale.

Slide 13: Researchers take the photographs of each right whale and draw the outline of all callosities and scars seen on that whale on a data sheet. This data sheet becomes part of the right whale catalog and will be used to identify the individual whales from future photographs. Researchers need to find and record all of the identifying marks. Sometimes a photograph will only show a small part of the whale's body, so creating a complete picture can be challenging.

Slide 14: I am going to show you some pictures of a whale called Pediddle. She is one of the hundreds of North Atlantic right whales that have been identified by scientists.

Slide 15: Remembering what we have just learned about callosities, let's try to identify the different types of callosities that we see on Pediddle. [*As you click on the slide, the six different types of callosities will be highlighted—read the name of each one in turn.*]

Slide 16: Here we see all of the different callosities circled.

Slide 17: Now it's your turn. On your right whale identification data sheet, try to draw all of the callosities and any scars that you might see in this photograph. Some of the white marks that we see where the water touches the whale's back are actually glare from the sunlight reflecting off the water. Sometimes the whale's skin will be shedding, leaving gray marks on the animal that will turn black later. It is helpful to have several photos of the same whale to make sure that all of the scars and callosities are correctly recorded. [*Give the students several minutes to draw their sketches.*]

Slide 18: Compare your drawing to the one that the researchers have in the catalog. How did you do? What marks did you get right? Which ones were you missing?

Activity: Right Whale Identification/Matching Game

1. It might be helpful for students to have blank copies of the right whale identification sheet (page 4) to use to sketch the whales' callosities and scar patterns during this activity.
2. Download the *Lesson 12: Right Whale Matching Game* PowerPoint presentation and show it to the students. Encourage students to use additional right whale ID data sheets to sketch each of the whales when trying to guess the identity of the "unknown" whale. This version of the game is based on an online game that used to be on the New England Aquarium's website. All photos used in the game are used with permission of the photographers (see the last slide in the PowerPoint for more information).

- Read the instructions on the first few slides.
- Correct answers are: easy round: 1152; second round: 1950; and third round: 1701.

Right Whale Identification Data Sheet

Instructions:

Look at the photographs of your whale (write the number above) and try to draw the callosities and scars that you

can see in the pictures. This will help you identify your whale.

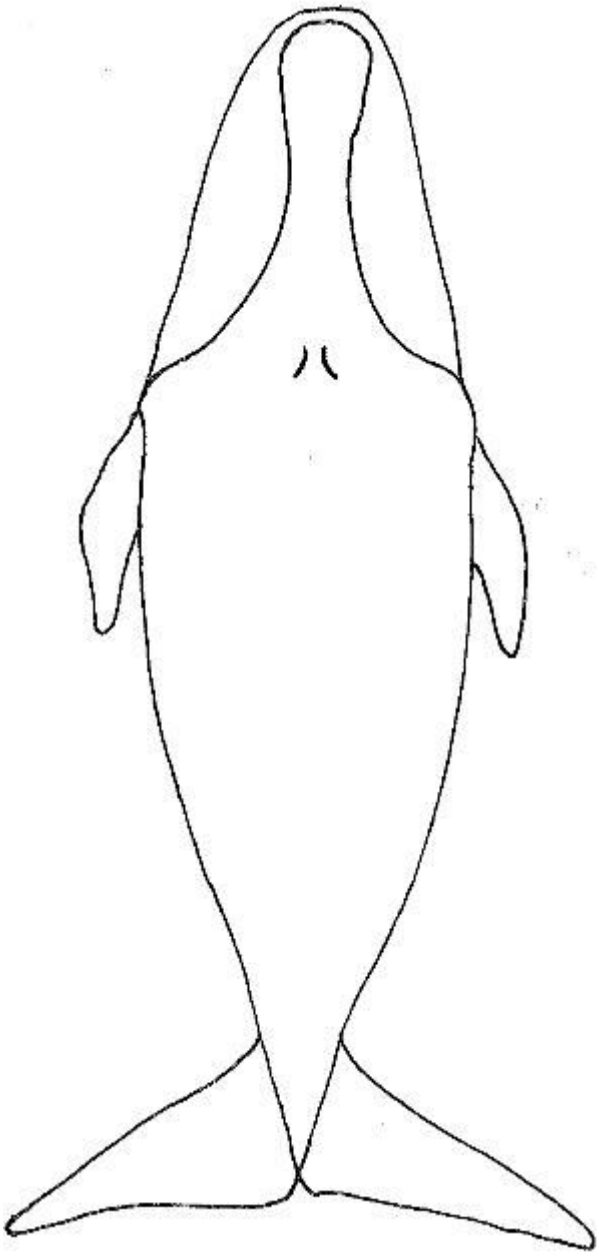


Figure 1. This is a view of the top of the whale's head. This is what you would see if you were looking down at the whale from an airplane or a boat.

Left Side View

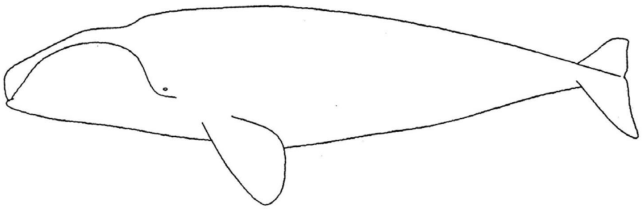


Figure 2. If you have a view of the left side of your whale's head, try to draw the callosities and scars on this diagram.

Right Side View

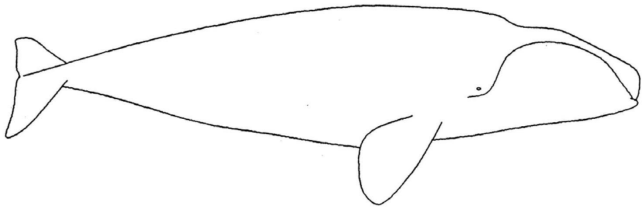


Figure 3. If you have a view of the right side of your whale's head, try to draw the callosities and scars on this diagram.

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