

Cetaceans 4th Grade Curriculum

Lesson 13: North Atlantic Right Whale Migration¹

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Description

Students will learn about the migration path of North Atlantic right whales and the ways researchers are studying the movement of these whales.

What You Will Need

- Ability to project PowerPoint presentation
- Copy of PowerPoint presentation, *Right Whale Migration*
- Internet access
- *North Atlantic Right Whale Migration Worksheet* (page 13-5; one per student)
- Optional: Copies of *Incredible Journey* worksheet for each student (*Whales: Activities Based on Research from the Center for Coastal Studies*, page 38)
- PowerPoint and book can be downloaded from <https://www.flseagrant.org/cetaceans/>

Standards

Florida Sunshine State Standards SCIENCE

- **SC.4.E.6.5** Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.
- **SC.4.P.12.2** Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds.

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Procedure

1. Use the script below in conjunction with the PowerPoint presentation to teach students about North Atlantic right whale migration.

Slide 1. Today we are going to learn about North Atlantic right whale migration.

Slide 2. What does “migration” mean? Many animals spend part of the year in one location, but then move to another place for part of the year—often to look for food, or to breed. This movement is called migration. Can anyone name an animal that migrates? *[Answers include many insects, especially monarch butterflies, many birds, fish, and whales.]* Why do you think right whales migrate? *[Write the students’ suggestions on the board. If students don’t have any ideas, prompt them to think about what whales might need in order to survive, and how that might affect where the whales go. Ideas could be to follow food, to look for warmer or colder water, to look for mates, etc. Some students might know that right whales come to the Georgia/Florida area in the winter to have their babies.]*

Slide 3. This map shows the western Atlantic Ocean and the East Coast of North America. *[You may want to point out your location on the map.]* In the spring—late February through April—most of the North Atlantic right whales can be found off the coast of New England, especially in the area of Cape Cod Bay, Massachusetts. *[As you mention each one, indicate the areas on the map.]* By May, most of the whales gather in an area just southeast of Cape Cod, where there are large patches of copepods, the plankton that right whales like to eat. In summer and early fall, many of the right whales move into the Bay of Fundy or swim to waters off Nova Scotia where they feed. In the winter, pregnant female whales, accompanied by some juvenile whales and a few other adult whales, migrate about 1,400 miles south to the warmer waters off Georgia and northern Florida. The females give birth to their babies, called calves. Most are born between December and March. The whales do not feed much in this region because there is not a lot of plankton there for them to eat.

Slide 4. Why do you think the pregnant whales come to Florida to have their calves? *[As a hint, ask them what is different about Florida compared to Massachusetts in the winter. The water is warmer; baby whales may be less stressed if they are born in warmer water. In the warmer water, however, there is less food for the moms. The mothers need to feed really well before they head south because they will be nursing their calves for a couple of months without much to eat. Studies have shown that pregnant female right whales have thicker blubber than non-pregnant whales. The thicker blubber apparently provides the nutrients and energy needed for milk production.]*

Slide 5. Scientists still have a lot to learn about right whale migration. Where the rest of the adult whales go in the winter is a bit of a mystery, but they probably go where there is a lot of food. Recently, researchers discovered that some of the whales may stay in the Gulf of Maine through the winter. There may also be another calving area elsewhere. It is difficult to learn where the other whales are due to the size of the ocean. Additionally, whales can only be spotted from the air when they are near the surface of the water, so it would not be realistic to try to make survey flights covering the entire North Atlantic Ocean year-round. Scientists believe that right whales mate in the winter, as their pregnancies are thought to last for about 13 months. Presumably some of the whales go to mating areas in the winter, but we do not know where those are! Believe it or not, scientists are using whale poop to try to find whale mating areas. They can measure compounds called hormones in the poop samples and tell if the whale is a male or female, and if it is a female that is ready to become pregnant. How do they find the whale poop? By using specially trained dogs that can smell the poop and show the scientists where to look!

Slide 6. By late March, the whales that traveled to southern waters are migrating back north to the feeding grounds near Cape Cod.

Slide 7. We know quite a bit about the whales that come to the southeastern US coast because various agencies and groups make surveys to locate and identify the individual whales. Here you can see a few of the different types of airplanes used to look for whales.

Slide 8. Scientists in the airplanes and onshore observers use binoculars to locate right whales, then try to get good photographs of the whales so the animals can be identified. *[If Lesson 12 from this curriculum has not been taught, you may want to include information about the way right whales are identified.]*

Slide 9. Scientists are using technology to try to learn more about right whale migrations. Satellite tags are attached to the back of a whale using suction cups. When the whale comes to the surface to breathe, and the tag sticks out of the water, it sends a signal into space where the signal is picked up by a satellite. The satellite can tell where the signal came from, and transmit that information to a computer on Earth. This allows scientists to plot the whale's location on a map. The suction cups usually stay stuck on the whales for a few days. *[Click on the video link to show a 3 minute, 40 second video of scientists tagging humpback whales.]*

Slide 10. As an example of satellite tracking, here is a map that shows the path of a right whale that was tracked off the coast of Florida for about a week in January of 2011. The whale had been tangled up in rope. Scientists were able to remove the rope, but they had to use sedatives on the whale. Sedatives are medicines that make the whale calm so it doesn't swim away from the people who are trying to help it. The researchers attached a small satellite tag to the whale's skin so they could monitor the whale and make sure it didn't have any side effects from the sedatives.

Slide 11. Acoustic buoys—basically underwater microphones that record noises in the ocean—have been used in areas around Cape Cod to study whale movement. The devices record whale calls along with the date and time that the whale made the sounds. The data can be collected and analyzed by scientists to help them learn how the whales are moving around. The yellow, ball-like device in the middle of this picture is an acoustic buoy. The researchers are getting ready to set it in place on the seafloor.

Slide 12. So what is it that the researchers are listening for? On this website *[Click on the link to navigate to the site]*, we can hear some of the different types of calls that right whales make. *[One at a time, click on the buttons to hear the different types of calls. Make sure that your volume is turned all the way up.]*

Slide 13. Let's review what we know about North Atlantic right whale migration.

- Where are most of the North Atlantic right whales found in the spring, summer, and fall? *[In waters from Cape Cod, MA to Nova Scotia, Canada—the yellow area on the map.]*
 - Why are they here? *[There is a lot of plankton here for the whales to eat.]*
 - Where do pregnant female North Atlantic right whales migrate in the winter? *[To waters off southern Georgia and northeastern Florida—shown in orange.]*
 - Why? *[To have their calves. The warmer water is less stressful for the calf.]*
 - How long do the moms and calves stay in the warm water off Georgia and Florida? *[They are there from December through March or early April.]*
 - Where do the other whales go in the winter? *[Some juvenile whales and adult females also spend part of the winter in the warmer southern waters. We still do not know where all of the other right whales go in the winter, but new research suggests that some of them may stay in their spring and summer feeding area year-round.]*
 - How do scientists study the migration of whales? *[Satellite tagging, observers in airplanes or on shore, underwater microphones.]*
2. Give students copies of the right whale migration worksheet to complete. You may want to leave the last slide up while students complete the worksheet.
 3. Optional activity: *Whale Migration* activity/*Incredible Journey* worksheet from Scholastic's *Whales: Activities Based on Research from the Center for Coastal Studies* (pages 37 to 38).

Additional Resources for Teachers

About where North Atlantic right whales are in the winter:

<http://www.ens-newswire.com/ens/dec2008/2008-12-31-094.html>

http://www.boston.com/news/science/articles/2011/02/07/some_rare_right_whales_prefer_maine_in_winter/

About acoustic buoys:

www.nefsc.noaa.gov/press_release/2006/nr0601.htm

<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/19961/MellingerEtAl-RightWhalesRediscovered.pdf?sequence=4>

<http://onlinelibrary.wiley.com/doi/10.1111/j.1748-7692.2010.00376.x/abstract?systemMessage=Wiley+Online+Library+will+be+disrupted+17+March+from+10-14+GMT+%2806-10+EDT%29+for+essential+maintenance&userIsAuthenticated=false&deniedAccessCustomisedMessage=>

North Atlantic Right Whale Migration Worksheet

Read the paragraph and answer the questions below.

Right whale #1408 was spotted on December 10, 2007 off the coast of Georgia. The same whale was observed several times in January and February of 2008 off the coast of northern Florida and Georgia. It was spotted near Georgia on March 1, 2008, then was next seen in May in the Great South Channel (southeast of Cape Cod, Massachusetts).

1. Do you think whale #1408 is a male or a female? What evidence in the paragraph supports your guess?

2. Whale #1611 was spotted in Florida on March 2 and in the Gulf of Maine on April 30. The whale swam about 1,400 miles.

- a. How many days did the whale take to swim 1,400 miles? _____

- b. How many weeks is this? (your answer to part a divided by 7)

- c. Assuming the whale swam without stopping, how many miles did it swim every week? (1,400 divided by your answer to part b)

- d. How many miles did the whale swim each day? (answer to part c divided by 7)

ANSWER KEY

North Atlantic Right Whale Migration Worksheet

Read the paragraph and answer the questions below.

Right whale #1408 was spotted on December 10, 2007 off the coast of Georgia. The same whale was observed several times in January and February of 2008 off the coast of northern Florida and Georgia. It was spotted near Georgia on March 1, 2008, then was next seen in May in the Great South Channel (southeast of Cape Cod, Massachusetts).

1. Do you think whale #1408 is a male or a female? What evidence in the paragraph supports your guess?

Female—she spent January to March off Florida and Georgia where she probably had a calf.

2. Whale #1611 was spotted in Florida on March 2 and in the Gulf of Maine on April 30. The whale swam about 1,400 miles.

a. How many days did the whale take to swim 1,400 miles? **59 days**

b. How many weeks is this? (your answer to part a divided by 7)

$59 \div 7 = 8$ (remainder 3)

Approximately 8 weeks

c. Assuming the whale swam without stopping, how many miles did it swim every week? (1,400 divided by your answer to part b)

$1,400 \div 8 =$ approximately 175 miles per week

d. How many miles did the whale swim each day? (answer to part c divided by 7)

$175 \div 7 =$ approximately 25 miles per day