UF IFAS Extension UNIVERSITY of FLORIDA

VM206

Third Grade Manatee Curriculum—Lesson 3: Manatee Adaptations[1]

Alexis Morris, Maia McGuire, and Ruth Francis-Floyd[2]

Description

Students will learn about what an adaptation means and how manatees are adapted to their aquatic environment.

Objective

By the end of the activity, students will be able to list at least five manatee adaptations.

Standards Addressed

Florida—SC.3.N.1.1

Vocabulary

adaptation, habitat, carnivore, herbivore, omnivore

You Will Need

- The ability to show a PowerPoint presentation (LCD projector or smartboard)
- The "Lesson 3: Manatee Adaptations" PowerPoint presentation (available at http://edis.ifas.ufl.edu/media/vm206/presentation3.pptx).

Strategy

1. Divide students into groups of 3–4 students.

2. Use the "Manatee Adaptations" PowerPoint presentation to get students thinking about adaptations. Each PowerPoint slide has a question. Have the groups discuss each question for 1–2 minutes, then use the teacher's guide below to direct the class discussion and provide answers to the questions.

1. This document is VM206, one of a series of the Veterinary Medicine—Large Animal Clinical Sciences Department, UF/IFAS Extension. Original publication date July 2015. For more lessons in the *Third Grade Manatee Curriculum* series, go to http://edis.ifas.ufl.edu/topic_series_third_grade_manatee_workbook. Visit the EDIS website at http://edis.ifas.ufl.edu.

2. Alexis Morris, veterinary technician, Greensboro, NC; Maia McGuire, Florida Sea Grant agent, UF/IFAS Extension St. Johns and Flagler Counties, Bunnell, FL; and Ruth Francis-Floyd, professor and UF/IFAS Extension veterinarian, College of Veterinary Medicine and School of Forest Resources and Conservation; UF/IFAS Extension, Gainesville, FL 32611.

The authors would like to thank the Florida Fish and Wildlife Conservation Commission for their financial support of this project.

Manatee Adaptation Lesson—Teacher's Guide to PowerPoint Slides

Slide 1—Title slide

Slide 2—What is adaptation?

STUDENTS

- Have the students explain what they think an adaptation means.

TEACHER

- The biological definition is a trait or characteristic that improves an organism's ability to survive and reproduce in its environment.
- Example: Animals' teeth are different depending on their diet. Lions and sharks, which are carnivores, have razor sharp teeth good for tearing meat, but cows, which are herbivores, have teeth that are good for grinding plant material. Humans are omnivores, so they eat both plants and animals; thus, they have both sharp teeth and grinding molars.

Slide 3—Do manatees breathe underwater?

STUDENTS

- Have the students discuss whether manatees breathe underwater like a fish or hold their breath like a person.
- When they determine that manatees hold their breath, have them guess how long they can hold their breath.

TEACHER

- Manatees breathe air just like humans, so they hold their breath. Their special adaptation is that they can close their nostrils so that water does not get into their lungs, just like we hold our nose when we dive underwater. On the slide, one picture shows the manatee's nostrils open, and the other shows them closed. When manatees surface to breathe, only their nose has to come out of the water so that they can open their nostrils and take another breath.
- Manatees can hold their breath for up to 20 minutes, while the average person can only hold their breath for 30–45 seconds.

Slide 4—What is the purpose of a manatee's whiskers?

STUDENTS

- Have the students explain what five senses a person has.
- Have the students discuss what they think manatee whiskers are used for.

TEACHER

- Manatees use their whiskers as a sensory organ, much like a cat does. They can feel things (sense of touch) with their whiskers. The whiskers are actually more sensitive than the tips of our fingers.

Slide 5—How do manatees swim?

STUDENTS

- Have the students explain what body part of the manatee is shown in the slide.
- Have the students discuss how they think the manatee swims through the water.

TEACHER

- The manatee moves through the water by moving its tail up and down.
- On average, manatees swim at about 3 to 5 mph. This is about the same speed that people can walk. However, they have been known to swim at almost 20 mph in short bursts.

Slide 6—A manatee in motion

TEACHER

- Play the movie showing how a manatee swims through the water. Explain to the students that this manatee is swimming quite fast! Encourage them to watch the tail pumping up and down. Point out that because the tail is wide, it generates a lot of power. Compare the speed of a person swimming with bare feet to that of a person swimming with swim fins or flippers. Who can swim faster?

Slide 7—What is the purpose of a manatee's flippers?

STUDENTS

- Have the students explain how manatees use their front flippers.

TEACHER

- Manatee front flippers help manatees steer and change direction when they are swimming. Point out that the students probably noticed this in the movie clip.
- Point out the manatees' toenails, which are similar to those on elephants' feet.
- Manatees can use their flippers (and toenails) to help them collect the plants that they like to eat, and to get the plants into their mouths.

Slide 8—What does a manatee use its lips for?

STUDENTS

- A manatee's snout looks like an elephant trunk. Have the students discuss what they think are the possible reasons for the similarity.

TEACHER

- Their snouts enable them to collect food easily. Manatees can eat plants that are underwater or floating on the surface. Their lips are muscular and can grab plants and move the plants into the manatee's mouth.

Slide 9—Do baby manatees use their lips to get food?

STUDENTS

- Have the students discuss what a mother manatee provides for her calf.

TEACHER

- A manatee calf nurses from under the mother's flipper, so even baby manatees use their lips to help them get food—in this case, to get milk from the mother manatee.

Slide 10—What kind of teeth do manatees have?

STUDENTS

- Have the students discuss which of their teeth most resemble a manatee's teeth.

TEACHER

- Humans have different types of teeth, because we eat many different types of food (we are omnivores—we eat both meat and plants). Our incisors are used to cut food. Our canine teeth (cuspids) are used for tearing food. The bicuspids behind the canines are used for crushing food. Our molars are used for grinding food.
- Since manatees are herbivores (they only eat plants), they only have molars, which they use to grind up the plants before they swallow them.
- Unlike us, manatees grow new teeth in the back of their mouths all the time. As their older teeth get worn down from chewing those tough and sometimes sandy plants, they fall out. The rest of the teeth move forward in the jaw, and new teeth start to form in the back. We say that manatees have "marching molars." Manatees never have to worry about running out of teeth!

Slide 11—How many manatee adaptations can you list?

- See how many groups of students can list all six adaptations mentioned in the presentation. How does a manatee use its nose, whiskers, lips, flippers, and tail? How are its teeth special?