

Whales on the Move

Grade Level: 5th-8th Grade

Rationale or Purpose: Students will be able to:

- Use research methods in order to find why whales migrate
- Describe their whale's characteristics
- Describe their whale's migratory routes and why migration is important to whales
- Plot points on a map

Materials needed:

- 1 World Map
- 7 different colors of tacks
- 7 different colors of yarn
- Assessment sheet that contains questions students that must research (attached)
- Internet access
 - Information about whales can be found at www.acsonline.org/factpack/index.html
 - For humpback whales, see www.learner.org/jnorth/spring2000/species/hwhale/Update032900.html

Additional Information: Some whales with easy or known migratory routes are:

1. Beluga Whale
2. Bryde's Whale
3. Gray Whale
4. Killer Whale/Orca
5. Pygmy Right Whale
6. North Atlantic Right Whale
7. North Atlantic Humpback Whale

Lesson Duration: 55 minutes

Source of Lesson: *Hot Science – Cool Talks* CD-ROM # 45: “The History and Future of Whales”; American Cetacean Society; Learner.org

TEKS Objectives:

5th Grade Science

(3D) evaluate the impact of research on scientific thought, society, and the environment; (6A) identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles;

(9A) compare the adaptive characteristics of species that improve their ability to survive and reproduce in an ecosystem;

6th Grade Science

(3D) evaluate the impact of research on scientific thought, society, and the environment;

7th Grade Science

(3D) evaluate the impact of research on scientific thought, society, and the environment;
(12C) describe how different environments support different varieties of organisms; (12D) observe and describe the role of ecological succession in ecosystems.

8th Grade Science

(3D) evaluate the impact of research on scientific thought, society, and the environment;
(12B) relate the role of oceans to climatic changes;
(14B) analyze how natural or human events may have contributed to the extinction of some species;

5th Grade Social Studies

(26C) express ideas orally based on research and experiences;
(26D) create written and visual material such as journal entries, reports, graphic organizers, outlines, and bibliographies;
(27B) use a decision-making process to identify a situation that requires a decision, gather information, identify options, predict consequences, and take action to implement a decision.

6th Grade Social Studies

(7B) identify and analyze ways people have modified the physical environment; (21C) organize and interpret information from outlines, reports, databases, and visuals including graphs, charts, timelines, and maps;
(22C) express ideas orally based on research and experiences;
(22D) create written and visual material such as journal entries, reports, graphic organizers, outlines, and bibliographies;

7th Grade Social Studies

(22A) use social studies terminology correctly;
(22C) transfer information from one medium to another, including written to visual and statistical to written or visual, using computer software as appropriate;

8th Grade Social Studies

(30C) organize and interpret information from outlines, reports, databases, and visuals including graphs, charts, timelines, and maps;
(31A) use social studies terminology correctly;
(31B) use standard grammar, spelling, sentence structure, and punctuation;
(31C) transfer information from one medium to another, including written to visual and statistical to written or visual, using computer software as appropriate;
(31D) create written, oral, and visual presentations of social studies information.

Background:

There are many different species of whales in the world. The whales are classified into two groups: baleen and toothed whales. These groups are categorized based on how the whales eat. Baleen whales (such as Minke, Fin, Blue, Bryde's, Gray, Pygmy Right, North Atlantic Right, and North Atlantic Humpback Whales) have several hundred fringed overlapping plates rather than teeth to trap the food to eat. Toothed whales, such as the Beluga and Killer Whale (Orca), eat prey with their teeth.

In addition to being categorized on how they eat, whales are also categorized according to if and how they migrate during the year. Most whales migrate for feeding and mating purposes. Some whales, such as the Bryde's Whale, do not show a definite migratory route, while others, like the Humpback Whale, have a true migratory route that it follows

seasonally. They go to the poles for feeding during the summer and go to the equator for mating during the winter (remember: the Southern Hemisphere's seasons are opposite of the Northern Hemisphere's seasons). By locating the migratory routes of whales, people are able to see why they migrate, what happens while they are migrating, and what areas of the ocean are important to whale survival.

Engagement:

Engage the students by watching a microdocumentary on *The Secret Lives of Whales* (www.stanford.edu/group/Palumbi/microdocs.html#secret). Distribute a picture of a whale (Beluga, Bryde's, Gray, Killer/Orca, Pygmy Right, North Atlantic Right, or North Atlantic Humpback Whale) to each group (there are seven whales, so there can be seven groups). Each group will act as a team of scientists researching the migration behaviors of a particular whale.

Exploration:

Have each group use the research materials you have provided and the Internet (if applicable) to answer the following questions from the assessment:

1. What kind of whale is it?
2. How far does your whale travel?
3. Where does it spend the summers?
4. Where does it spend the winters?
5. Why does it migrate?
6. What does the whale eat?
7. What is the current estimated population size compared to 100 years ago?

Have the groups write a brief report about their whale. They should include a description of the type of whale, the size of the whale, where it lives, what has happened to the whales in the past, and the current status of the whale.

After groups have completed and recorded their research, post a large world map on the bulletin board, and have groups plot the migration routes of their type of whale. Plotting routes may be difficult from the lack of known routes. Tell students to do the best they can and generalize where the whales may move.

Each group should choose its own color pushpin to mark points along the whale's migration route, and then connect the points with matching yarn. Students can use colored markers to create a color key at the bottom of the map to identify each type of whale.

After the group has posted their migration route, have one student give the brief description of their whale and explain why their whale migrates in the route they have posted. (2 minutes each)

Explanation:

Discuss as a class what all of the groups have found including:

- How far do the different types of whales migrate?
- Why do these whales migrate?
- If you were a whale, would you migrate?
- Do you notice any patterns in when and where whales migrate?
- If whales are hunted in one part of the ocean, can this affect their population size in another part of the ocean?

Elaboration:

Elaborate on this topic by discussing how conservation of whales could be affected by migration patterns.

Evaluation:

Evaluate the groups' research skills by what they present in class. Ask each group some questions about their research methods and whale information. Optional: ask the class to grade each other's presentations based on a rubric that you give to them.

Why do Whales Migrate?

Topics to research:

Name of whale:

Scientific name:

Migration:

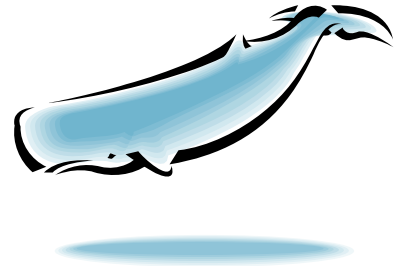
How far does your whale travel?

Where does it spend the summers?

Where does it spend the winters?

Why does it migrate?

What does the whale eat during migration?



Description:

Type of whale and why it is considered this type:

In what region of the world do the whales live in and why?

Describe physical characteristics of the whale.

What do the whales eat?

Past history of the whale (include information about evidence):

Is the whale listed as one of the whales that Dr. Stephen Palumbi found in whale bacon?
(See www.esi.utexas.edu/outreach/prevlectures.html)

Status of the whale today:

Is the Whale endangered?

If so, what could be done to help its population recover?

After all presentations:

Which whale that was presented today would you be and why?

