



Humpback Whales of Glacier Bay National Park

Middle School Scientists Curriculum

Investigation 3: You're the Superintendent!

Overview:

This is the third lesson on humpback whales in Glacier Bay National Park. In this lesson, students will take on the role of park superintendent and create a plan to balance the needs of park visitors and humpback whales. The students will examine and discuss important legislation and how it affects the park. They will use facts about humpback whales and park visitation to create a press release about a new policy regarding humpbacks and humans.

Background Information:

Humpback whales are an important part of Glacier Bay National Park. They are one of the animals that visitors most want to see but they are also an **endangered** animal that relies on Glacier Bay as a sanctuary for food and rest. Balancing the needs and desires of the park visitor and protecting the humpback whales is one of the more challenging jobs for park managers.

Park managers are **mandated** by, or required to follow, several laws, including the Organic Act of 1916. The Organic Act states that the purpose of national parks is: “to **conserve** the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them **unimpaired** for the enjoyment of future generations.” This law challenges park managers because it requires balancing two often opposing activities. The scenery and wildlife must be conserved and protected, but parks also provide ways for visitors to enjoy them for generations. Creating the roads, rest stops, trails, and hotels that visitors use to enjoy the park often compromises the conservation of the scenery, objects, and wildlife.

Park managers enact specific policies to follow the Organic Act. Glacier Bay National Park has very few roads. In fact, this park is the same size as the state of Connecticut, but has only five miles of roads. Most visitors to Glacier Bay come by boat, from small kayaks to large cruise ships. Roads, rest stops, and parking lots are not needed because visitors sleep and eat on ships or camp on shore. However, ships can still disturb wildlife. Humpback whales and other marine mammals may be deterred from feeding in Glacier Bay if cruise ships are regularly traveling through the bay.

Researchers are still trying to discover the exact impact of cruise ships on humpback whales. As vessels

Class Time Required	1 class period (50 minutes)
Materials Needed:	<ul style="list-style-type: none"> • Science journals • You're the Superintendent! Fact Sheet (2 pages, one for each student)
Teacher Preparation:	20 minutes to review background information and print fact sheets.
Student Knowledge:	Basic understanding of humpback whale behavior and protecting endangered species
Vocabulary:	conserve, endangered species, imperiled, mandated, unimpaired
National Content Standards	<ul style="list-style-type: none"> • NS.5-8.6 Personal and Social Perspectives • NS.5-8.7 History and Nature of Science

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move through the bay they may force humpbacks to leave rich feeding areas to get out of the way of the vessel. Even more tragically, there is the potential for a collision and possible fatality between a vessel and a humpback whale. The noise of vessel engines may impair humpback whales' ability to communicate or find food.

The Organic Act requires the conservation of all wildlife, but the Endangered Species Act (ESA) requires extra conservation measures for endangered animals, including humpback whales. The purpose of the ESA is to "protect and recover **imperiled** species and the ecosystems upon which they depend." Since the act works by protecting ecosystems, it is important for Glacier Bay National Park to protect the ecosystem upon which humpback whales depend: the ocean. In order to do this, the park has enacted vessel quotas and strict regulations on behavior while in the park. Under current regulations, two cruise ships are allowed in the park per day, twenty-five private boats, six charter vessels, and three tour boats. Glacier Bay receives more than 400,000 visitors per summer with these regulations. While in the park, vessels are not allowed to pursue humpback whales or approach closer than a quarter mile. In recent years, researchers have documented 100-150 individual whales in Glacier Bay each summer, although they are not all present at the same time.

Focus Questions:

How does the Organic Act of 1916 influence planning decisions by park managers?
How does the Endangered Species Act influence planning decisions by park managers?
How might vessel traffic affect endangered humpback whales in Glacier Bay?
What is the contradiction between the presence of whales in the park and visitors' desire to see humpback whales in the park?



Engagement:

(15 minutes)

Introduce the students to the Organic Act of 1916 and the Endangered Species Act. Divide the students into two groups. One group will focus on the Endangered Species Act (ESA) and the other will examine the Organic Act. Within those two groups, further divide the students into pairs, triplets or quartets. Based on the information you give them, have the students analyze the two pieces of legislation. What do they mean? What must be done to comply with these laws? Can they think of examples of places or things affected by this legislation? After a few minutes of discussion within the small groups, report back to the class. This initial discussion will be important for the investigation.



Investigation:

(30 minutes)

In this activity students will become the superintendent of Glacier Bay National Park. The superintendent has a problem: vessels filled with visitors eager to see humpback whales are disturbing the humpbacks in their excitement to see the whales. The endangered humpback whales stop critical behaviors like eating in order to avoid the boats. The superintendent needs to write a press release outlining a new policy.

1. Pass out the Fact Sheet handout to students. Give them time to read over the facts or quietly discuss the facts with their neighbors. Alone or in groups, brainstorm solutions.
2. The students will outline and write a paragraph on the new policy. Each paragraph should have a clear topic sentence detailing the policy and plenty of supporting facts from the Fact Sheet.

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3. If students are having difficulty thinking of ways to protect the humpbacks, the teacher could give them some examples of regulations Glacier Bay National Park has put in place. These include:

Vessels must remain at least a quarter mile away from humpback whales.

Vessels may not pursue humpback whales.

A limited number of vessels are allowed into Glacier Bay each day.

Speed limits of 13 knots in areas where whales are concentrated.

Current regulations allow per day:

2 cruise ships

3 tour boats

25 private boats

6 charter vessels

Explanation:

(10 minutes)

Have some students read their press release out loud. Share and discuss different policies that students developed. Why did they create the policies they did? Are the policies similar or different? Can they think of similar situations that they have experienced or heard about in the news? How would they defend their decision to a visitor demanding to get close to the whales?

Extension:

Look at Glacier Bay National Park's current policy on humpback whales and vessels. Compare this policy to the policies of the students. The whale and vessel management plans for Glacier Bay National Park can be found here: <http://www.nps.gov/glba/planyourvisit/boatregs.htm>

Read more of the Organic Act of 1916, especially Section 3. The Act can be found here: <http://www.nps.gov/grba/parkmgmt/organic-act-of-1916.htm> How does this clarify or explain parts the meaning of the document? After reading the act, describe what you'd expect to find happening in a national park. If you were to write a piece of legislation for the national parks, what would you put in it?

References/Resources:

The Organic Act of 1916

<http://www.nps.gov/grba/parkmgmt/organic-act-of-1916.htm>

Endangered Species Act

<http://www.fws.gov/endangered/laws-policies/index.html>

Humpbacks of Southeastern Alaska

<http://www.alaskahumpbacks.org/humpbacks.html>

Glacier Bay National Park Humpback Whales

<http://www.nps.gov/glba/naturescience/whales.htm>

Juneau Humpback Whale Catalog

<http://www.afsc.noaa.gov/ABL/Humpback/default.htm>

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National Education Science Standards Addressed: Grades 5-8

NS.5-8.6 Personal and Social Perspectives

Personal Health (5-8):

- The potential for accidents and the existence of hazards imposes the need for injury prevention. Safe living involves the development and use of safety precautions and the recognition of risk in personal decisions.

Populations, Resources, and Environments (5-8):

- When an area becomes overpopulated, the environment will become degraded due to the increased use of resources.
- Causes of environmental degradation and resource depletion vary from region to region and from country to country.

NS.5-8.7 History and Nature of Science

Science as a Human Endeavor (5-8):

- Women and men of various social and ethnic backgrounds – and with diverse interests, talents, qualities, and motivations – engage in the activities of science, engineering, and related fields.
- Science requires different abilities, depending on such factors as the field of study and type of inquiry.



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Introduction

The National Park Service (NPS) is legally mandated or required to abide by certain laws. Two important laws that influence decisions made by NPS managers are the Organic Act of 1916 and the Endangered Species Act (ESA).

The Endangered Species Act (ESA)

The purpose of the ESA is to “protect and recover imperiled species and the ecosystems upon which they depend.”

The NPS Organic Act of 1916

The purpose of national parks is “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.”



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Congratulations! You have been selected as the new superintendent of Glacier Bay National Park. You have a lot of work ahead of you, but there is one task that needs your attention now. Endangered humpback whales are being disturbed by boats of visitors eager to see these magnificent animals. What can be done to balance the needs of the visitors and the whales?

You need to write a brief press release stating an action the park will take. Study the facts below to make your decision. Once you have made a decision, write a press release stating your decision and why. The press

Facts

Laws

- The National Park Service (NPS) is legally mandated or required to abide by certain laws, including:

The Endangered Species Act (ESA)

The purpose of the ESA is to “protect and recover imperiled species and the ecosystems upon which they depend.”

The NPS Organic Act of 1916

The purpose of national parks is “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

Endangered animals

- Researchers estimate that commercial whaling destroyed 90% of the humpback whale population.
- Today, about 22,00 individual humpback whales live in the Pacific Ocean and about 3,000-5,000 in British Columbia and southeastern Alaska.
- The Pacific population of humpback whales is increasing at a rate of about 4-7% per year.
- Today, about 100-150 humpbacks feed in Glacier Bay every summer.
- 71% of humpbacks have scars from entanglement with fishing equipment or ocean debris.
- Vessels may cause disturbance and disruption to normal humpback whale behavior.

Humpback Whale Behavior

- Humpback whales must eat enough food in the summer to last the whole year.
- The average humpback consumes about 800 pounds of food per day.
- Humpbacks use sound to communicate. Noise from vessel engines may impair a humpback whale's awareness of its surroundings.
- While in Glacier Bay humpback whales are focused on feeding and are generally swimming slower than five miles per hour. Most vessels travel faster than this, some up to 25 mph.