

actionbioscience.org lesson

To accompany the article from the World Wildlife Fund (WWF)

“New Threats Endanger Great Whales” (July 2001)

<http://www.actionbioscience.org/biodiversity/wwf.html>

Great Whales: A Whale of a Problem (May 2002)

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Educator’s section: *p. 1-2*

Student handout 1: *p. 3-4*

Student handout 2: *p. 5*

Student handout 3: *p. 6*

Grades & Levels:

- **Handout 1:** middle school
- **Handout 2:** high school (general)
- **Handout 3:** high school (advanced/ AP)

Time Recommendations:

- minimum 1 class period for article review and discussion
- minimum 1-2 days of research (much of the preparation can take place outside of class time)

NSES content standards (9-12):

- NSES 1.4. Unifying Concepts & Processes: evolution & equilibrium
- NSES 4.4. Life Science: interdependence of organisms
- NSES 7.2. Science in Personal & Social Perspectives: population growth
- NSES 7.5. Science in Personal & Social Perspectives: natural & human-induced hazards

Note: View the NSES content standards on this site to choose other curricular applications for additional activities at:

<http://www.actionbioscience.org/educators/correlationcharts.html>

NSES content standards (5-8):

- NSES 1: Unifying Concepts & Processes
- NSES 4: Life Science
- NSES 7: Science in Personal & Social Perspectives

Learning Objectives: Students will ...

- learn about different species of great whales
- examine why great whale populations are endangered
- consider the consequences of human activity on the marine ecosystems
- understand the mission and actions of organizations trying to protect great whales

Key Words Include:

cetaceans, (biological) classification, conservation, contamination, degradation, deplete, echolocation, endangered/threatened, habitat, mammal, migrate, moratorium, mysticetes, odontocetes, sanctuary

Preparation

Article Discussion:

- Distribute copies of the article “New Threats Endanger Great Whales” to students or have them read the article online at <http://www.actionbioscience.org/biodiversity/wwf.html> in class or as homework.
- Provide definitions for keywords or ask students to research the definitions.
- Assign the Content Questions (see “Article Discussion” below) to be completed for the next class or conduct this activity in class after the students have read the article.

Student Handouts:

- Distribute the appropriate student handout. Tell students whether they should conduct the selected project(s) individually, in pairs, or as a team. Assign a due date.
- Closure: after presentations are made in class, have an open discussion on the issue of great whale endangerment. Another suggestion is to start a World Wildlife Club in your school. Access the WWF web site for materials and ideas.
- The links provided at the end of the article can serve as a starting point for students’ research.

For Educators: Article Discussion

About the article from the World Wildlife Fund (WWF):

“New Threats Endanger Great Whales”

<http://www.actionbioscience.org/biodiversity/wwf.html>

Content Questions (middle school – high school)

1. In addition to hunting, list three factors that endanger great whale populations.
2. How many species of great whales are there?
3. How many great whale species are considered endangered by the WWF?
4. In this article, what does WWF stand for?
5. What population of great whales has already vanished from the Atlantic?
6. Approximately how many great whales are killed each year for profit?
7. How many great whales have been killed since the 1985 moratorium?
8. Does the WWF support or discourage whale watching?
9. List two of the actions called for by the WWF to protect whales.
10. Name two species of great whales mentioned in this article.
11. What have you learned about whales from TV, movies, books, or from a visit to an aquarium?

Content Questions (advanced level high school)

1. List three factors that endanger great whale populations. Explain how they affect whales.
2. How many species of great whales are there? Name them.
3. How many great whale species are considered endangered by the WWF? Name them.
4. In this article, what does WWF stand for? What does the WWF mission have to do with whales?
5. What population of great whales has already vanished from the Atlantic? When did they become extinct?
6. Approximately how many great whales are killed each year for profit? Which species are the most threatened?
7. How many great whales have been killed since the 1985 moratorium? Who declared this moratorium?
8. Does the WWF support or discourage whale watching? Explain (why or why not supported).
9. List two of the actions called for by the WWF to protect whales. How do you think they will help?
10. Name two species of great whales mentioned in this article. Where can they be found?
11. Why do you think whales should be protected? What can the public do to help them?

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Student Handout 1: Part A

Choose *one* of the projects below for your assignment. Be prepared to answer questions about your presentation in class.

1. Why are whales mammals?

- a) List the characteristics of whales that show they are like all other mammals. For example: warm-blooded.
- b) Using the items in your list, write a definition of mammals. Use complete sentences.

2. Comparing whales

There are two groups of whales: baleen and toothed. Complete the following chart to compare the characteristics of each group. In the last row, write the names of at least 3 whale species that belong to each group. For example: Humpback.

CHARACTERISTICS	BALEEN (Mysticetes)	TOOTHED (Odontocetes)
Number of blowholes		
How they eat		
Teeth features		
Examples		

3. Whale glossary

Create an illustrated glossary of terms related to whales. Include the following words: baleen plates, barnacles, blow, blowhole, blubber, bowriding, breaching, bull, calf, cetaceans, cow, dorsal fin, echolocation, flippers, flukes, krill, lobtailing, melon, migration, mysticetes, odontocetes, orca, pectoral fin, plankton, pod, spout, spyhopping, tail slapping, whalebone.

4. My favorite whale

Create a poster about your favorite whale. Draw or paste a picture of the whale. Write information about:

- how it looks
- its habitat
- some interesting facts

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Student Handout 1: Part B

WHALE QUIZ

Underline the correct answer to complete each sentence.

1. A Beluga whale is a ... a) baleen whale b) toothed whale.
2. A Blue Whale is a ... a) baleen whale b) toothed whale.
3. Baleen whales have ... a) 1 b) 2 c) no ... blowholes.
4. The largest whale is the ... a) Killer whale b) Humpback c) Blue Whale.
5. The ... a) skin b) fur c) blubber ... keeps whales warm.
6. Travelling to feeding areas is called ... a) migration b) hunting c) echolocation.
7. Blow is the ... a) puff of air b) water c) food ... exhaled by a whale.
8. The cetacean family includes ... a) fish b) dolphins c) sharks.
9. Another name for baleen is ... a) whalebone b) fin c) blubber.
10. An adult male whale is called a ... a) pod b) bull c) cow.
11. A baby whale is called a ... a) kid b) colt c) calf.
12. Toothed whales travel together in a ... a) pod b) group c) herd.
13. All whales belong to the kingdom ... a) Animalia b) Cordata c) Amphibians.
14. Whales are classified in the order ... a) Anthropods b) Cetacea c) Primates.
15. The ... a) Blue Whale b) Orca c) Narwahl ... eats other whales.
16. Echolocation helps whales to ... a) breathe b) swallow c) find food.
17. Fin whales can live for ... a) 20 years b) 50 years c) 100 years.
18. Whales have ... a) lungs b) gills.
19. Male humpback whales communicate by ... a) gurgling b) dancing c) singing.
20. Baleen whales eat tiny crustaceans called ... a) flukes b) krill c) plankton.

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Student Handout 2

PROJECTS

Threats to whales

You are a concerned citizen who is given the opportunity to present at an environmental task force meeting. Create a handout or visual presentation about *one* of the following factors that affect the great whales:

- marine pollution
- destructive activities to habitat and feeding grounds
- global warming and other atmospheric changes
- the fishing industry
- oil and gas industry

Whale trivia

- List at least 20 interesting facts about different whales species. For example: *A Blue Whale's tongue weighs more than an entire elephant.*
- Create a trivia quiz using the items on your list. For example: *Which whale's tongue weighs more than an entire elephant? ... a) Minke b) Blue Whale c) Orca?*
- Exchange your trivia quiz with classmates and ask them to complete it. Be prepared to provide the correct answer after they complete the quiz.

Whales vs. Fish

Why are whales classified as mammals and not as fish? Create a chart that compares the characteristics of whales to fish, illustrating why scientists classify each differently.

Save the whales

Review the activist organizations listed in the “get involved” links at the end of the article “New Threats Endanger Great Whales” at <http://www.actionbioscience.org/biodiversity/wwf.html>. Imagine that you are a volunteer for *one* of these organizations. Create a display for a community environmental event that promotes the mission of that organization.

Odontocetes vs. Mysticetes

Create a chart or other visual presentation that compares the characteristics of these two groups of whales. Your chart should also list at least 5 species of whales that belong to each group. Include an illustration of *one* whale that belongs to each group.

Echolocation

Create a graphic that illustrates how whales use echolocation. Write a summary of the purpose of whale echolocation to explain the graphic.

Baleen

Write an essay that describes the composition of baleen plates. Add an anatomical illustration of a Right whale or a Humpback's jaws and provide interesting facts about its feeding habits.

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Student Handout 3

PROJECTS

Threats to whales

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- marine pollution
- destructive activities to habitat and feeding grounds
- global warming and other atmospheric changes
- the fishing industry
- oil and gas industry

Whale trivia

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- Create a trivia quiz using the items on your list. For example: *Which whale's tongue weighs more than an entire elephant? ... a) Minke b) Blue Whale c) Orca?*
- Exchange your trivia quiz with classmates and ask them to complete it. Be prepared to provide the correct answers after they complete the quiz.

Whaling

- Learn more about the International Whaling Commission (IWC) from the Internet.
- Write a letter to the IWC in support or opposition of their practices.

Whale species

Write a report or create a visual presentation for an exhibit at an aquarium that describes

- the two groups of whales
- several species that belong to each group
- threatened/endangered statistics for the species

Save the whales

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Whale migration

Whales migrate along specific routes. Choose a species of migratory whale and

- draw a map to show its migration route
- write an accompanying essay to explain the whale's activities during migration

History of whaling

Write a newspaper feature about the history of whaling. Include illustrations or photos, with captions.