



The Gray Whale Obstacle Course Viewer Guide

“ Our goals are to help more people become aware of threats to gray whales, to encourage decision makers to protect these whales and to promote more scientific research on marine mammals. ...

In this way, we can ultimately pass on to the next generation something that is as good as - if not better than - what we found.” —Jean-Michel Cousteau

THEME

Education and investigation of whale adaptations to natural and man-made migration obstacles

VIEWING TIME

One hour total; viewing in shorter segments is recommended

OBJECTIVES

Students will be able to

- understand the human activities that impact gray whale migration and food supply.
- identify adaptations that help the gray whale to survive.
- learn about techniques that humans have developed in order to collect data and track whale migration.
- understand how global warming effects gray whales.

MATERIALS

- Ocean Vocabulary Sheet (student handout #1)
- *The Gray Whale Obstacle Course* Viewing Questions (student handout #2)
- *The Gray Whale Obstacle Course* Viewing Questions With Answers (teacher sheet)
- Copy of *The Gray Whale Obstacle Course* episode of the **Jean-Michel Cousteau: Ocean Adventures** series

SYNOPSIS

In *The Gray Whale Obstacle Course*, Jean-Michel Cousteau and the Ocean Adventures team travel the length of the gray whales' migration route. They begin in the warm waters of Magdalena Bay in Baja California, Mexico, where the gray whales give birth, nurse their calves, rest and play before their long journey north. The trip ends in the nutrient-rich feeding grounds of the Bering Sea in Alaska. The team searches for clues about this resilient species to gain a better understanding of the increasing challenges, both natural and man-made, that gray whales face along the way.

PRE-VIEWING ACTIVITIES

- Brainstorm all the ways you can think of that scientists can collect data and track where, when and how gray whales migrate.
- Make a list of all the harmful and nonharmful ways that humans use the oceans today.
- Explore the interactive migration map on *The Gray Whale Obstacle Course* episode page. Discuss the concept of ocean basins and learn in which ocean basin the gray whale migration takes place.
- Read the detailed episode description on *The Gray Whale Obstacle Course* episode page. Pay particular attention to the vocabulary words, and record and define them on the Ocean Vocabulary Sheet.

FOCUS FOR VIEWING

- Use *The Gray Whale Obstacle Course* Viewing Questions that go with the segments you watch.

WEB LINKS

- Found at pbs.org/oceanadventures/episodes/whales
- *The Gray Whale Obstacle Course* episode description
 - Trace the Migration Interactive
 - Navigating the Long Way Home article
 - Tag, You're It! Tracking the Gray Whale Journey
 - Whale Watcher game
- Found at pbs.org/oceanadventures/educators/whales
- Whale Watcher game lesson plan
 - Gray Whale Adaptations lesson plan
 - Gray Whales on the Move lesson plan
 - San Ignacio Lagoon lesson plan

STANDARDS

National Science Education Standards Grades 5–8
<http://www.nap.edu/catalog/4962.html>

Life Science – Content Standard C:
 Populations and ecosystems
 Interdependence of organisms
 Behavior of organisms

Science and Technology – Content Standard E:
 Understanding about science and technology

Science in Personal and Social Perspectives – Content Standard F:
 Natural resources
 Environmental quality
 Populations, resources and environments
 Natural and human-induced hazards
 Science and technology in society

FOLLOW-UP ACTIVITIES

- Make a collage showing either (1) all the different ways that whales have adapted to their environment or (2) the tools that researchers use to study and collect data on gray whales. Use pictures from the *Ocean Adventures* Web site to help.
- Research on the Internet or at the library to find out where all of the salt mines of the world are located, then map them.
- Read the Tag, You're It! article on *The Gray Whale Obstacle Course* episode page. Find out more about how satellites are used to study whale migration.
- How do gray whales find their way on the migration route? Use the Navigating the Long Way Home reading on *The Gray Whale Obstacle Course* episode page to discover their secrets.
- Play the Whale Watcher game with your students. Use the accompanying lesson plan for help.

SEGMENT SUGGESTIONS

NOTE: The indicated timings are approximate and are based on the PBS broadcast; home video versions may differ slightly.

Theme: Adaptations

Location in *The Gray Whale Obstacle Course*: Feeding (3:36-6:30); Magdalena Bay (6:33-8:50); killer whales (19:50-27:30); Depot Bay (29:20-36:44); acoustic pollution (41:36-44:59)

Pre-Viewing Questions

- What do you think whales eat for nutritional value?
- How do gray whales feed and how much food do you think they need?
- What kind of environmental pollution do you think affects whales during their migration?
- Why do you think orcas are also called killer whales?

Focus for Viewing

- For feeding, use questions 6 through 12 from the "Feeding" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For Magdalena Bay, use questions 6 through 8 from the "Magdalena Bay" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For killer whales, use questions 3 through 10 from the "Killer whales" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For Depot Bay, use questions 3 and 8 from the "Depot Bay" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For acoustic pollution, use questions 1 through 4 from the "Acoustic pollution" section of *The Gray Whale Obstacle Course* Viewing Questions.

**Science As Inquiry –
Content Standard A:**

Abilities necessary to do scientific inquiry
Understanding about scientific inquiry

**Ocean Literacy:
Essential Principles and
Fundamental Concepts**

<http://coexploration.org/oceanliteracy/>

**Essential Principle #1:
Earth has one big ocean
with many features.**

- a. The ocean is the dominant physical feature on our planet Earth, covering approximately 70 percent of the planet's surface. There is one ocean with many ocean basins, such as the North Pacific, South Pacific, North Atlantic, South Atlantic, Indian and Arctic.
- h. Although the ocean is large, it is finite and its resources are limited.

**Essential Principle # 5:
The ocean supports a great
diversity of life and ecosystems.**

- i. Estuaries provide important and productive nursery areas for many marine and aquatic species.

**Essential Principle #6:
The ocean and humans are
inextricably interconnected.**

- b. From the ocean we get foods, medicines, and mineral and energy resources. In addition, it provides jobs, supports our nation's economy, serves as a highway for transportation of goods and people, and plays a role in national security.

Post-Viewing Discussion Questions

- List the kinds of pollution that the gray whales face during their migration.
- Why do killer whales work together while they feed on the gray whales?
- Describe the adaptations of gray whales related to feeding and migration.

Follow-up Activity

- Use the Gray Whale Adaptations lesson plan to help your students explore the different adaptations that help gray whales survive. Lab groups can investigate how sound travels underwater, replicate how blubber keeps marine animals warm and simulate common feeding methods of whales.
- Conduct library or Internet research and write a report on a specific whale species. Write about its physical attributes, behaviors, migration patterns, and feeding and mating habits.

Theme: Migration

Location in *The Gray Whale Obstacle Course*: Introduction (2:23-5:27); Magdalena Bay (6:33-8:50); satellite tagging (12:00-15:50); whale watching (15:51-19:48); photo I.D. (36:45-41:35)

Pre-Viewing Questions

- Describe all the different ways that you think researchers can track and collect data on how many whales are actually in the ocean.
- What kinds of technology do you think are used to study whale migration?
- Why do you think whales (or other animals) need to migrate? Why do people move?

Focus for Viewing:

- For the introduction, use questions 1 through 4 from the "Introduction" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For Magdalena Bay, use questions 1 through 3 from the "Magdalena Bay" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For satellite tagging, use questions 1 through 9 from the "Satellite tagging" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For whale watching, use questions 4 through 7 from the "Whale watching" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For photo I.D., use questions 1 through 4 from the "Photo I.D." section of *The Gray Whale Obstacle Course* Viewing Questions.

- c. The ocean is a source of inspiration, recreation, rejuvenation and discovery. It is also an important element in the heritage of many cultures.
- e. Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out of and put into the ocean. Human development and activity leads to pollution (point source, nonpoint source and noise pollution) and physical modifications (changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.
- g. Everyone is responsible for caring for the ocean. The ocean sustains life on Earth, and humans must live in ways that sustain the ocean. Individual and collective actions are needed in order to effectively manage ocean resources for all.

Essential Principle #7:

The ocean is largely unexplored.

- c. Over the last 40 years, use of ocean resources has increased significantly; therefore the future of sustainability of ocean resources depends on our understanding of those resources and their potential and limitations.
- d. New technologies, sensors and tools are expanding our ability to explore the ocean. Ocean scientists are relying more and more on satellites, drifters, buoys, subsea observations and unmanned submersibles.

Post-Viewing Discussion Questions

- What role do scientists play in helping to protect the gray whale population?
- List specific data-collection techniques that researchers are using today to investigate gray whales.
- What are some possible explanations for the disappearance of one-third of the gray whale population?

Follow-up Activity

- Use the Gray Whales on the Move lesson plan to deepen your students' knowledge and understanding of where, when and why whales migrate and also to expand on your students' map-reading skills.
- Use the Trace the Migration interactive on *The Gray Whale Obstacle Course* episode Web page to find out more about what happens along the migration route. Create your own map illustrating the hazards the whales face on their journey.
- Draw illustrations of four different species of whales and compare the many different attributes that are unique to each whale.

Theme: Calving grounds

Location in *The Gray Whale Obstacle Course*: San Ignacio Lagoon (9:00-11:59); Magdalena Bay (6:33-8:50)

Pre-Viewing Questions

- What are all the things a baby gray whale needs from its mother?
- Describe how you think salt is mined from the oceans.

Focus for Viewing

- For the San Ignacio Lagoon, use questions 2 through 6 from the "San Ignacio" section of *The Gray Whale Obstacle Course* Viewing Questions.
- For Magdalena Bay, use questions 1 through 5 from the "Magdalena Bay" section of *The Gray Whale Obstacle Course* Viewing Questions.

Post-Viewing Discussion Questions

- What do you think a salt mine does to its surrounding environment?
- List specific ways that whales take care of their young.
- What is it about Magdalena Bay that makes it such a great nursery for gray whales?

Follow-up Activity

- Learn how salt mining can affect the migration patterns of whales by using the San Ignacio Lagoon: Ecology or Economy lesson plan.
- Create a poster that illustrates the best environment for a whale nursery. Make a color-coded legend on the side that labels a nursery's most important attributes.
- Make a list of all the different ways you could educate your schoolmates and your community about what is happening to the gray whale population. Do one of the things on your list.

Additional educator resources for **Jean-Michel Cousteau Ocean Adventures** can be found at pbs.org/oceanadventures.

AUTHOR

Elsie Ovrahim is an Oakland middle school science teacher and an independent contractor for the KQED Education Network. KQED Education Network uses the power of KQED Public Media to inspire learning by providing curriculum materials, professional development, online resources and special events for educators, child-care providers, families, youth and the community at large.

CREDITS

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The Gray Whale Obstacle Course Viewing Questions With Answers

NOTE: The indicated timings are approximate and are based on the PBS broadcast; home video versions may differ slightly.

Introduction (2:23-3:35)

1. In which season do the gray whales begin arriving in the Arctic?
summer
2. What has recently happened to the gray whale population?
one-third of the population has mysteriously disappeared
3. How long is the gray whales' migration?
12, 000 miles round trip
4. Where do the gray whales migrate from and to?
from the Arctic to Baja California, Mexico
5. Where in the ocean do gray whales feed? (*on the ocean floor*)

Feeding (3:36-6:30)

1. How long does the sun shine in the Arctic summer?
24 hours a day
2. How will the team get a firsthand look at the gray whales' food?
collect samples of mud from the ocean floor
3. How do gray whales alter the environment when they feed?
they create underwater trenches
4. What is the visibility underwater? *zero*
5. How did the divers know that they were in the right spot?
they were in one of the trenches the whales had created
6. What species are the gray whales feeding on? *amphipods*
7. How many amphipods did the marine biologist find in the mud sample? *10*
8. Do gray whales have teeth? *no*
9. Describe the mouth of the gray whale. *bottom jaw is just gums; all along the top jaw are plates of baleen*
10. What is baleen made of? *keratin, just like our fingernails*
11. How do gray whales use their mouth when they feed?
they open their huge mouth, bring in a mouthful of water and close their mouth, then use their tongue to squeeze the water out through the baleen, leaving the arthropods behind, stuck to their baleen
12. What is the last part of feeding?
they use their tongue to lick off the arthropods from their baleen

Magdalena Bay (6:33-8:50)

1. What could the sudden disappearance of one-third of the gray whale population be linked to? *depleted/poisoned food source and obstacles along migration*
2. Where do gray whales go to mate, give birth and play?
lagoons of Baja California, Mexico
3. Where do the researchers begin tracking the whales?
Magdalena Bay
4. What do the divers find when they investigate what whales' feeding behavior looks like?
a sea floor that has no food for the whales
5. What does this confirm for the divers?
that the whales are not here to feed

The Gray Whale Obstacle Course Viewing Questions With Answers

6. What does diver Matt find on and pick up from the sea floor?
a patch of whale skin
7. What is the gray whale usually infested with?
a lot of parasites attached to its skin
8. Why do gray whales need a rubbing beach? *so they can scratch their skin and possibly remove some of the parasites*

San Ignacio Lagoon (9:00-11:59)

1. What does the bracelet mean that Don Santee has to have on?
that you are in a protected area
2. What do the Ocean Adventures team members see when they go to the lagoon? *breaching, mating and many other behaviors*
3. What happened in 1972?
gray whales started approaching boats
4. What percentage of fat is the milk that the calves nurse on?
50 percent fat
5. When do calves part from their mother and fend for themselves?
when they are 7 months old
6. How was San Ignacio recently threatened? *a major corporation and the Mexican government wanted a massive salt mine project to improve the economy*
7. "Good environmental policy 100 percent of the time is _____
___ to good economic policy." *identical*

Satellite tagging (12:00-15:50)

1. How do whales travel once they leave the Arctic?
hidden below the surface except to breathe
2. What is satellite tagging? *shooting a tag into gray whales to aid in tracking the whales from space using a satellite and a transmitter*
3. What do the tags allow the researchers to do?
track the latitude and longitude of the whale
4. What good update did Jean-Michel Cousteau get during the two days of tagging? *that they tagged four whales*
5. When looking at the GPS coordinates, what direction do the researchers see the gray whales traveling? *north*
6. Why are the mothers and calves the last to leave the lagoon?
waiting for the calves to gain strength
7. Why might all the tags have stopped transmitting?
rubbed off by calves on the sandy bottom
8. What is the team's backup plan?
to follow the whales the hard way -- visually

The Gray Whale Obstacle Course Viewing Questions With Answers

Whale watching (15:51-19:48)

1. "The gray whale has evolved to _____." *hide*
2. What does the team find south of Los Angeles?
expert whale watchers -- the American Cetacean Society
3. What are the two key things that the American Cetacean Society (ACS) looks at to determine how many gray whales there are?
timing of the migrations, how many calves are surviving
4. What do researchers think gray whales use oil rigs for?
point of navigation
5. How many miles a day can a gray whale cover by swimming constantly? *80 miles a day*
6. What happened to the calf count after gray whales were taken off the endangered species list in 1994? *first year they were fine, second year numbers dropped and researchers don't know why*
7. By tracking pictures, what did researchers determine about the size of gray whale going north and going south? *whether the whales were well fed when they began their migration and how much weight they lost from the migration and from giving birth*

Killer whales (19:50-27:30)

1. What does Nancy Black's research link to the high number of killer whales? *seasonal presence of gray whale calves*
2. What is the most intense natural obstacle that the gray whales encounter? *killer whales*
3. What is a great food source for killer whales? *gray whale calves*
4. How many killer whales can one gray whale calf feed? *20 to 30*
5. Why is it important for killer whales to teach their calves how to feed on gray whales?
important to their culture and to their survival
6. Which two ways do gray whales travel when they cross Monterey Bay to continue heading north? *the long way around hugging the shoreline of the bay or the shortcut straight across the bay over Monterey Canyon*
7. How do the researchers think killer whales find the gray whales in the deep water?
they patrol the canyon listening for the gray whales
8. "These whales have lost the safety of the _____ as they enter deep waters." *shore*
9. How do orcas kill a gray whale calf? *lunge on top of and separate it from its mother, then bash it from the underside to give it internal injury*
10. How do orcas eat the calf? *working together underwater, one holds the carcass while the others strip off the blubber; they don't compete or fight*
11. Why was the 2004 season unprecedented? *because of the high number of attacks: 16 attacks, 12 kills, only four escapes*
12. "When we see fewer calves born, then we see fewer attacks and fewer _____ whales in the area." *killer*
13. How many of the calves born will not survive the trip north?
one-third

The Gray Whale Obstacle Course Viewing Questions With Answers

Depot Bay (29:20-36:44)

1. What does the gray whale need in order for its population to completely recover? *a dependable source of food*
2. What do the whales do when they get to Depot Bay? *stop*
3. What are the gray whales called that stop at Depot Bay? *resident whales*
4. What does Carrie Newell have to do to prove her theory about resident whales? *identify specific whales that stay to feed at Depot Bay and return every year*
5. How many residents has Newell documented? *56*
6. The sample revealed that _____ is sustaining the resident whales. *mysisid shrimp in the kelp*
7. What did Newell find when she took a sample of the gray whales' fecal material? *mysisid shrimp fragments*
8. What does Newell say would happen if a bunch of pollutants were dumped in the waters of Depot Bay? *mysisid shrimp would die; whales, rock fish and salmon would suffer; and the economy of Depot Bay would suffer*
9. What is the name of the whale that has been shot by a harpoon? *scarback*

Photo ID (36:45-41:35)

1. How many gray whale identifications have the researchers made? *more than 6,000*
2. What part of the whale is used for identification in this photo I.D. technique? *natural markings on sides and tails of the whales*
3. What have researchers confirmed by identifying individual whales? *that resident whales range from Northern California to British Columbia*
4. What is the estimated survival rate for the resident whales from year to year? *95 percent*
5. What new obstacle have gray whales encountered by feeding in the waters of the state of Washington? *Native Americans seeking to hunt*
6. What did the Makah people of Washington do in 1999? *killed their first gray whale in 70 years; they said they were invoking treaty rights of 1855*
7. Why did the Makah people say they needed to kill this gray whale? *cultural reasons, failing tradition and ancient pride*
8. How many other tribes have signed up for permits to kill their own gray whales? *17*
9. How did the male juvenile gray whale lose its life? *got tangled in different types of netting; whale probably spun around and got caught*

The Gray Whale Obstacle Course Viewing Questions With Answers

Acoustic pollution (41:36-44:59)

1. What is the new invisible form of environmental pollution?
acoustic pollution
2. What kind of human activities are heard underwater?
underwater explosives, commercial shipping, high-frequency sonar, oil development, intrusive scientific research
3. What does high-frequency sonar do?
interferes with behavior, causes stranding and death
4. What do the researchers notice happens to killer whales when the military turns on mid-frequency sonar in the ocean?
they react negatively and can become beached

Global warming and other concerns (45:00-end)

1. "The waters off Point Barrow once sustained an entire _____."
culture
2. Where else in the world is whaling going on?
Russia; aboriginal whaling in Alaska; Greenland; the Caribbean
3. What is the gray whale most threatened by? *global warming*
4. What effects of global warming do people of this area see?
retreat of the main ice pack, main ice pack breaking up, erosion problems, polar bears roaming, less ice in water, can't walk on ice
5. What did the older resident say was good about global warming? *warmer, use less gas, save money, better for the economy*
6. Over the past three decades, how much of the gray whale's food source has been lost due to global warming? *30 percent*
7. What are the many different threats and hazards that affect the gray whale population? *use of military sonar, human thirst for petroleum, increased number of ships in ocean, loss of food related to global warming and pollution, pollution on whales themselves, harassment, development*
8. What are the goals for saving the gray whale population?
to increase awareness of threats to whales, to get decision makers to make better decisions, to increase public support for science, to pass on to the next generation something as good as, if not better than, what we started with

The Gray Whale Obstacle Course Viewing Questions

Introduction (2:23-3:35)

1. In which season do the gray whales begin arriving in the Arctic?
2. What has recently happened to the gray whale population?
3. How long is the gray whales' migration?
4. Where do the gray whales migrate from and to?
5. Where in the ocean do gray whales feed?

Feeding (3:36-6:30)

1. How long does the sun shine in the Arctic summer?
2. How will the team get a firsthand look at the gray whales' food?
3. How do gray whales alter the environment when they feed?
4. What is the visibility underwater?
5. How did the divers know that they were in the right spot?
6. What species are gray whales feeding on?
7. How many amphipods did the marine biologist find in the mud sample?
8. Do gray whales have teeth?
9. Describe the mouth of the gray whale.
10. What is baleen made of?
11. How do gray whales use their mouth when they feed?
12. What is the last part of feeding?

Magdalena Bay (6:33-8:50)

1. What could the sudden disappearance of one-third of the gray whale population be linked to?
2. Where do gray whales go to mate, give birth and play?
3. Where do the researchers begin tracking the whales?
4. What do the divers find when they investigate what whales' feeding behavior looks like?

The Gray Whale Obstacle Course Viewing Questions

5. What does this confirm for the divers?
6. What does diver Matt find on and pick up on the sea floor?
7. What is the gray whale usually infested with?
8. Why do gray whales need a rubbing beach?

San Ignacio Lagoon (9:00-11:59)

1. What does the bracelet mean that Don Santee has to have on?
2. What do the Ocean Adventures team members see when they go to the lagoon?
3. What happened in 1972?
4. What percentage of fat is the milk that calves nurse on?
5. When do calves part from the mother and fend for themselves?
6. How was San Ignacio recently threatened?
7. "Good environmental policy 100 percent of the time is _____ to good economic policy."

Satellite tagging (12:00-15:50)

1. How do whales travel once they leave the Arctic?
2. What is satellite tagging?
3. What do the tags allow the researchers to do?
4. What good update did Cousteau get during the two days of tagging?
5. When looking at the GPS coordinates, what direction do the researchers see the gray whales traveling?
6. Why are the mothers and calves the last to leave the lagoon?
7. Why might all the tags have stopped transmitting?
8. What is the team's backup plan?

The Gray Whale Obstacle Course Viewing Questions

Whale watching (15:51-19:48)

1. "The gray whale has evolved to _____."
2. What does the team find south of Los Angeles?
3. What are the two key things that the American Cetacean Society (ACS) looks at to determine how many gray whales there are?
4. What do researchers think gray whales use oil rigs for?
5. How many miles a day does the gray whale cover by swimming constantly?
6. What happened to the calf count after gray whales were taken off the endangered species list in 1994?
7. By tracking pictures, what did researchers determine about the size of the gray whale going north and going south?

Killer whales (19:50-27:30)

1. What does Nancy Black's research link to the high number of killer whales?
2. What is the most intense natural obstacle that gray whales encounter?
3. What is a great food source for killer whales?
4. How many killer whales can one gray whale calf feed?
5. Why is it important for killer whales to teach their calves how to feed on gray whales?
6. Which two ways do gray whales travel when they cross Monterey Bay to continue heading north?
7. How do the researchers think killer whales find gray whales in the deep water?
8. "These whales have lost the safety of the _____ as they enter deep waters."
9. How do killer whales kill a gray whale calf?
10. How do killer whales eat the calf?
11. Why was the 2004 season unprecedented?

The Gray Whale Obstacle Course Viewing Questions

12. "When we see fewer calves born, then we see fewer attacks and fewer _____ whales in the area."
13. How many of the calves born will not survive the trip north?

Depot Bay (29:20-36:44)

1. What does the gray whale need in order for its population to completely recover?
2. What do the whales do when they get to Depot Bay?
3. What are the gray whales called that stop at Depot Bay?
4. What does Carrie Newell have to do to prove her theory about resident whales?
5. How many residents has Newell documented?
6. The sample revealed that _____ is sustaining the resident whales.
7. What did Newell find when she took a sample of the gray whales' fecal material?
8. What does Newell say would happen if a bunch of pollutants were dumped in the waters of Depot Bay?
9. What is the name of the whale that has been shot by a harpoon?

Photo I.D. (36:45-41:35)

1. How many gray whale identifications have the researchers made?
2. What part of the whale is used for identification in this photo I.D. technique?
3. What have researchers confirmed by identifying individual whales?
4. What is the estimated survival rate for the resident whales from year to year?
5. What new obstacle have gray whales encountered by feeding in the waters of the state of Washington?
6. What did the Makah people of Washington do in 1999?

The Gray Whale Obstacle Course Viewing Questions

7. Why did the Makah people say they needed to kill this gray whale?
8. How many other tribes have signed up for permits to kill their own gray whales?
9. How did the male juvenile gray whale lose its life?

Acoustic pollution (41:36-44:59)

1. What is the new invisible form of environmental pollution?
2. What kind of human activities are heard underwater?
3. What does high-frequency sonar do?
4. What do the researchers notice happens to killer whales when the military turns on mid-intensity sonar in the ocean?

Global warming and other concerns (45:00-end)

1. "The waters off Point Burrow once sustained an entire _____."
2. Where else in the world is whaling going on?
3. What is the gray whale most threatened by?
4. What effects of global warming do the people of this area see?
5. What did the older resident say was good about global warming?
6. Over the past three decades, how much of the gray whale's food source has been lost due to global warming?
7. What are the many different threats and hazards that affect the gray whale population?
8. What are the goals for saving the gray whale population?

Ocean Vocabulary Sheet

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| WORD | PICTURE |
| DEFINITION | |

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| WORD | PICTURE |
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