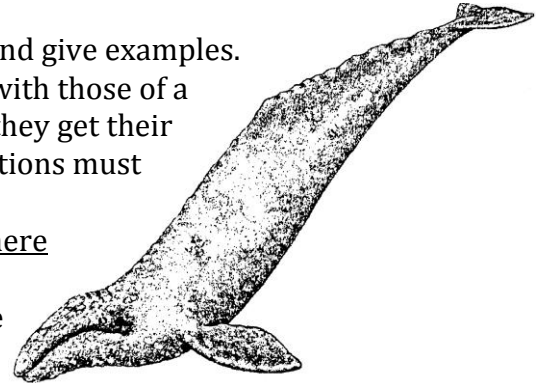


Dear Teacher:

During the **What About Whales** assembly program one of our education staff members will introduce students to several whale and dolphin species found in Pacific waters. Using a PowerPoint presentation, life-sized inflatable whales, bones, teeth and baleen, students will learn characteristics of marine mammals and understand the differences between toothed and baleen whales.

Before your assembly program:

- Ask students to list the characteristics of mammals and give examples.
- Compare the living conditions of a marine mammal with those of a terrestrial mammal. Where do they sleep? How do they get their food? What do they eat? What environmental conditions must they be adapted to?
- Compare and contrast humans and whales in the Where Do Whales Fit In? activity.
- Conduct the Measuring Whales activity. Using a tape measure, have your students measure out the length of each animal.



After your assembly program:

- Conduct the Where Do Whales Fit In? activity again to see if students' thing of additional classification characteristics.
- Conduct the The Wonder of Blubber activity to discuss one of many whale adaptations for life in the ocean.
- Lead a classroom discussion using the enclosed Dilemmas card activity.
- Review the difference between endangered and threatened species with your class. Several species of whales (sei, fin, sperm, blue, humpback and right) are currently listed as endangered in the state of Oregon. Ask students to consider what actions they can take to prevent further loss of these species.

Participating in this program and using the pre and post curriculum will help your students meet Oregon science standards and Ocean Literacy Principles.

What About Whales? Assembly Grades 3-5

Goal: To familiarize students with whales found off the Oregon coast and their adaptations that help them to survive in this environment.

Cognitive Objectives:

1. Compare and contrast toothed and baleen whales in their:
 - a. Feeding mechanisms
 - b. Movement
 - c. Social structure
 - d. Physical characteristics
2. Describe the appropriate whale adaptation for a given environmental stress and how it works.
3. Explain how whales are protected.

Affective Objectives:

1. Students will value whales as worthy of protection and conservation.
2. Students will be inspired to learn more about whales.

Oregon Science Standards Correlations:

- 3.1 Structure and Function: Living and non-living things vary in their characteristics and properties.
- 4.1 Structure and Function: Living and non-living things can be classified by their characteristics and properties.
- 5.2L.1 Explain the interdependence of plants, animals, and environment, and how adaptation influences survival.

Background Information

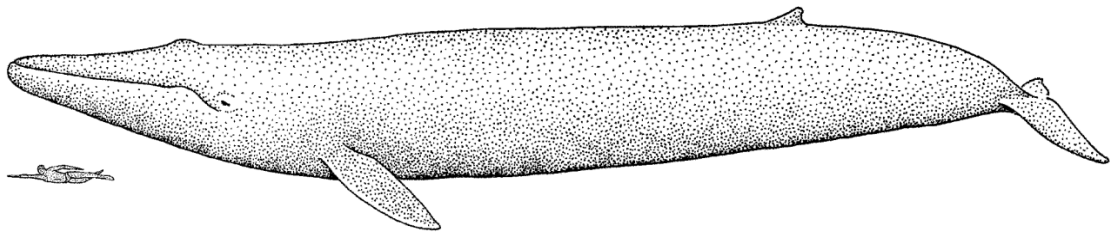
What is a marine mammal?

The colossal blue whale, active sea otter, barking sea lion, plant-eating manatee and even the polar bear are all marine mammals. They share a number of characteristics with their land-dwelling relatives: they are warm-blooded, give birth to live young, nurse their young, have hair at some time in their lives on some part of their bodies, and breathe air.

But marine mammals differ from land mammals in that their livelihood depends upon the ocean. They have bodies that are particularly well suited to life at sea. Ears, limbs, mammary glands and sex organs have all been streamlined to reduce drag as these animals swim through the ocean. Except for sea otters, marine mammals have a thick layer of fat called **blubber** under their skin. This aids buoyancy, provides insulation and serves as a reserve energy source for most marine mammals. To keep themselves warm, they also have a specialized circulatory system with an adaptation called **countercurrent heat exchange**, in which blood cooled by exposure at the body's extremities is warmed as it flows next to warm blood moving out from the body's core.

The Cetaceans: whales, dolphins and porpoises

Whales, dolphins and porpoises are all marine mammals that belong to the scientific order Cetacea (*seh-TAY-shah*). The word "cetacean" is derived from the Greek word *cetus*, which means whale. Altogether, 75 species of cetaceans have been identified and divided into eleven families. They include the largest animal on earth, the blue whale which reaches lengths of 80-100 feet and weighs as much as 150 tons. A blue whale is so big, an African elephant, the largest land animal, could stand on its tongue! In contrast, the smallest whale is the Commerson's dolphin, which measures four to five feet and weighs only 100 pounds. Whales are able to reach these large sizes because the surrounding water provides them with support—giving them the potential to grow larger than a land mammal.



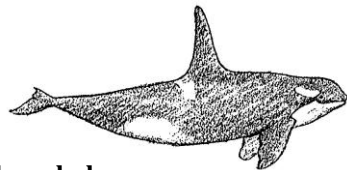
Blue whale and human size comparison

As a group, whales are unique among the mammals as they spend their entire lives in water. They have all the characteristics of mammals—they are warm blooded, give live birth, nurse their young, have traces of hair or fur, and must come to the surface to breathe air using lungs—yet they are distinctive in their appearance and survival strategies.

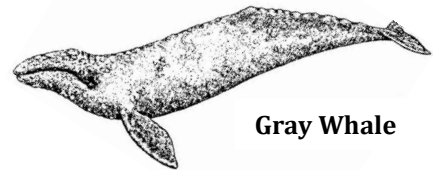
Whales live in all of the oceans of the world. Some species, such as the beluga whale, may travel into large rivers. Other species, such as the gray whale, migrate with the seasons; others remain year-round in the same habitats, where they find their preferred food.

A few whales of our coast

Whales can be separated into two groups according to how they feed:



Killer whale, orca



Gray Whale

Toothed whales Examples: dolphins, orcas and sperm whales	Baleen whales Examples: gray, humpback and blue whales
Use teeth to rip and tear; swallow their food whole	Use baleen plates to strain out small animals for food
Have a single blow hole	Have two blow holes
Swim fast	Swim slowly
Relatively small whales	Relatively large whales
Form pods	Live alone or swim in small groups
Have a noticeable dorsal fin	Have a very small dorsal fin

Gray whales are baleen whales that migrate past the Oregon coast twice a year. During late January and early February, female gray whales give birth to 15-foot calves in the shallow, warm lagoons of Baja California, Mexico. As March approaches, the gray whale population starts to migrate north to its summer feeding grounds off Alaska. A few spend the summer along the Oregon coast. Then in November and December, as the waters freeze over, gray whales start south again.

Killer whales, or orcas, are toothed whales found in all oceans of the world and are sighted off the Oregon coast periodically. The diet of orcas consists primarily of whatever kinds of fish are in the vicinity. They may also eat seals, sea lions, walruses, sea otters, dolphins, penguins and other sea birds, sea turtles, and other whales.

Measuring Whales

Lesson at a Glance:

Students will measure the lengths of a group of whales and compare each animal's size.

Oregon Content Standards:

SCIENCE

- **Third Grade:** 3.1 Structure and Function: Living and non-living things vary in their characteristics and properties.
- **Fourth Grade:** 4.1 Structure and Function: Living and non-living things can be classified by their characteristics and properties.
- **Fifth Grade:** 5.2L.1 Explain the interdependence of plants, animals, and environment, and how adaptation influences survival.

OTHER ADAPTABLE CONTENT AREAS

- Mathematics

Ocean Literacy: Essential Principles and Fundamental Concepts

5. THE OCEAN SUPPORTS A GREAT DIVERSITY OF LIFE AND ECOSYSTEMS.

- 5.a. Ocean life ranges in size from the smallest virus to the largest animal that has lived on Earth, the blue whale.

Materials:

- ❑ One 100-foot length of clothesline or rope
- ❑ Cable ties
- ❑ Single hole punch for each group
- ❑ Permanent marker for each group
- ❑ Measuring tape for each group
- ❑ Laminating materials (optional, but recommended)

Background information:

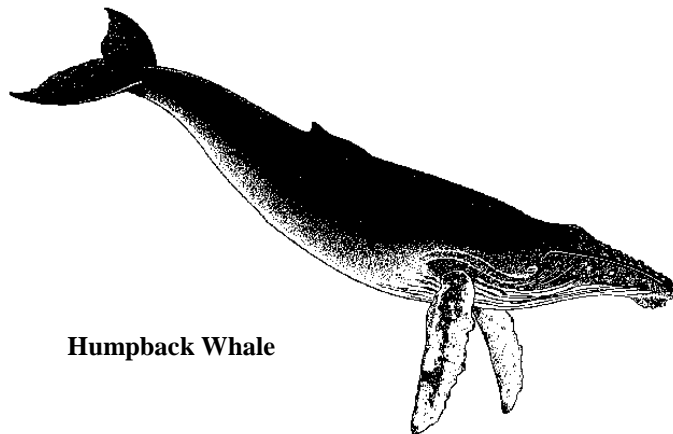
The lengths used for this activity come from a variety of resources and are currently accepted record lengths for these animals. If your students choose to pursue further research on these animals they may find resources with slightly different information.

In many groups of animals, one sex is different from the other; for instance, hens and roosters are different in size and plumage. This is called sexual dimorphism. With toothed whales (such as dolphins, porpoises and sperm whales), the males are typically larger. With baleen whales (such as gray and blue whales), the females are typically larger.

Here are the lengths of the animals included in this activity (on the cards provided in this kit), plus some additional lengths (in *Italics*) that you may choose to add on your own. We have provided the lengths for males and females when that information was available.

Whales	Accepted maximum lengths
<i>Vaquita (male)</i>	5 feet
*Harbor porpoise	6 feet
*Pacific White-sided dolphin	8 feet
<i>Boto (river dolphin)</i>	9 feet
<i>Bottlenose dolphin (female)</i>	12 feet
Bottlenose dolphin (male)	12.5 feet
<i>Beluga whale (female)</i>	13.5 feet
<i>Narwhal (female)</i>	16.5 feet
Beluga whale (male)	18 feet
<i>*Short-finned pilot whale (female)</i>	18 feet
<i>*False killer whale (male)</i>	19.5 feet
Narwhal (male, not including tusk)	20.5 feet (tusk – up to 10 feet)
*Short-finned pilot whale (male)	22 feet
<i>*Killer whale (female)</i>	25.5 feet
*Killer whale (male)	29.5 feet
<i>*Minke whale (female)</i>	35 feet
<i>*Baird's beaked whale (female)</i>	42 feet
<i>*Sperm whale (female)</i>	56 feet
<i>*Gray whale (male)</i>	48 feet
*Gray whale (female)	49 feet
<i>*Northern right whale (male)</i>	54 feet
<i>*Humpback whale (male)</i>	57.5 feet
*Northern right whale (female)	60 feet
*Humpback whale (female)	62.5 feet
*Sperm whale (male)	65.5 feet
<i>*Fin whale (female)</i>	88.5 feet
*Blue whale (male)	101.5 feet
<i>*Blue whale (female)</i>	110 feet (record length, rare)

* Found off of our coast.



Humpback Whale

Activity:

1. Before class, cut out the pictures, laminate them (to prevent from tearing when attached to rope), and punch a hole near the top for the cable tie.
2. Divide students into as many groups as there are animals to measure out OR have your class make three of the same rope and then compare the measuring accuracy of each finished rope.

Group instructions:

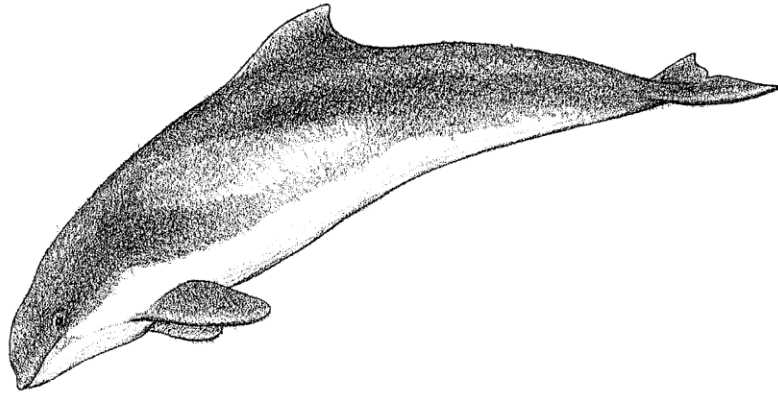
1. Have students unravel their rope, preferably in a hallway or gymnasium.
2. Have students take turns using the measuring tape, marking the measurement and attaching the length cards with the cable ties.
3. Make sure that they tie the knot loops for their cable ties as they go. If they wait until all the marks are made, their final lengths on the rope won't be accurate, since they will have shortened the rope as they tie each knot.
4. Explain that they will begin to measure the length of each whale from the end of the rope. The end of the rope is every whale's tail and the mark on the rope (where the tag is hung) is the tip of the whale's face.

Conclusion:

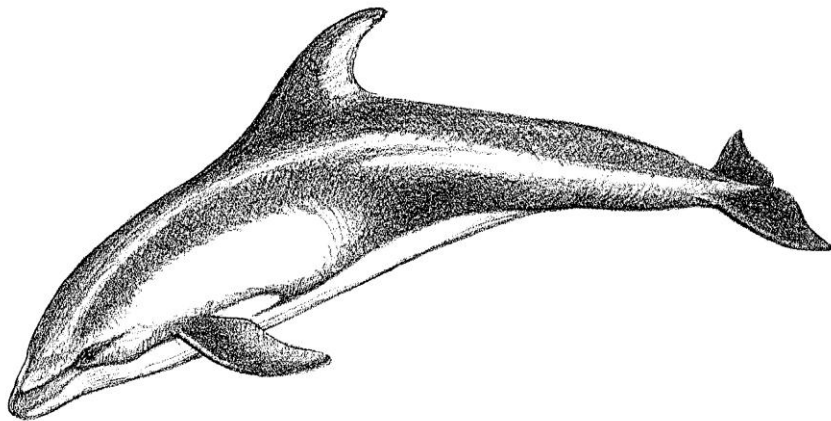
Have each group share their rope with the rest of the class, by having one student stand at each whale tag as they hold up the rope.

Extension:

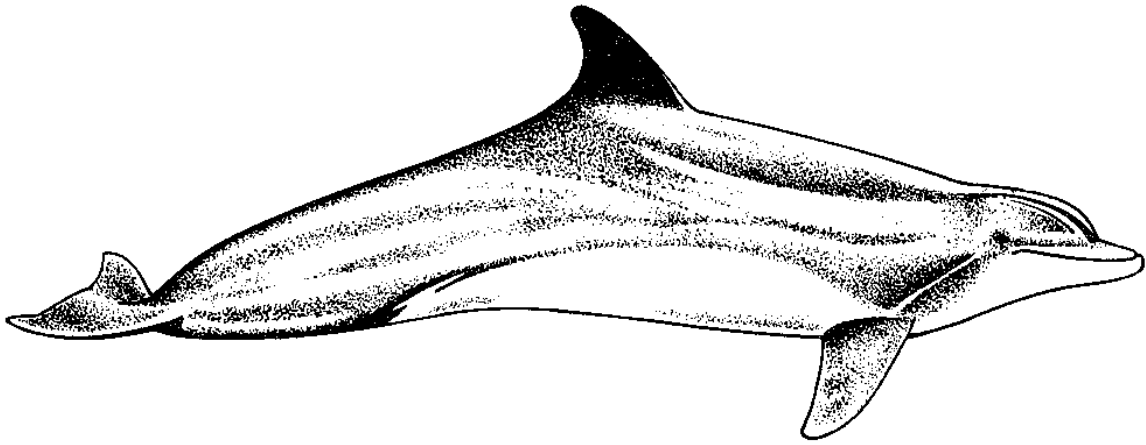
1. Have students convert the lengths in feet into inches, yards, meters, centimeters.
2. Add the shorter male and female lengths to the rope. Discuss sexual dimorphism.
3. Have students look up the lengths of other animals or things they are familiar with and add them to the rope. For example, find the length of a school bus or the average height of a fourth grader.
4. Have students use the library and the Internet to find the weights of the whales on their rope.
5. Have students calculate how many of each whale (nose to tail) it would take to reach one end of the hallway or gymnasium to the other.



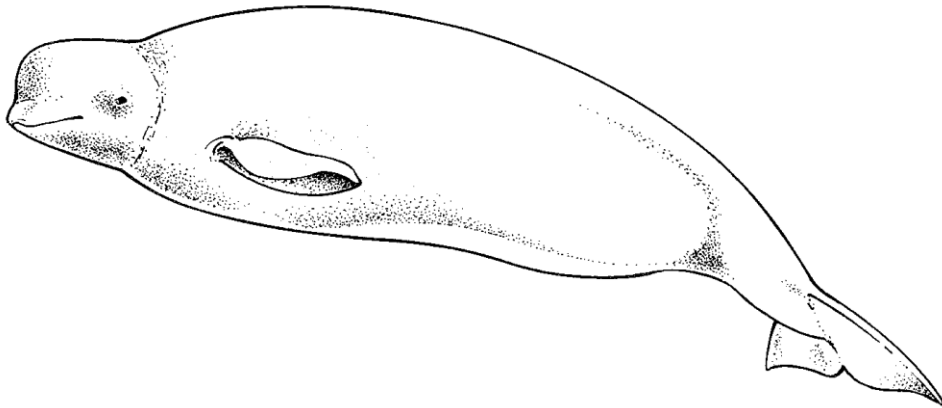
Harbor porpoise
Up to 6 feet



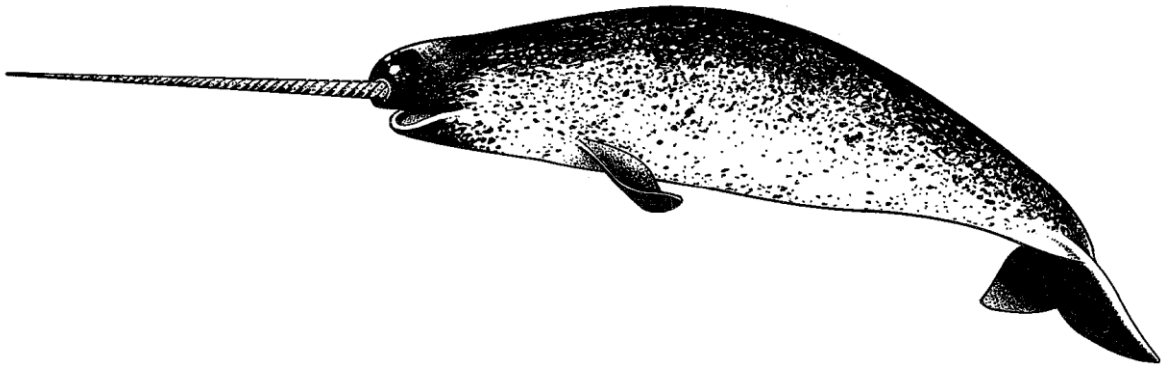
Pacific white-sided dolphin
Up to 8 feet



Bottlenose dolphin
Up to 12.5 feet



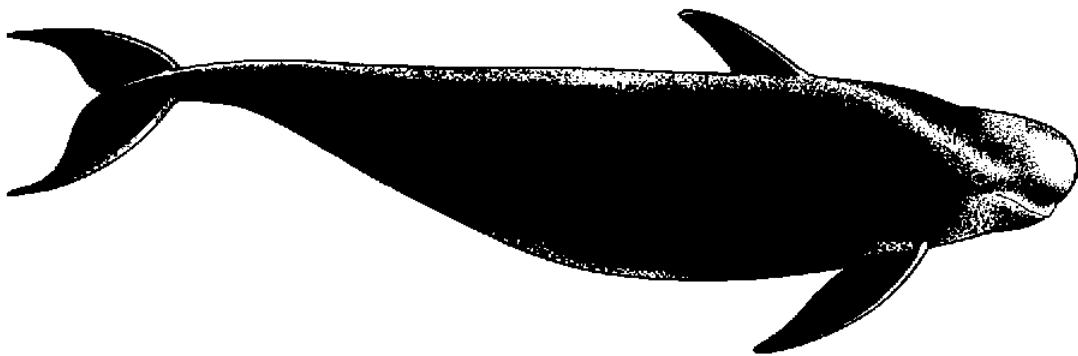
Beluga whale
Up to 18 feet



Narwhal

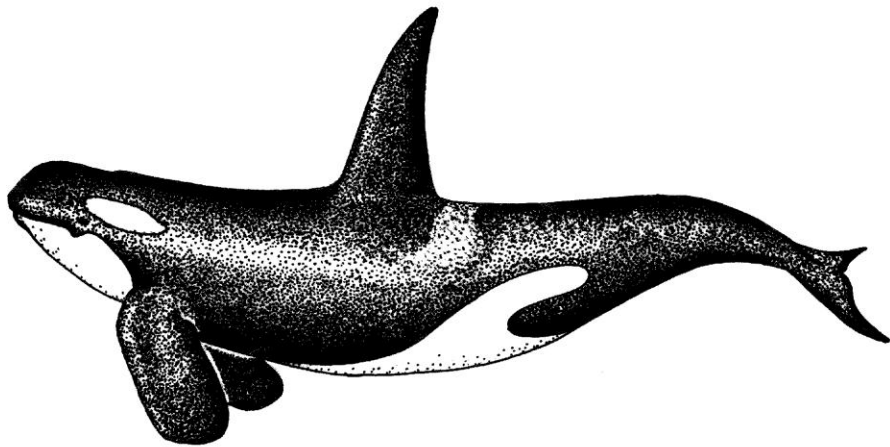
Up to 25.5 feet (not including tusk)

Tusk may grow up to 10 feet.

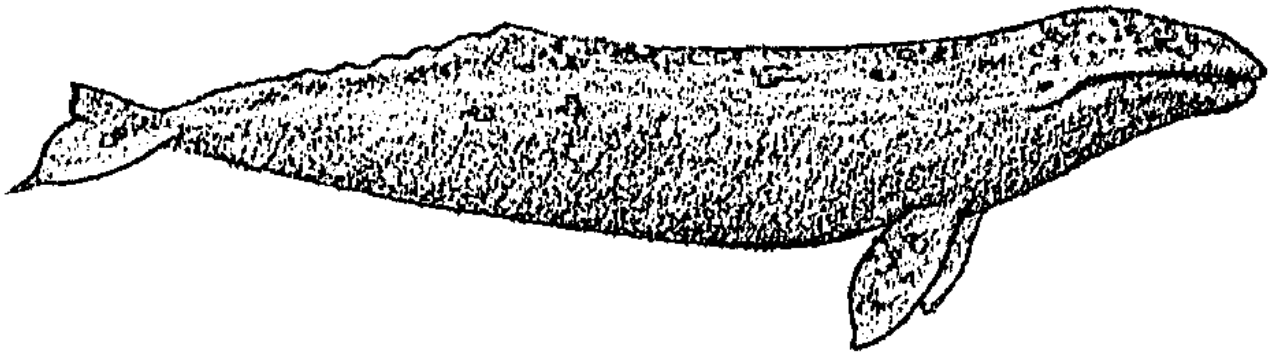


Short-finned pilot whale

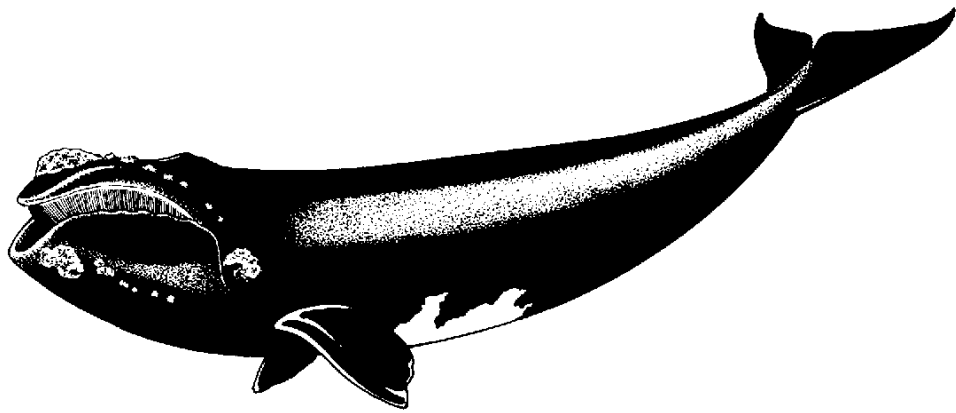
Up to 22 feet



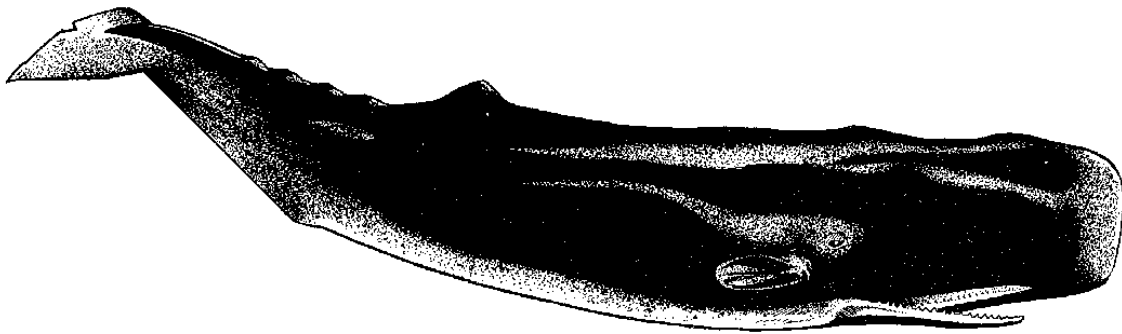
Killer whale (Orca)
Up to 29.5 feet



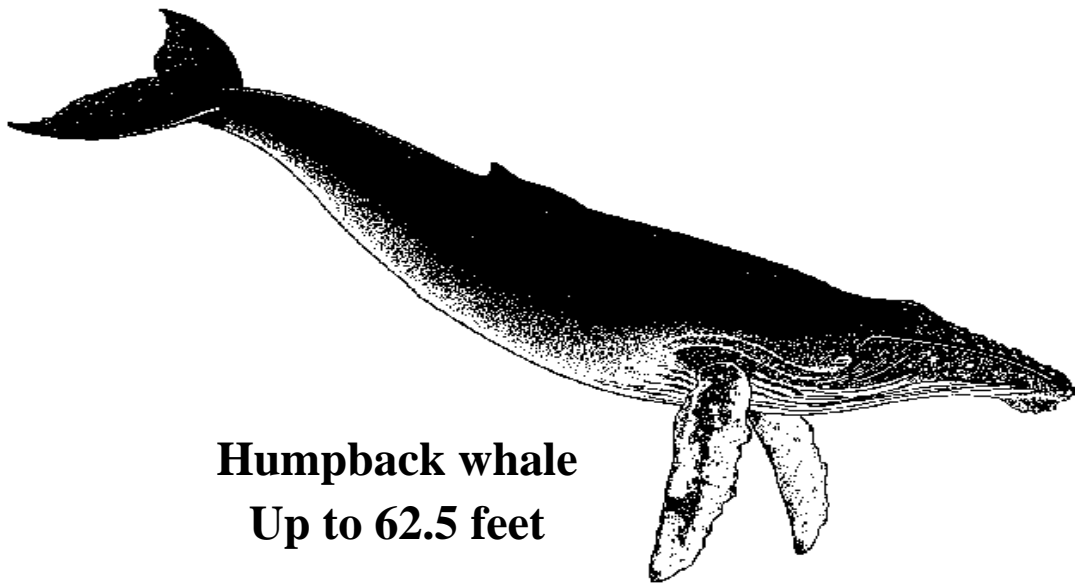
Gray whale
Up to 49 feet



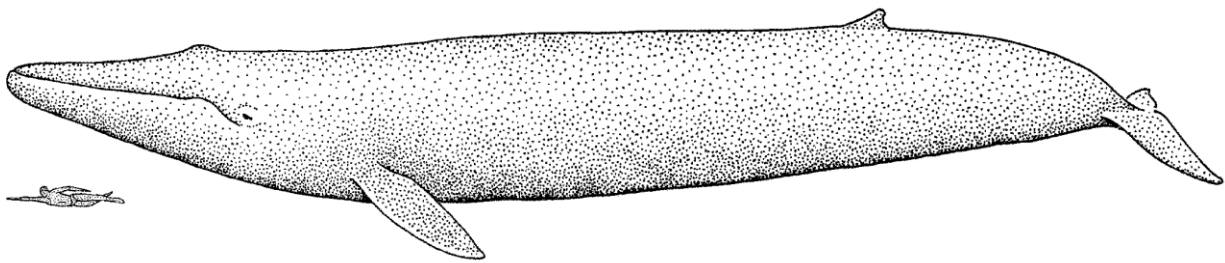
Northern right whale
Up to 60 feet



Sperm whale
Up to 65.5 feet



Humpback whale
Up to 62.5 feet



Blue whale
Up to about 100 feet
(Record – 110 feet!)

Where Do Whales Fit In?

Lesson At a glance:

Students will be able to recognize that humans and whales are both mammals and that they share common characteristics but they are adapted to live in different habitats.

Oregon Content Standards:

SCIENCE

- **Third Grade:** 3.1 Structure and Function: Living and non-living things vary in their characteristics and properties.
- **Fourth Grade:** 4.1 Structure and Function: Living and non-living things can be classified by their characteristics and properties.
- **Fifth Grade:** 5.2L.1 Explain the interdependence of plants, animals, and environment, and how adaptation influences survival.

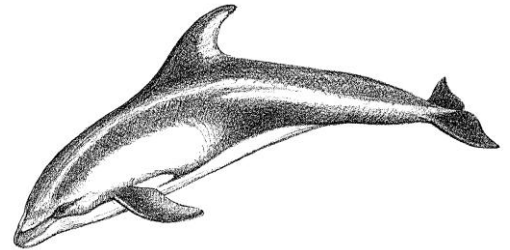
Ocean Literacy: Essential Principles and Fundamental Concepts

5. THE OCEAN SUPPORTS A GREAT DIVERSITY OF LIFE AND ECOSYSTEMS.

- 5.d. Ocean biology provides many unique examples of life cycles, adaptations and important relationships among organisms (symbiosis, predator-prey dynamics and energy transfer) that do not occur on land.

Materials:

- ❑ A **Where Do Whales Fit In?** worksheet for each group of 4-5 students
- ❑ A pen or pencil for each group of 4-5 students
- ❑ White board
- ❑ An erasable marker



Background:

Plants and animals are arranged into groups based on their characteristics. There are many ways plants and animals can be classified. For example, they might be grouped as land or aquatic plants or animals, active by day or by night, useful or nuisance, etc.

However, taxonomy, the study of scientific classification, attempts to classify animals based on their actual relationships and shared characteristics. Taxonomic scientists do this by studying the plant's and animal's anatomy and physiology. For example, research has shown that sea turtles belong with snakes and lizards, while porpoises and whales belong in the mammal group, and neither are fish. Classification can change from time to time as new evidence emerges and as scientists change their minds about where to draw lines between groups.

Activity:

1. Divide the class into cooperative-learning groups of 4-5 students.
2. Give each group a worksheet and a pen or pencil.
3. Have each group designate a recorder.
4. Have each group brainstorm as many characteristics of humans as they can and list them in the circle labeled humans.
5. Have each group brainstorm as many characteristics of whales as they can think of and list them in the circle labeled whales.
6. Have the group list the characteristics that both groups share in the center of their work sheet.

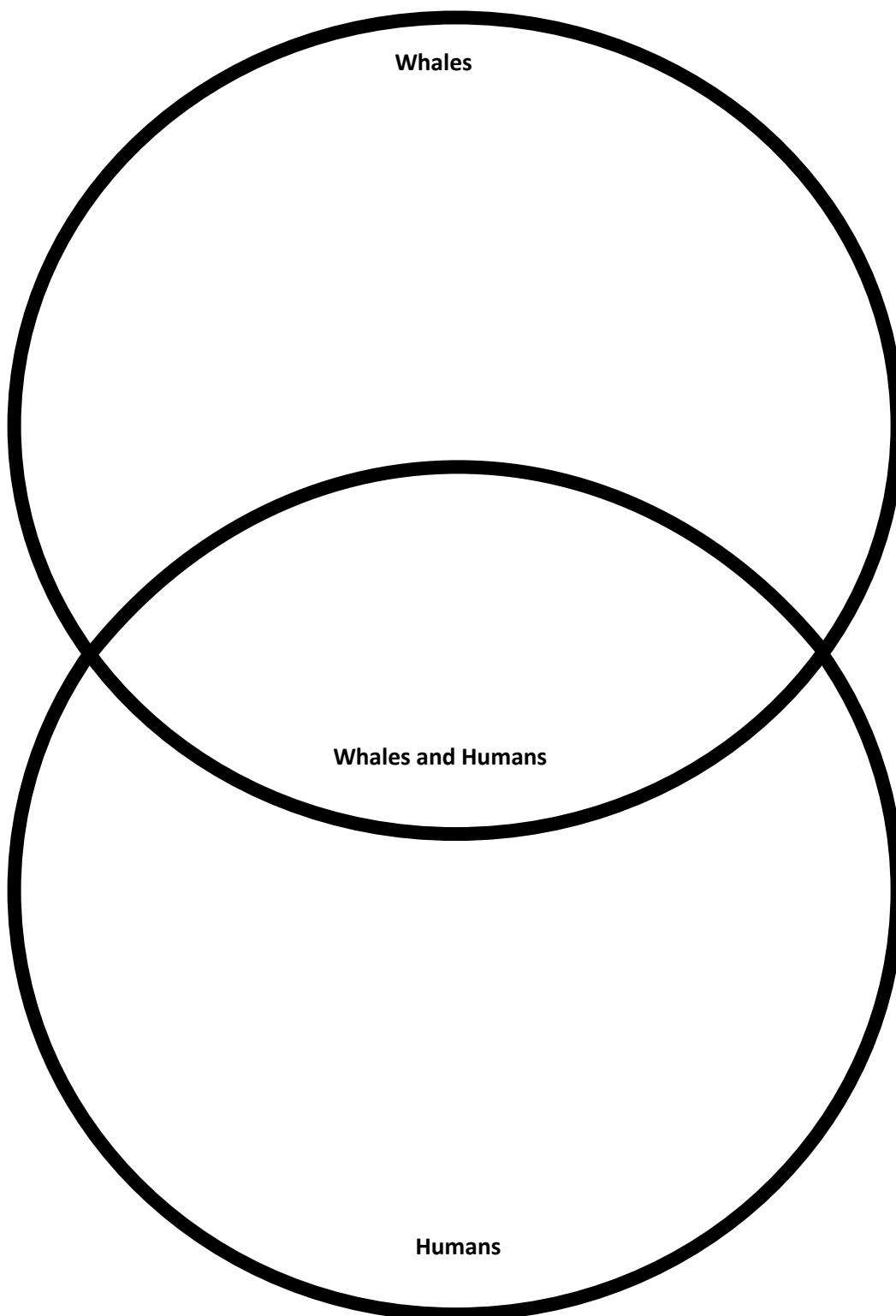
Summary:

Review what the students placed in their diagram by drawing a larger Venn diagram on the white board and adding all groups' characteristics.

Extension:

Do this activity before and after the "Tales of Whales" presentation. Would the students change or add anything to the diagram? Why or why not?

**Where Do Whales Fit In?
Worksheet**



The Wonder of Blubber

Lesson at a glance:

Students will understand how a layer of blubber insulates most marine mammals to help keep them warm in cold water.

Oregon Content Standards:

Science

- **Third Grade:** 3.3S.2 Use the data collected from a scientific investigation to explain the results and draw conclusions.
- **Fourth Grade:** 4.2L.1 Describe the interactions of organisms and the environment where they live.
- **Fourth Grade:** 4.3S.2 Summarize the results from a scientific investigation and use the results to respond to the question being tested.
- **Fifth Grade:** 5.2L.1 Explain the interdependence of plants, animals, and environment, and how adaptation influences survival.
- **Fifth Grade:** 5.3S.2 Identify patterns in data that support a reasonable explanation for the results of an investigation or experiment and communicate findings using graphs, charts, maps, models, and oral and written reports.

Ocean Literacy: Essential Principles and Fundamental Concepts

5. THE OCEAN SUPPORTS A GREAT DIVERSITY OF LIFE AND ECOSYSTEMS.

- 5.d. Ocean biology provides many unique examples of life cycles, adaptations and important relationships among organisms (symbiosis, predator-prey dynamics and energy transfer) that do not occur on land.

Materials:

- ❑ A large container (such as a plastic bowl or bucket) full of ice
- ❑ Two Fahrenheit thermometers
- ❑ 1 “blubber bag” (Zip-lock baggies lined with shortening)
Make your own “blubber bag”:
- ❑ Two sandwich-sized zip-lock bags (freezer bags last the longest)
- ❑ 2 cups of shortening
- ❑ Duct tape

Background:

Just like mammals that live on land, marine mammals, are warm blooded and must keep a constant body temperature. However, it is much easier to retain body heat out of water than in water. This is because water absorbs heat five times faster than air does. That is why humans get chilled after spending a long time in water, even if the water is relatively warm (such as in the tropics). Our bodies are not designed to survive for very long in a watery environment.

With the exception of sea otters, all marine mammals have a layer of fat called blubber, which helps keep them warm. Unlike our body fat, this special marine mammal fat is

very dense and similar in texture to butter. Usually, the colder the water, the thicker the blubber. Blubber serves as an insulator by keeping the marine mammal's body heat from escaping into the cooler water outside its body. Blubber also streamlines their body, helping them to swim faster. It also gives them energy when food is scarce.

Activity:

1. Make your “blubber bag”:
 - Fill one zip-lock bag with 2 cups of shortening.
 - Push the other bag inside the bag of shortening and seal the edges of the two bags together with the duct tape.
 - Carefully distribute the shortening evenly inside the bag

Note: “Blubber” bags may last several years if kept in a cool place.

2. Fill your large container with ice.
3. Push the “blubber bag” down into the container of ice until most of the bag is submerged.
4. Let the “blubber bag” sit in the ice for several minutes.
5. Have students make observations and form hypotheses about how much of a temperature difference there may be in the ice versus inside the “blubber bag.”
6. Have one student hold one thermometer directly in the ice while another student holds another thermometer in the “blubber bag”.
7. After 15-30 seconds, have the students read the temperatures on each thermometer.

Summary:

1. Ask the students to discuss which one was warmer and why.
2. Explain to students that water absorbs heat about 5 times faster than air.
3. Ask students to describe how having a layer of blubber would be a helpful adaptation for a marine mammal.
4. Would a human be able to survive for very long in such cold water? Discuss hypothermia if age-appropriate.
5. Ask your students to think of ways they stay warm in their environment. (Blubber is like a warm coat that marine mammals have built into their bodies. The thicker their blubber is, the easier it is for them to stay warm inside, just as the thicker the coat you wear, the warmer you will be.)

Extensions:

1. Have your students write a research report on their favorite blubbery marine mammal (sea otters are excluded from this group).
2. Have students see if they can find out which marine mammal has the thickest blubber layer. Answer: Bowhead whales have a blubber layer that is up to 20 inches thick! This is because they live in the cold waters of the Arctic ocean year-round.
3. Introduce the concept of cold blooded animals. Have your students research a cold blooded animal and compare it to a marine mammal.

Marine Mammal Dilemmas

Lesson at a glance:

This lesson is designed to give students an opportunity to examine their own values and beliefs related to the environment and to practice discussing environmental issues without placing judgments.

Common Curriculum Goals and Benchmarks:

SOCIAL SCIENCE

- **Third Grade:** SS.03.CG.03 Identify ways that people can participate in their communities and the responsibilities of participation.
- **Third Grade:** SS.03.SA.03 Identify and compare different ways of looking at an event, issue, or problem
- **Third Grade:** SS.03.SA.04 Identify how people or other living things might be affected by an event, issue, or problem.
- **Third Grade:** SS.03.SA.05 Identify possible options or responses; then make a choice or express an opinion.
- **Fourth and Fifth Grade:** SS.05.GE.07 Understand how physical environments are affected by human activities.
- **Fourth and Fifth Grade:** SS.05.GE.07.01 Understand how and why people alter the physical environment
- **Fourth and Fifth Grade:** SS.05.GE.07.02 Describe how human activity can impact the environment.
- **Fourth and Fifth Grade:** SS.05.SA.03 Identify and study two or more points of view of an event, issue, or problem.
- **Fourth and Fifth Grade:** SS.05.SA.04 Identify characteristics of an event, issue, or problem, suggesting possible causes and results.

Materials:

- Dilemma cards

Background information:

Discussing environmental ethics can be difficult. There are many sides to every issue, and often the feelings for one position or another are strong. In presenting this activity to students, stress the importance of not placing judgment, and listening to perspectives other than their own. Understanding all sides can provide a bigger picture of the issues.

It is not the intent of this activity to prescribe right and wrong answers for the students.

Activity:

1. Divide students into groups of four or five.
2. Give each group a dilemma card and have one member read the dilemma and the choices of answers to the rest of their group.
3. Each student in the group should decide on their own what their response would be. Then have each group discuss their choices among themselves. Each student should be able to defend their reasoning.

Summary:

1. Discuss each dilemma as a class. Be sure to remind your students that there are several sides to any issue and usually there isn't only one right answer.
2. Stress the importance of gaining a clear understanding of all positions.
3. Ask the students whether or not it would have helped them make their dilemma choices if they had known more about the issue.
4. Ask them if they think that most people are aware of these issues.
5. What can they do to help more people become aware of human impact on the marine environment?
6. Encourage students to find out more about the issues brought up in their dilemmas. Knowing more will allow them to make more informed decisions.

Extensions:

1. Have students research other issues related to marine mammals discuss them as a class.
2. Discuss how other marine wildlife may also be affected by marine debris, water pollution, commercial fishing, eco-tourism or possible release from a captive situation such as an aquarium.

1.

You just cleaned your basement. On a dusty back shelf you discovered 10 cans of old paint and some very old pesticides and weed killers that you can't use.

What will you do with them?

2.

You are walking on the shore with a friend who is visiting you from the Midwest. Your friend sees a purple sea star she thinks is very beautiful. She tells you she wants to go into the tidepool and get it to take it home.

What do you do?

3.

You are an expert salmon angler. You always know where the BIG ones are. You're standing on the side of a stream where you know the salmon run. On the far side of the stream you see a pool you just know has the BIG one in it, but to get there you must cross the stream. You know this is probably an area with salmon redds (nests), but no one from the Department of Fish and Wildlife is around and you're expected to come home with a fish for dinner.

What do you do?

4.

You were fishing at a secluded lake and caught seven fish this morning. Now, its afternoon and the fishing as been great! You have caught five fish in one hour, all of which are on your string in the water and are bigger than this morning's fish. The law allows you to possess 10 fish per day.

What should you do?

5.

You are on a fieldtrip to the Newport bay front. Although you know it's not a good idea to feed the wildlife, some of your friends are tossing pieces of their tunafish sandwiches to the sea lions.

What should you do?

6.

You're on a charter boat with your family during your summer vacation. Your grandfather, a grumpy, stubborn man, is a heavy smoker and keeps throwing his plastic cigar butts over the side.

What should you do?

4.

- a. Continue to fish and keep all the fish.
- b. Let the smallest fish you caught this afternoon go free and keep the big ones to stay within your limit.
- c. Quit fishing and go for a hike.
- d. Continue to fish but release them.
- e. Other

1.

- a. You know it's illegal, but you simply hide them in your garbage can with your other household waste and have it taken to the county landfill.
- b. Leave them in your basement.
- c. Call the county to find out where to dispose of them safely.
- d. Other

5.

- a. Tell them that feeding the sea lions can harm the animals and ask them to stop.
- b. Report their behavior to an authority on the dock.
- c. Ask the teacher to ask them to stop.
- d. Ignore them.
- e. Other

2.

- a. You notice that there are many sea stars and you think it won't hurt anything to take just one.
- b. Offer to pull it off the rock and suggest you play Frisbee with it.
- c. Explain that this animal won't be able to survive if she takes it home and suggest that she watch it here and then leave it in its habitat.
- d. Yell at her and ask her how she would feel if someone picked her up and threw her out in the ocean.
- e. Other

6.

- a. Yell at him, call him an idiot and ask him if he hasn't heard of the MARPOL Protocol, the law prohibiting the dumping of all plastic wastes from ships at sea.
- b. Ask the captain for a can, give it to your grandfather and politely ask him to use it for his cigar butts.
- c. Do nothing.
- d. Tell your parents to tell your grandfather to quit smoking.
- e. Other

3.

- a. Go to the nearest house and ask to borrow their boat, knowing you'll be in the doghouse if you don't come home with fresh fish.
- b. Put on your best lure, cast as close to the pool as possible and hope for the best.
- c. Carefully walk through the stream.
- d. Go to the fish market for fish for dinner.
- e. Other

1.

There are getting to be too many sea lions near your town. Their pups are starving. Sea lions eat fish – but fishermen need fish too. The sea lions rest on the beach – but people want to sit on the beach too.

What should the people in your town do?

2.

You are on a fishing boat with a friend's family. When the fishing net is hauled in, some of it is torn. Your friend's father cuts the torn part out and throws it overboard. Just then you see some dolphins swimming toward the boat.

What should you do?

3.

You are out on the beach with your friend and you find a seal pup. No one else is around.

What should you do?

4.

You work at an oceanarium that might be able to return a whale to the wild. Here are some facts to consider:

- You have been treating the whale for a possibly contagious disease. The disease seems to be gone.
- The whale has begun to feed on its own, but you don't know if it will be able to find food in the wild.
- It has not been with others of its own species for most of its life.
- Whales swim with their own pods but you don't know if its pod can be found or if they will accept it.
- This species of whale is not endangered.

Make your decision based on what is best for this whale and for whales in the wild. What should you do?

2.

- a. Move quickly and try to pull the net out of the water.
- b. Tell your friend's father that it is against the law to throw plastics overboard. Tell him also that marine mammals die from getting tangled in nets.
- c. Try to scare the dolphins away.
- d. Don't say anything but report him to the Coast Guard when you get to the dock.
- e. Do nothing
- f. Other

1.

- a. Take some of the sea lions to live in another place. This would mean fewer sea lions near your town. (Keep in mind that the ones you move might not live or they might come back.)
- b. Let nature take its course and let the sea lions starve.
- c. Catch the pups and let your local aquarium take care of them, if they can. When the pups are older, set them free.
- d. Hire a biologist to determine the actual effect of the sea lions on the fishing industry
- e. Let licensed hunters control the sea lion population.
- f. Other

4.

- a. Go ahead and release it and hope it will socialize and feed on its own. You hope to use radio-tracking equipment to follow its progress in the wild.
- b. Since your whale seems healthy, capture other whales in an ocean pen. Introduce your whale to them. If your whale hunts and eats on its own and gets along with the other whales, then release it
- c. Keep the whale in the oceanarium for educational purposes and for study since you can not prove it is healthy.
- d. Other

3.

- a. Take it home and care for it in your bathtub.
- b. Leave the pup alone. Call the State Police and tell them the pup is on the beach. Stay to keep people away from it until they arrive.
- c. Pet the pup, although you know it's against the law. Then return it to the water.
- d. Do nothing
- e. Other

5.

You are the owner of a large factory. The water that your factory drains into the river nearby is polluted, but it is within legal limits. Fish and marine mammals in your area are getting sick from the pollution. Some are dying. The equipment to reduce the pollution. Some are dying. The equipment to reduce the pollution is expensive. If you buy it, you can't give your employees raises this year.

What should you do?

6.

You are the owner of a small aquarium. You are going out of business because not enough people are coming to see your exhibits. Your seals are healthy but old. Other aquariums might not want to adopt them, and you might not be able to get permits to turn them loose. You are not sure if they can live in the wild after 25 years in your aquarium. These seals are not an endangered species.

What should you do?

7.

You are a researcher on a small tropical island. The people of this island hunt dolphins for food. They travel in canoes and use spears to kill the dolphins. Each year a small number of dolphins is injured but not captured. Some of these injured animals may not survive.

What should you do?

8.

You are a humpback whale photographer. You always know where you can find the whales. You are out in your boat and see a mother humpback whale and her calf. To get the photograph you want, you must be at least 20 feet from the pair. You know this is against the law, but no one from the government is around. Your magazine has to have the photo.

What should you do?

6.

- a. Ask other aquariums if they can take the seals. Keep at it until someone says yes, or until you run out of possibilities.
- b. Ask an animal rights group to try to force the government to let you release the seals.
- c. Load the seals in your truck and release them without the permits. Deal with the law later.
- d. End the seals' lives.
- e. Other

5.

- a. Since you are within legal limits, wait a while to see if the cost of the equipment will go down.
- b. Do nothing.
- c. Store the water until the laws change or until you have extra money to spend on the equipment.
- d. Add the equipment, because you know that the chemicals will work up the food chain and affect even more animals. Your employees may be unhappy, but everyone will lead healthier lives.
- e. Other

8.

- a. Stop your engine and hope that the whales will come closer so that you can get your photograph.
- b. Keep following the whales at a legal distance and hope you get your picture. (Keep in mind that you may be tiring the calf.)
- c. Chase them down and take your picture.
- d. Forget taking a picture of this pair of whales. Look for another photo opportunity, even though you feel sure you'll never get one as good as this.
- e. Other

7.

- a. Give the people motor boats to increase their speed. This might improve their aim.
- b. Give them guns to reduce the suffering on the part of the dolphins. This will also increase their hunting efficiency.
- c. Do nothing. This tradition has gone on for hundreds of years and hasn't seemed to hurt the dolphin population.
- d. Bring in another food source so the people don't have to eat dolphins.
- e. Other