How Big is a Blue?

Objective

Students compare the lengths of several species of whales. They recreate whale illustrations, exploring proportional relationships and changes in scale.

Materials

- ❏ One 30-m (about 100-ft.) rope measuring tape
- ❏ Ten different colors of tape or felt pens
- ❏ Butcher paper
- ❏ Pencils
- ❏ Protractors
- ❏ Whale illustrations and lengths from the Whale Cards in this Guide.

Background

More than 70 species of whales inhabit our planet. The smallest is just 1.2 m (4 ft.) long. Extremely large blue whales have reached lengths of 27.5 m (90 ft.).

Action

PART ONE: MEASURING

1. Make a "whale rope" to estimate, make, and use measurements. Using a different color of tape or a different color felt pen for each whale you've chosen, students mark the lengths of various whales on the rope. (Use the whale lengths given on the Whale Cards in this Guide.)

2. On a piece of paper or cardboard, students make a color key to go along with the rope.

3. (Do this part of the activity outside or in the school auditorium.) Select two students to slowly unroll the whale rope. Have them stop unrolling each time they reach a colored marker. At each marker, ask students to guess which whale is as long as the unrolled rope. Tell the name of the correct whale and continue to unroll the rope until you've named all the whales.

PART TWO: SCALE DRAWINGS

4. Photocopy the pictures, names, and lengths of the whales you've chosen from the mini-poster.

5. Divide the class into cooperative learning groups and distribute one whale illustration to each group. Also give each group pencils and enough butcher paper to create a life-size drawing of their whale. (Option: students can use chalk to create drawings on the sidewalk or blacktop.

6. Students measure lengths, areas, and angles of their whale illustration so that they will be able to create a lifesize drawing.

7. Students create life-size drawings of whales on the butcher paper or blacktop. They refer to the scale printed on the whale cards in the center of this guide for the proportionality constant. Display the life-size whale drawings in your school's auditorium, library, or hallways.

Use the cards on this insert to get started exploring whales. Each of the nine families of hales are represented by one or more of the following species. Each card includes a scale for reference; note that not each illustration is drawn to the same scale. Here are some ideas for ways to use these cards in your classroom:

❏ Use the facts on the cards to help you prepare lessons and lead discussions in class.

❏ Copy and cut apart the cards. Distribute a different card to each cooperative learning group. Visit the school library to learn more about the whales. Groups may even adopt that species as their "mascot" while working on the Whales unit.

❏ Copy and cut apart the cards. Distribute a complete set to each student or group of students. Students compare similarities and differences among species.

blue whale
Balaenoptera musculus

Suborder	Mysticeti
Family	Balaenopteridae, the rorqual whales
distribution	worldwide
prey	krill (A single blue whale may eat as much as 8 tons in one day.)
predators	killer whales
adult length	to about 26 m (85 ft.), although the largest recorded blue whale measured 34 m (112 ft.). Blue whales are the largest animal in the world. Females grow larger than males.

1 in. = 4 m

sperm whale
Physeter macrocephalus
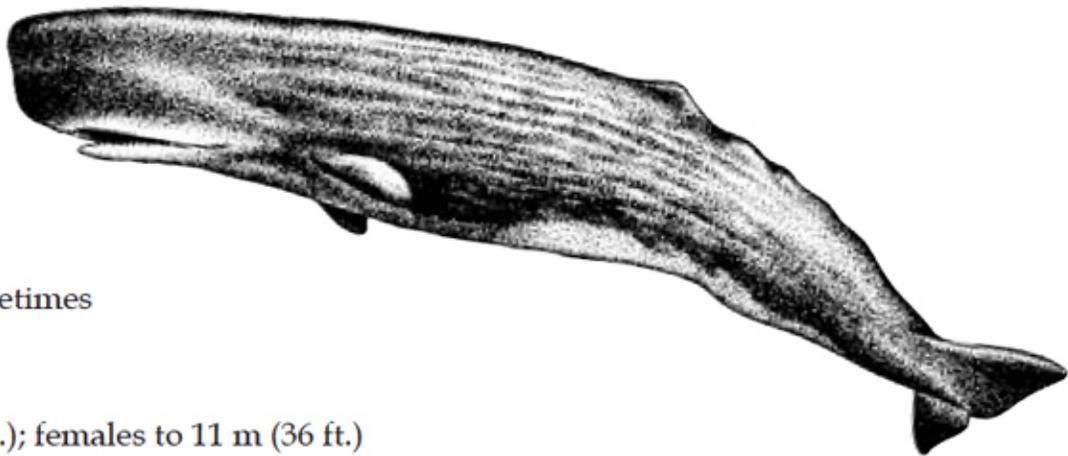
Suborder	Odontoceti
Family	Physeteridae, the sperm whales
distribution	worldwide
prey	mostly squids, sometimes octopus and fishes
predators	killer whales
adult length	males to 15 m (49 ft.); females to 11 m (36 ft.)

1 in. = 3 m

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humpback whale
Megaptera novaeangliae
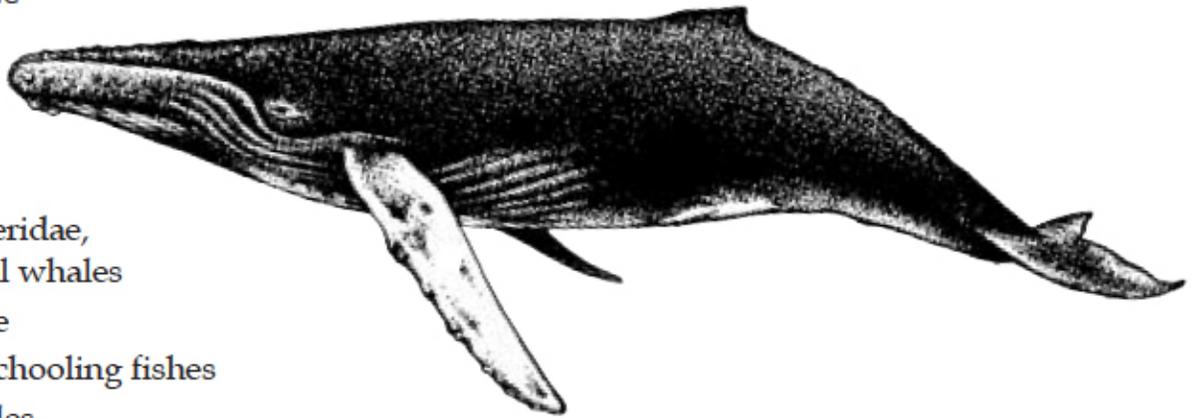
Suborder	Mysticeti
Family	Balaenopteridae, the rorqual whales
distribution	worldwide
prey	krill and schooling fishes
predators	killer whales
adult length	to about 16 m (52 ft.)

1 in. = 3 m

Northern right whale
Eubalaena glacialis
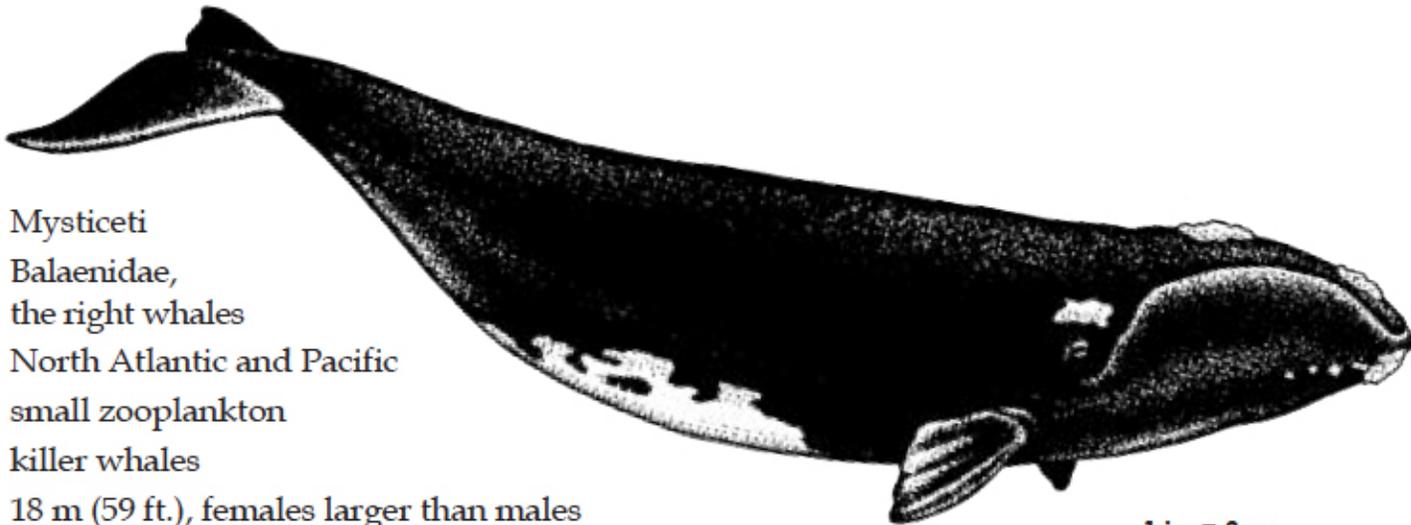
Suborder	Mysticeti
Family	Balaenidae, the right whales
distribution	North Atlantic and Pacific
prey	small zooplankton
predators	killer whales
adult length	18 m (59 ft.), females larger than males

1 in. = 3 m

gray whale
Eschrichtius robustus
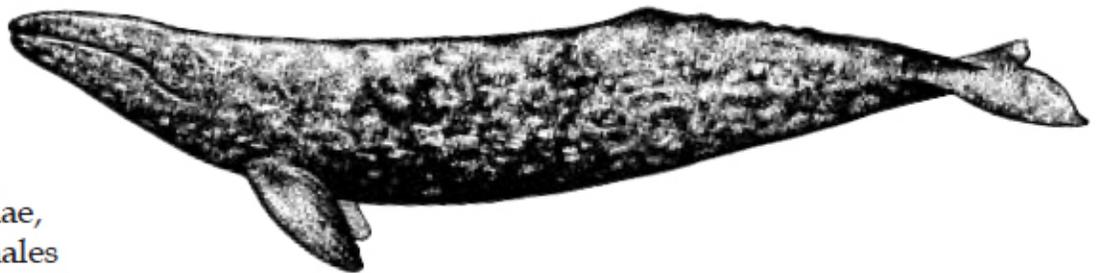
Suborder	Mysticeti
Family	Eschrichtiidae, the gray whales
distribution	Eastern North Pacific
prey	mostly benthic amphipods
predators	killer whales
adult length	14 m (46 ft.)

1 in. = 3 m

Dall's porpoise
Phocoenoides dalli

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Suborder	Odontoceti
Family	Phocoenidae, the true porpoises
distribution	North Pacific
prey	squid, crustaceans, and fishes
predators	sharks and killer whales
adult length	2.2 m (7.2 m)
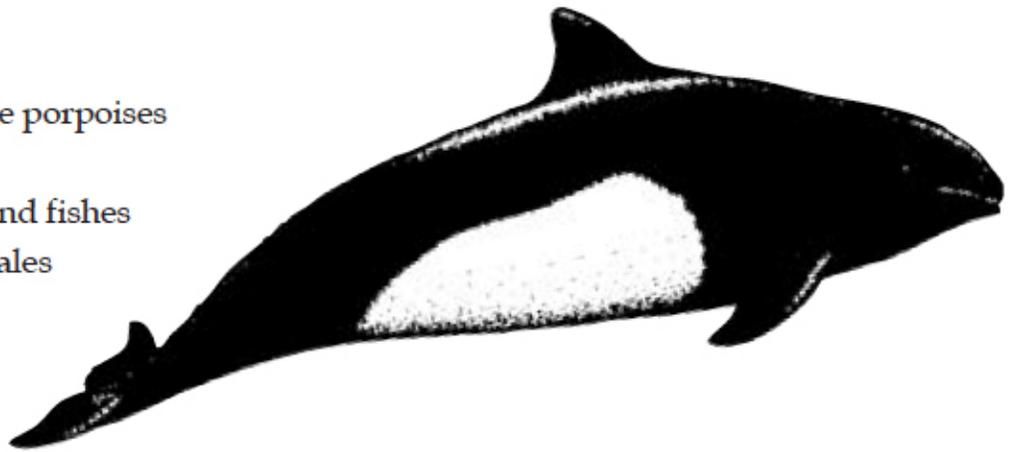
2 in. = 1 m

Commerson's dolphin
Cephalorhynchus commersoni

Suborder	Odontoceti
Family	Delphinidae, the oceanic dolphins
distribution	southern Pacific, Atlantic, and Indian Oceans
prey	invertebrates including krill and small fishes
predators	killer whales and sharks
adult length	1.5 m (5 ft.)

2 in. = 1 m

baiji (Chinese river dolphin)
Lipotes vexillifer

Suborder	Odontoceti
Family	Platanistidae, the river dolphins
distribution	Yangtze River of China (fresh water)
prey	fishes
predators	unknown
adult length	2.5 m (8.2 ft.)

2 in. = 1 m

SeaWorld. Busch Gardens.
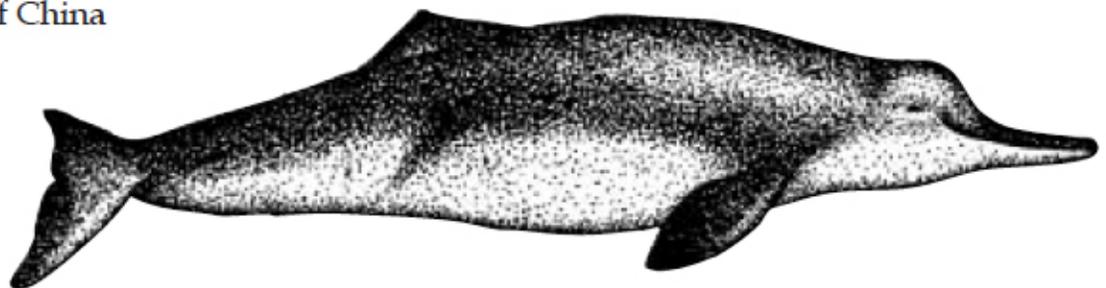
Cuvier's beaked whale
Ziphius cavirostris

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Suborder	Odontoceti
Family	Ziphiidae, the beaked whales
distribution	temperate and tropical waters
prey	squid and deepwater fish
predators	killer whales
adult length	7.5 m (24.6 ft.)
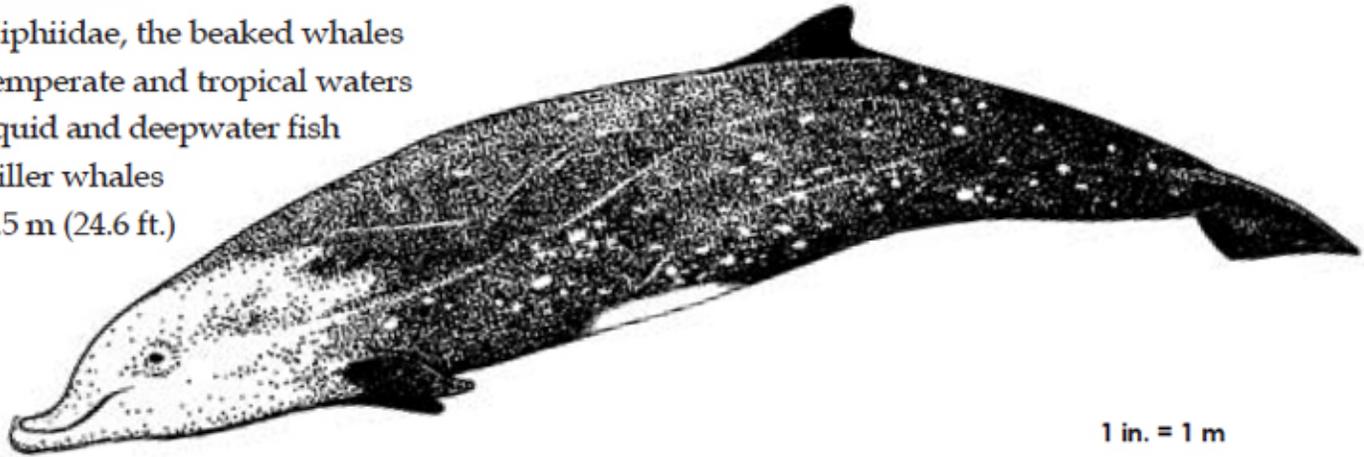
1 in. = 1 m

beluga whale
Delphinapterus leucas

Suborder	Odontoceti
Family	Monodontidae, the narwhal and beluga
distribution	arctic and subarctic seas
prey	bottom-dwelling invertebrates and fishes
predators	killer whales and polar bears
adult length	males to 4.6 m (15.1 ft.); females to 4 m (13.1 ft.)
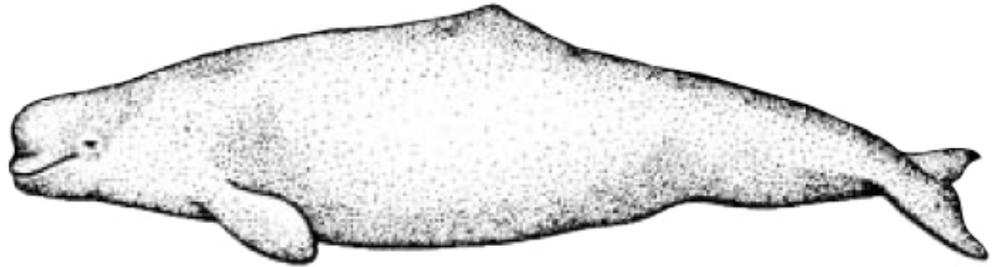
1 in. = 1 m

killer whale
Orcinus orca

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Suborder	Odontoceti
Family	Delphinidae, the oceanic dolphins
distribution	worldwide
prey	Fishes, squids, and marine mammals. Killer whales are the oceans' top predators. Their diets vary from region to region.
predators	none
adult length	males to 6.7 m (22 ft.); females to 5.8 m (19 ft.)

1 in. = 1 m