


COLOR and Learn
all about

WHALES of Massachusetts

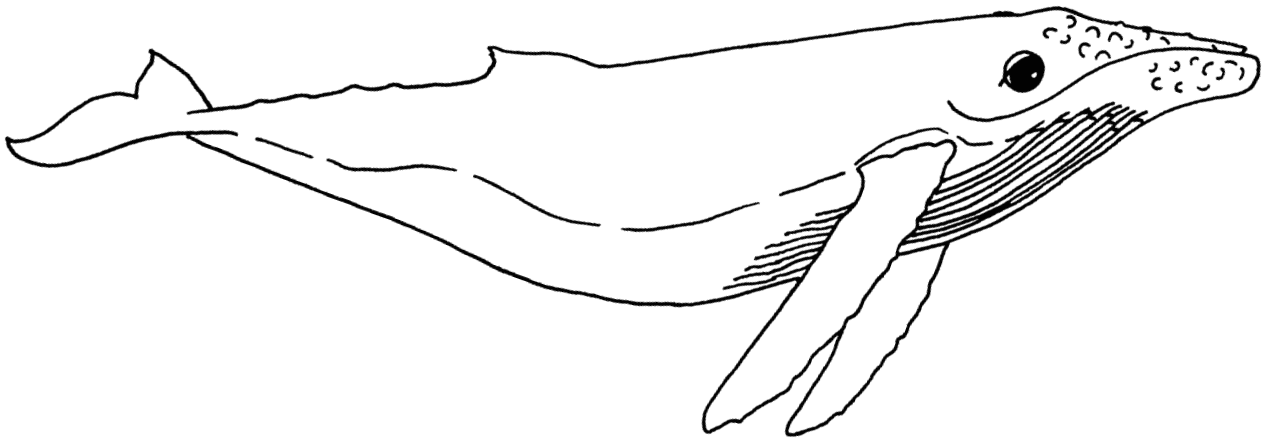
A simple line drawing of a whale's blow, showing a vertical column of water with several small circles representing bubbles or droplets at the top. The blow is positioned between the words 'of' and 'Massachusetts'.

This book belongs to: _____

Marine Fisheries
Commonwealth of Massachusetts



What is a whale?



Whales are **marine mammals**. They live in the ocean, and like all mammals, are warm-blooded, give birth to live young, nurse their young, and breathe air.

Whales, porpoises, and dolphins are all **Cetaceans**. There are 91 **species**—or kinds—of cetaceans living all over the world. Some species live mainly in the colder Arctic and Southern Oceans while others live in tropical waters around the equator. Many of the largest cetaceans, the whales, migrate thousands of miles. Massachusetts happens to be a stopping point on a few migration paths...



Baleen vs toothed whales

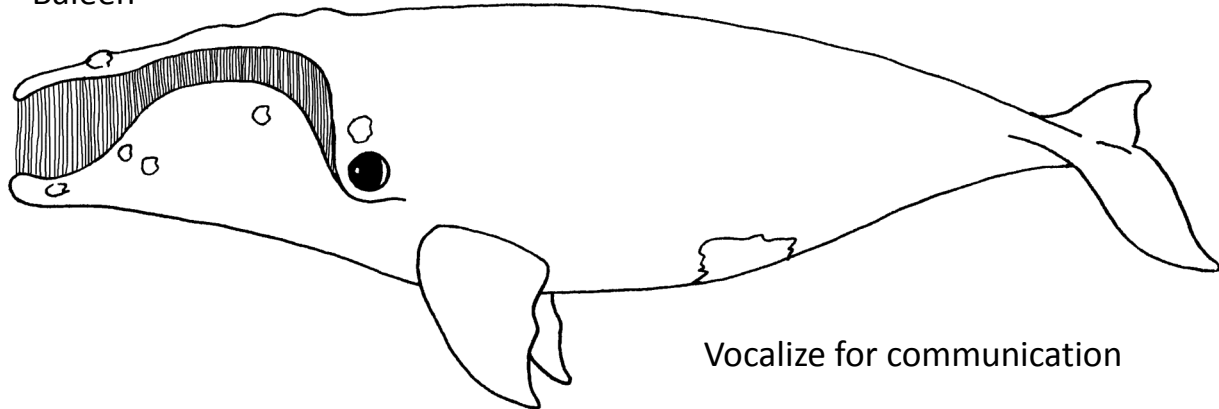
Mysticeti



Two blow holes

Largest of the whales

Baleen



Vocalize for communication

Cetaceans are divided into two groups, called suborders. **Mysticetes** (miss-ta-SEATS) are the baleen whales, like humpbacks and right whales. They have long hair-like teeth called **baleen** and eat **zoo-plankton** and small fish. **Odontocetes** (o-DONT-a-seats) are the toothed whales. These whales have teeth and eat larger animals. Odontoceti include sperm whales, dolphins, and porpoises.

Odontoceti

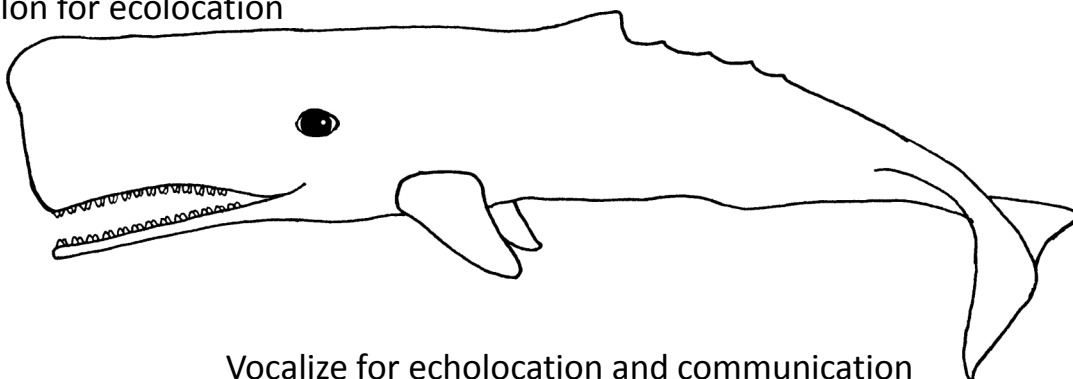


One blow hole

Except for the sperm whale, the smallest of the whales

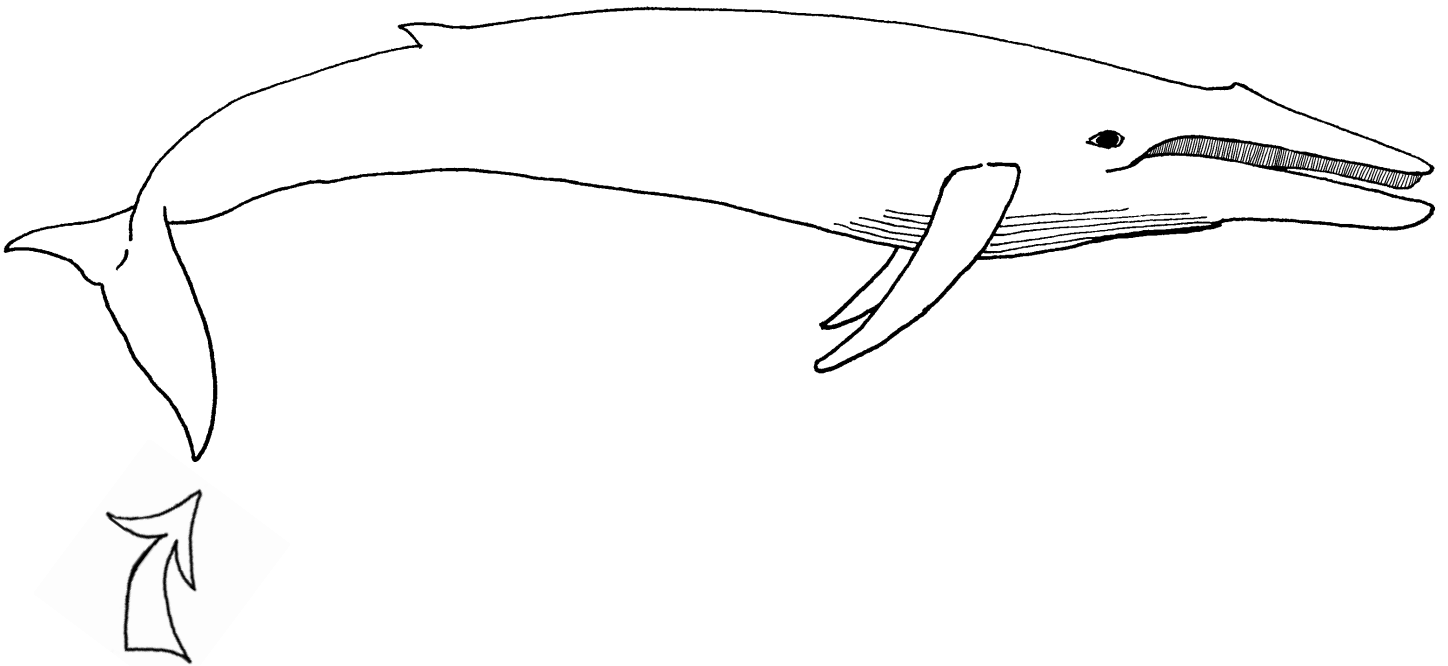
Have a melon for echolocation

Teeth



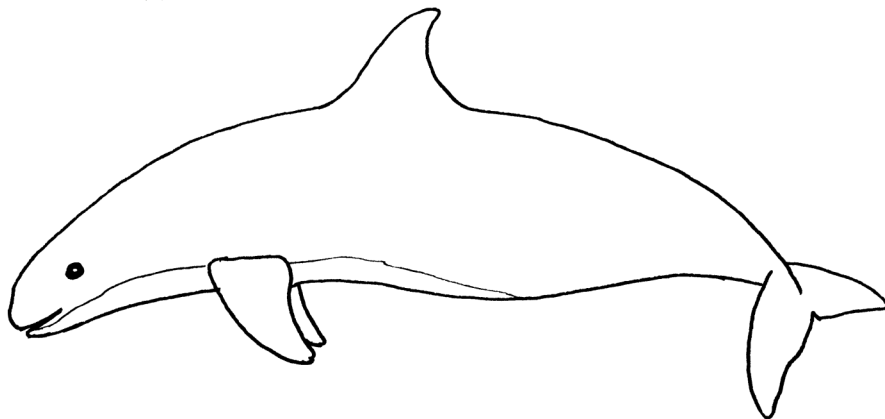
Vocalize for echolocation and communication

How big are whales?



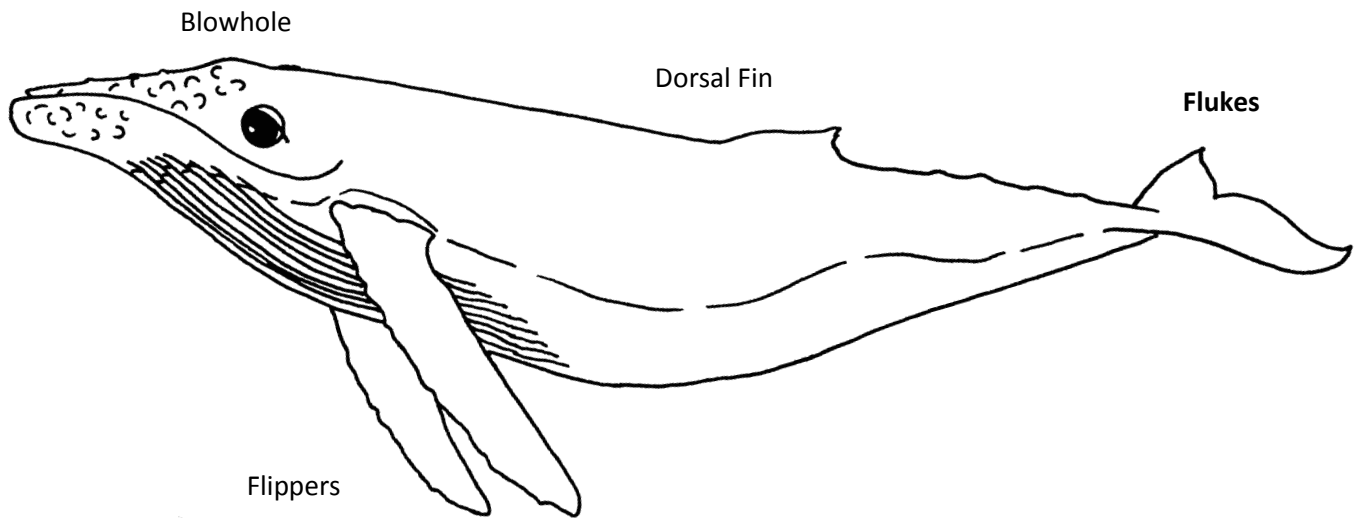
The largest animal known ever to live on Earth is the **blue whale**. They can grow up to 100 feet long!

The extremely endangered vaquita, which lives in the northern Gulf of California, is the smallest cetacean at 4.5 feet long.



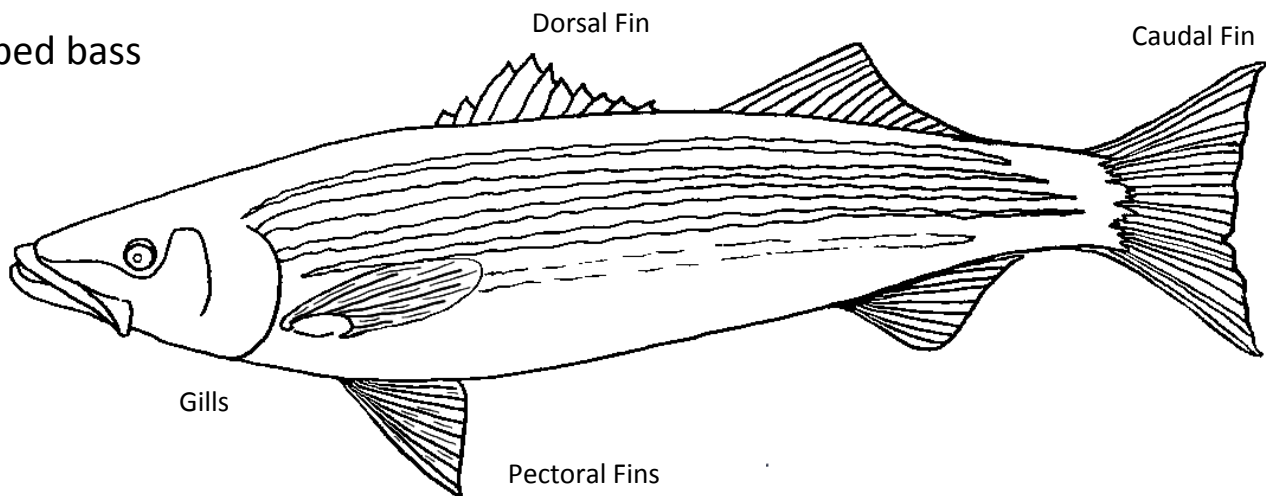
Is it a whale or a fish?

Humpback whale



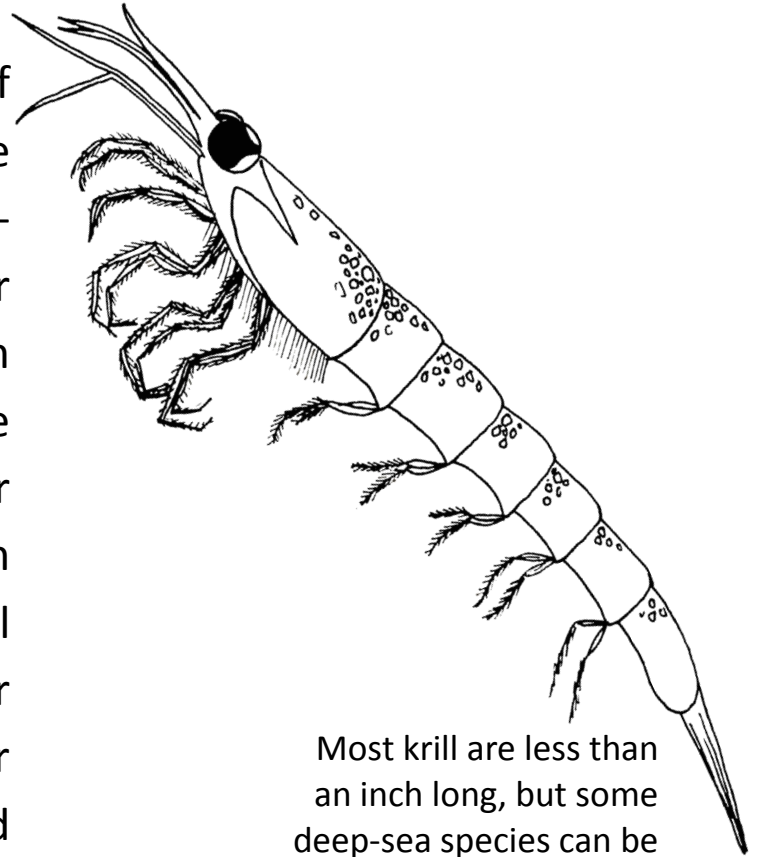
Whales and fish may look similar but they are very different! Look at the humpback whale above and the striped bass below to see the similarities and differences between the two.

Striped bass

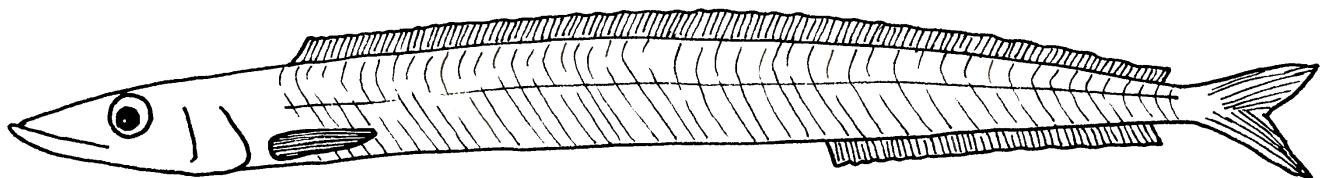


What do baleen whales eat?

Baleen whales, the largest of the cetaceans, eat some of the smallest animals - zooplankton! They swim with their mouths wide open, taking in lots of water. In the water are large groups of **krill** and other tiny animals. The whales then close their mouths and push all the water out by pressing their tongues to the roof of their mouths. All the yummy food gets caught in the baleen while the water leaves!



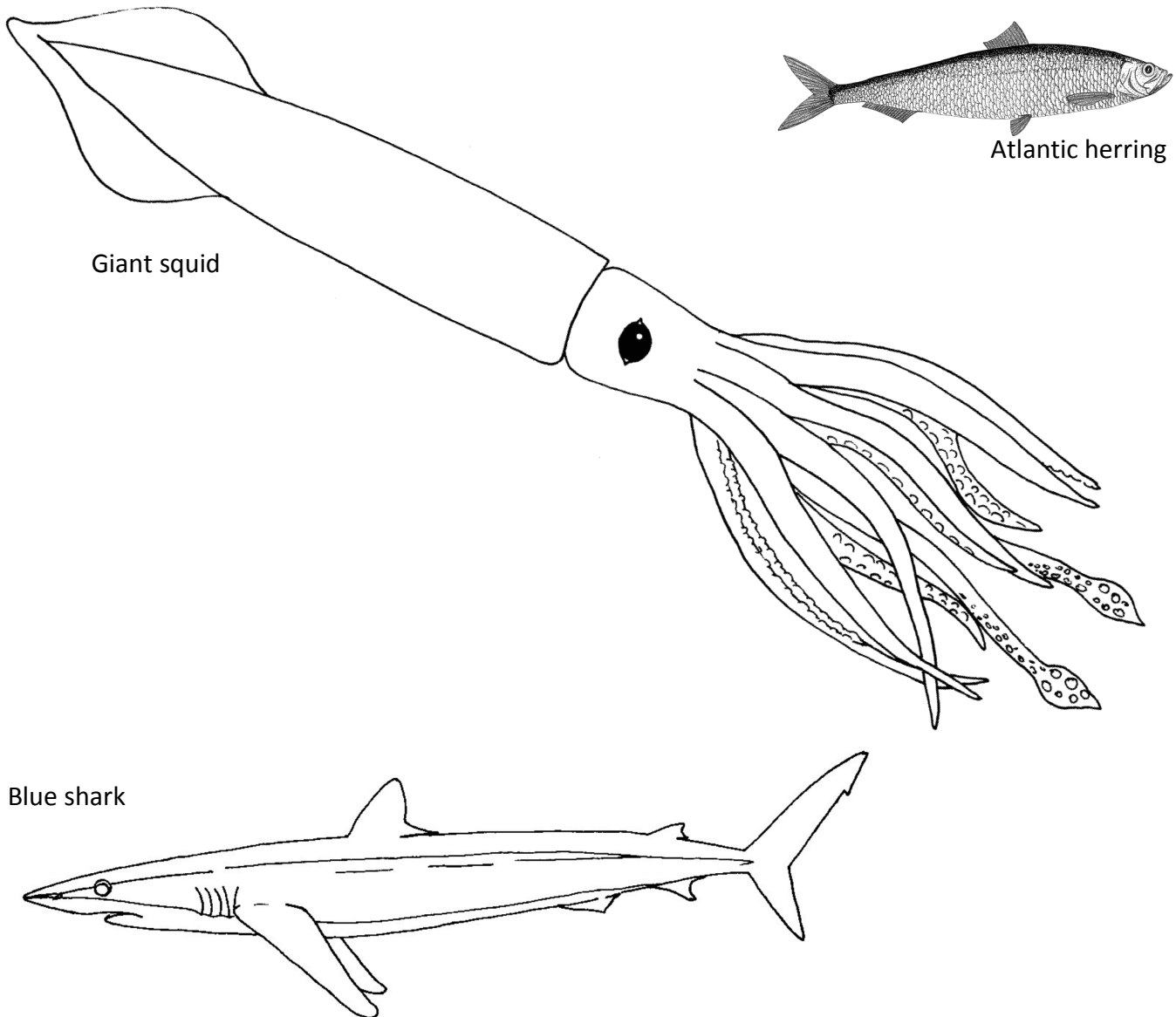
Most krill are less than an inch long, but some deep-sea species can be up to 6 inches long!



Sand lance can grow to be 10 inches long!

Plankton are organisms that drift with currents. Zooplankton are animals while phytoplankton are **autotrophs**—meaning they make their own food like plants. Zooplankton include tiny copepods and large sea jellies.

What do toothed whales eat?

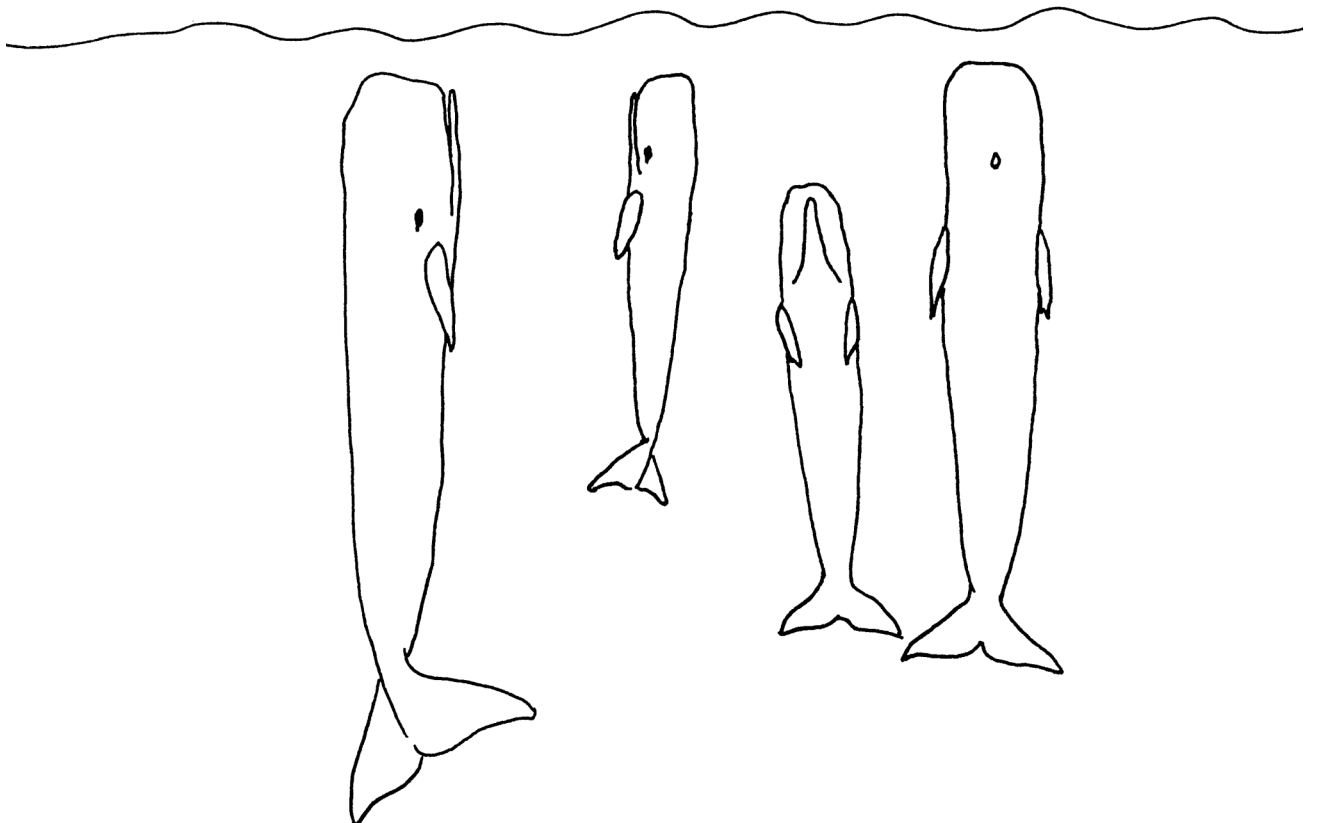


Toothed whales eat a variety of food. They can eat everything from seals and sea lions to fish and sharks to squid! The sperm whale's favorite food is **giant squid**. Orcas in the North Atlantic Ocean like eating herring and even some sharks!

Do whales sleep?



All cetaceans are **conscious breathers**. This means that they have to think about breathing. To make sure they wake up in time to breathe, whales let only half of their brains sleep at a time. They stay close to the surface and don't move very much when they sleep. This is called "**logging**."



Where do the whales live?

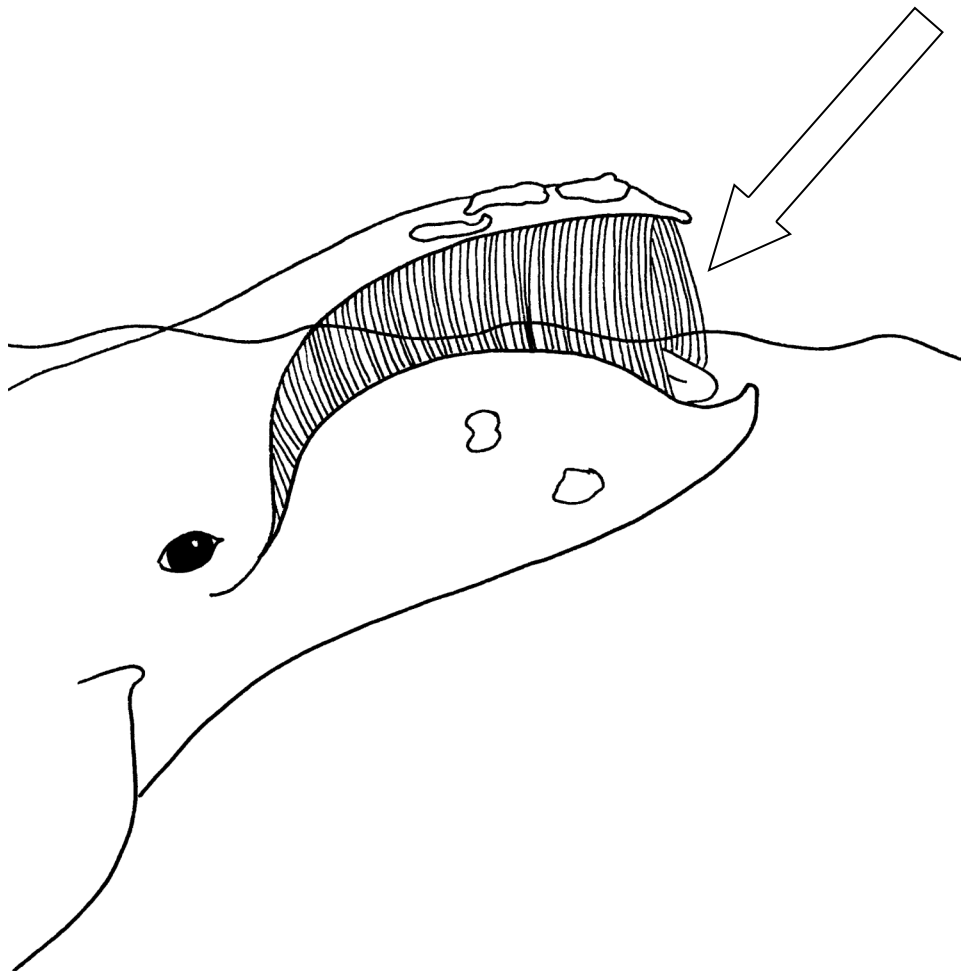
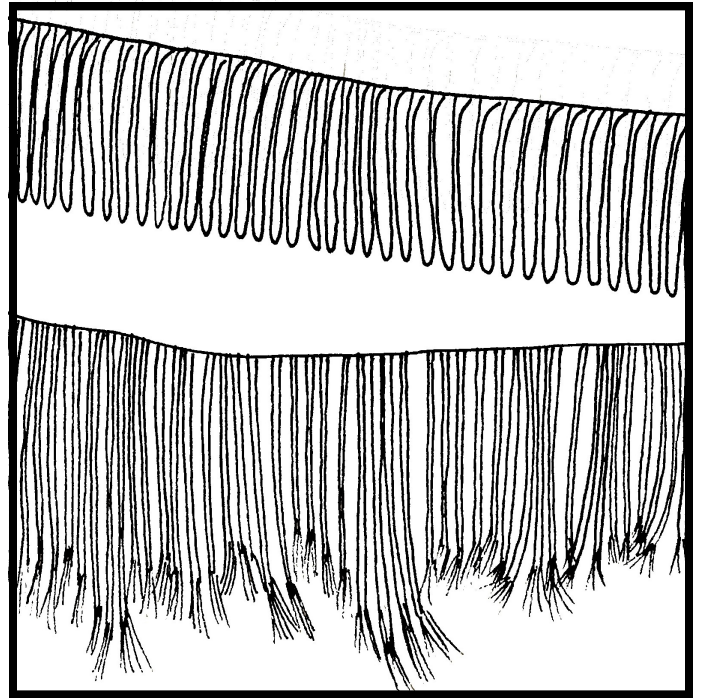
There are some **resident populations** of different whale species around the world. These are groups that stay in the same place year after year. Other whale species migrate thousands of miles from where they eat to where they mate and give birth to their young.



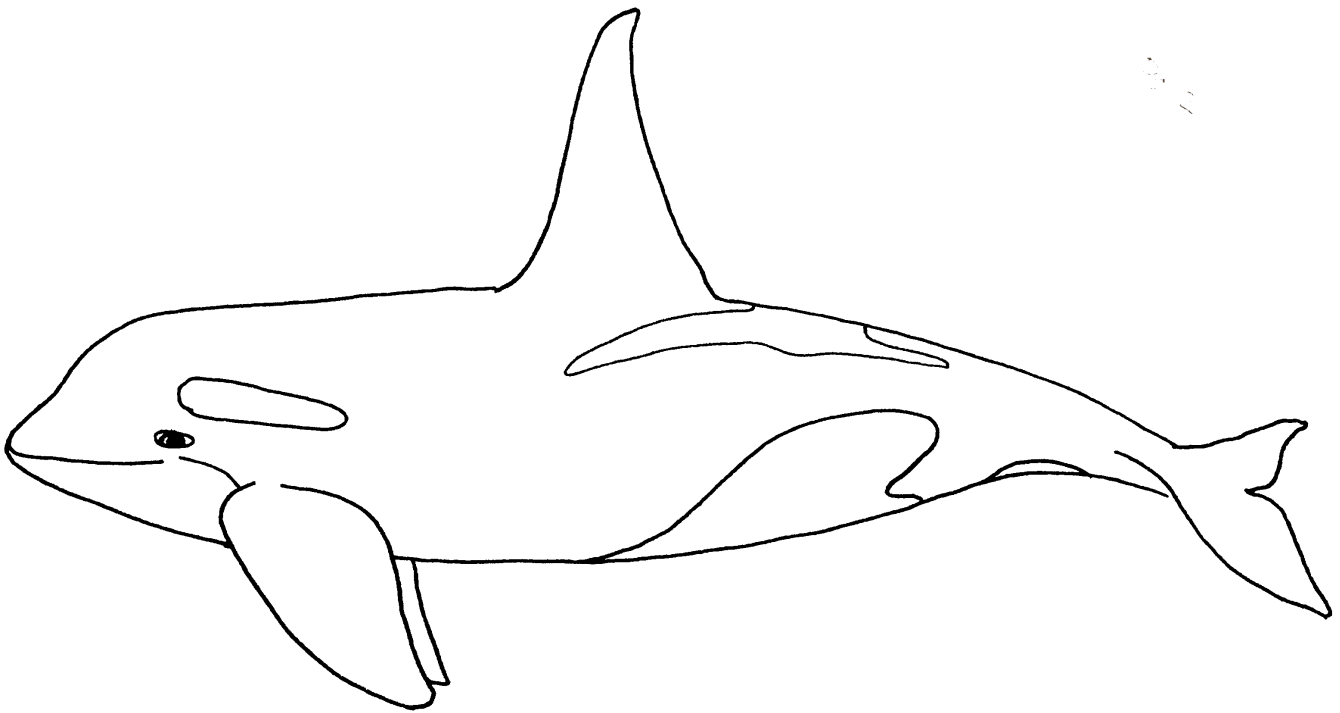
Humpback whales have the longest migrations of any mammal. They travel thousands of miles from summer feeding grounds (Stellwagen Bank and off the coasts of Greenland) to winter calving grounds off the Caribbean islands.

What is baleen?

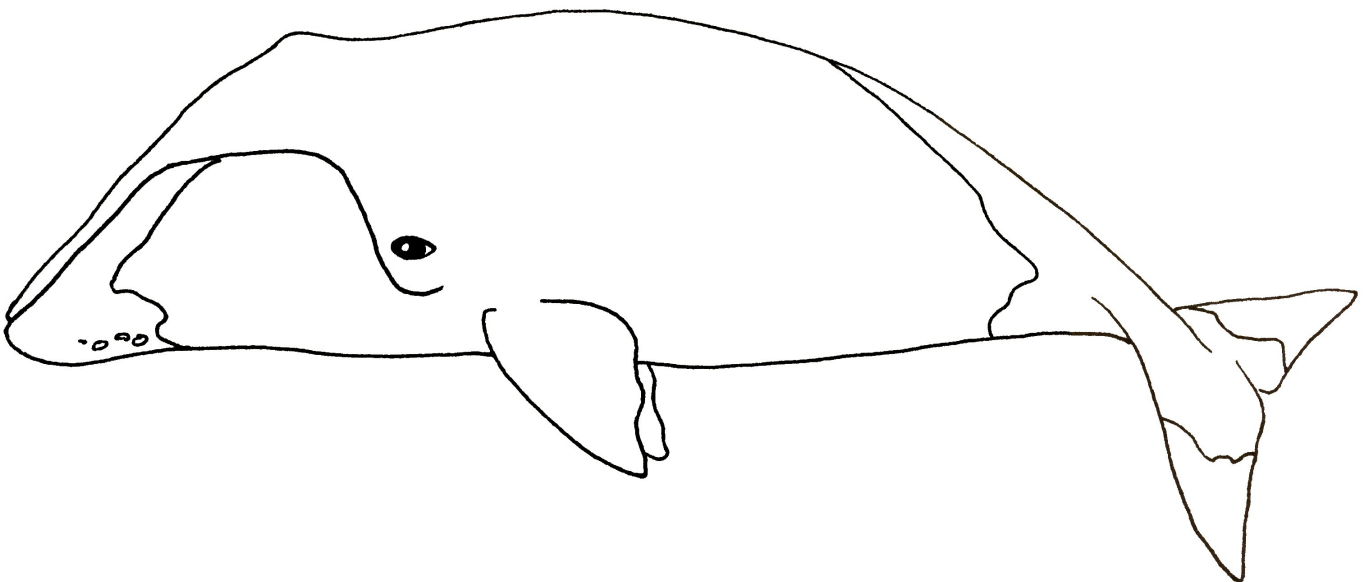
The baleen whales have baleen plates in their mouth instead of teeth. Baleen are made of keratin, the same proteins found in human hair and fingernails! They use the thick, hair-like baleen to filter feed their food.



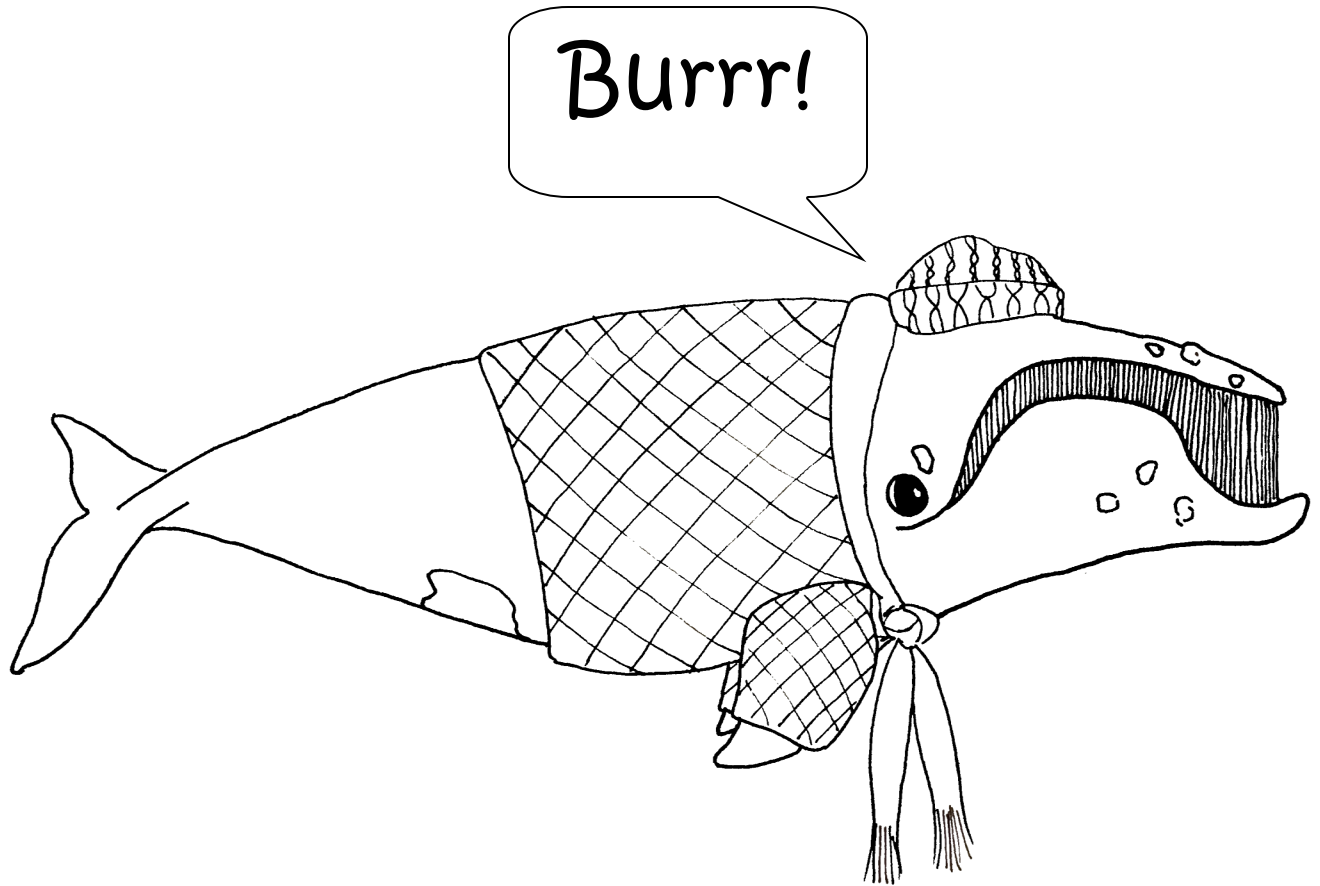
How old do whales get?



Many cetaceans can live very long lives. Orcas, part of the dolphin family, can live between 60 and 80 years. Humpback whales can live to be about 50 years old. The oldest whale, the bowhead, has been recorded to live over 200 years!



What is blubber?



Blubber is a layer under the skin where fat is stored in whales. When whales migrate, they use up the blubber instead of eating. Blubber also acts as an **insulator**, keeping the whales warm when they swim into cold waters.

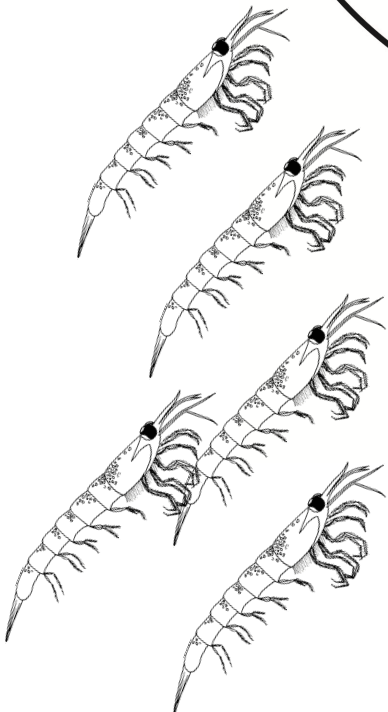
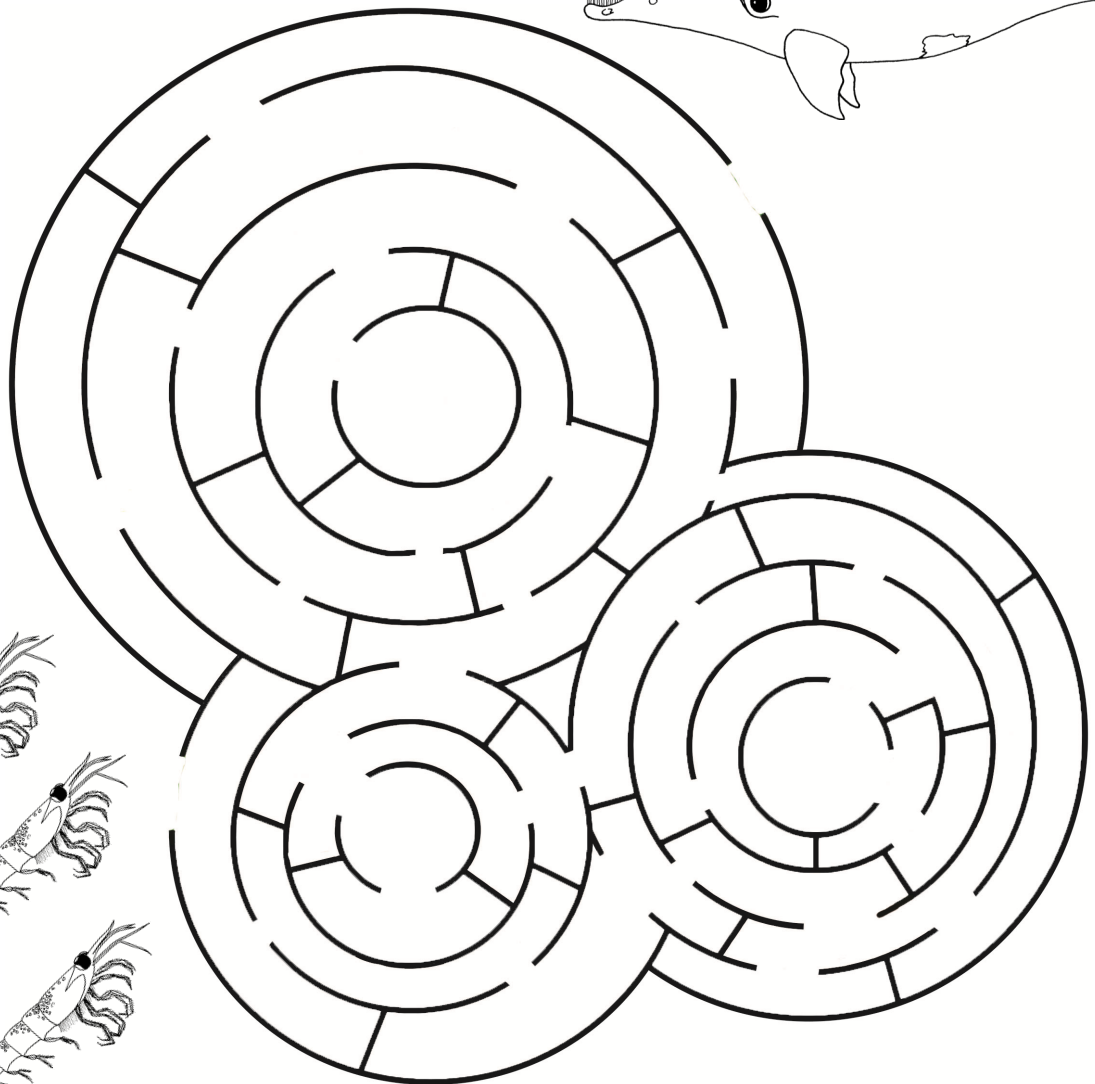
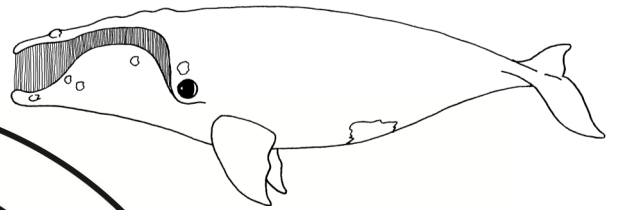
Can you find all of the whale names?

Look up, down, diagonally, and backwards!

A T E E B L K R W P L I U B N A A L T M P E E A M
H I R H I A E T C A E I C M I N K E W H A L E K L
N I H P L O D D E D I S E T I H W C I T N A L T A
E D D F D R B R H H L G I L A S P E R M W H A L E
A E I A R A E E I T R P O E A N K I N I L W H I L
A L N A N S A L A I O R R N N H I I N N M H W A E
H L K A I R E A E C R N A A I E W I L L F T K P S
R R E M O T A E L T E I A E L T L E N T A G C H H
M P C K E H H H W I U L H H L I L W U O O I A I H
I P W R F R E I A E T W O I S A D D P L A R B P H
E A A N I I A A W M B E E A H R H P F W B C P H W
D N A A I I D A W K K S T W I H A W W O A I M F H
I L W L L D C O H L A A N U I E N D R K C T U T S
O N I M R O I A E E T I R R W H K P L E D N H A E
A W A I W R H O P H F K N R A E O W E A L A A L P
D T A A A I I A A H E A S D E R W A L E B L R M E
L E I N H I R E L I D I K I P W T L A N L T I L N
L H H H P G T L B U H D I O E A A H M E I A H K T
D H L H M N L E A A O D I A W F E W E R L H R B D
T N T B H G L P A M G S B E I A I O W E L T E E L
O L N B E L A H W I E S W H N I T L M H I R A W E
W D P M A H W I E L O H T H R A T C B L W O N E A
C F E F L M T H N E L E L P E K E L O H W N E O A
P O H I T U E W W T I L F E L O O L H U O E L O E
E M L N S H K K R H H S W H W A A I H I U N H H H

Blue Whale	Humpback Whale	Minke Whale	Fin Whale
Atlantic White Sided Dolphin	Killer Whale	Harbor Porpoise	
North Atlantic Right Whale	Sperm Whale	Sei Whale	

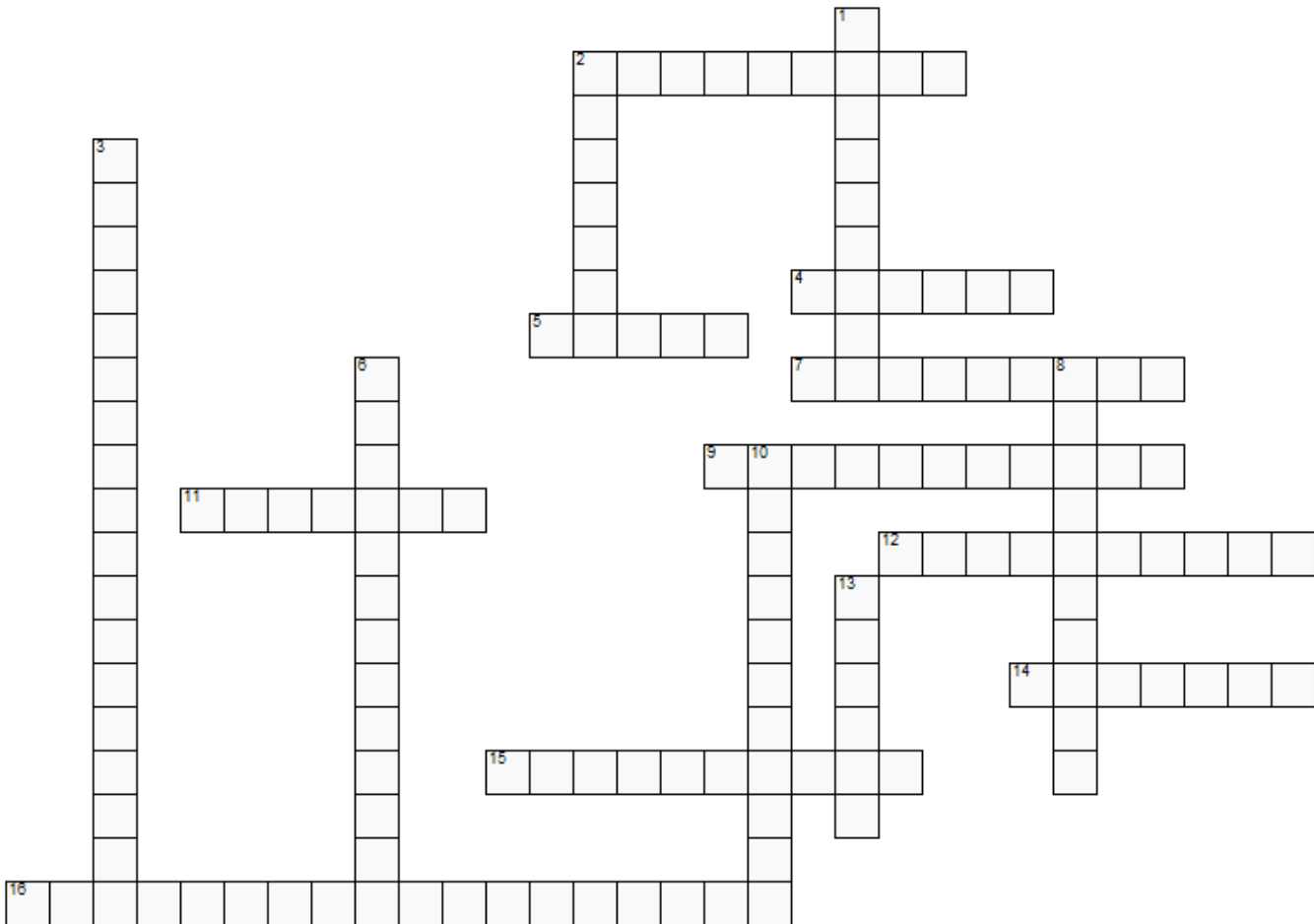
Help the right whale find the
krill!



Crossword

Figure out the clues below to fill in the crossword!

(if you need help, look for the **bold** words in this book!)



Across

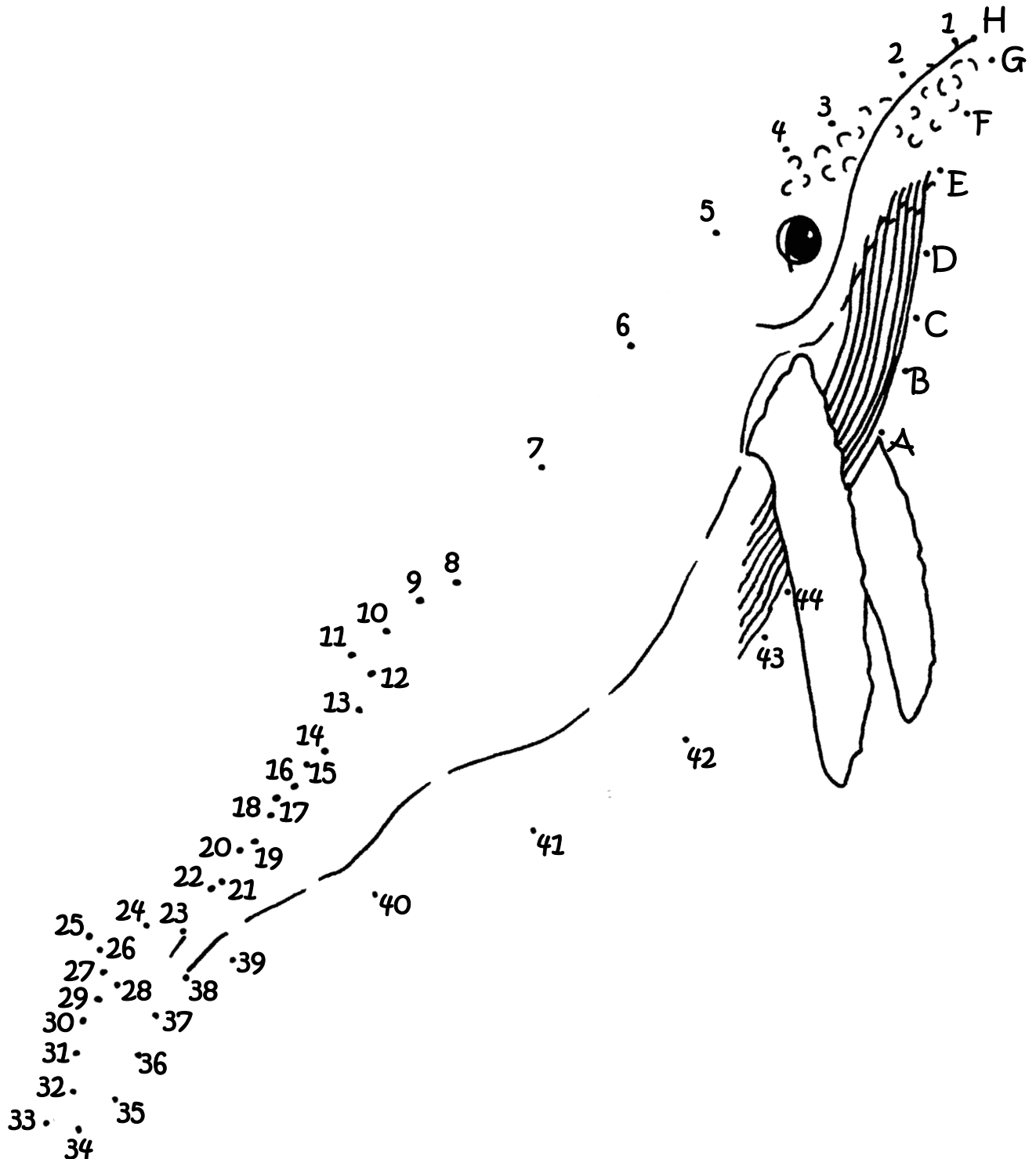
- 2 Mysticetes have two of these holes, Odontocetes have one
- 4 Long hair-like teeth used to strain food in some whales
- 5 Most baleen whales eat this
- 7 Whales, dolphins, and porpoises
- 9 Animals that drift on currents, includes krill and jellies
- 11 Resting near the surface of the water
- 12 Sperm whale's favorite meal
- 14 Different kinds of living things
- 15 Baleen whales
- 16 Whales are ___, they have to think about breathing

Down

- 1 Largest animal known to live on Earth
- 2 Insulating layer that is also storage for energy
- 3 Staying in the same place year after year
- 6 Animals that live in the water but breathe air and give birth to live young
- 8 These living things make their own food
- 10 Toothed whales
- 13 What the two lobes on a whale tail are called

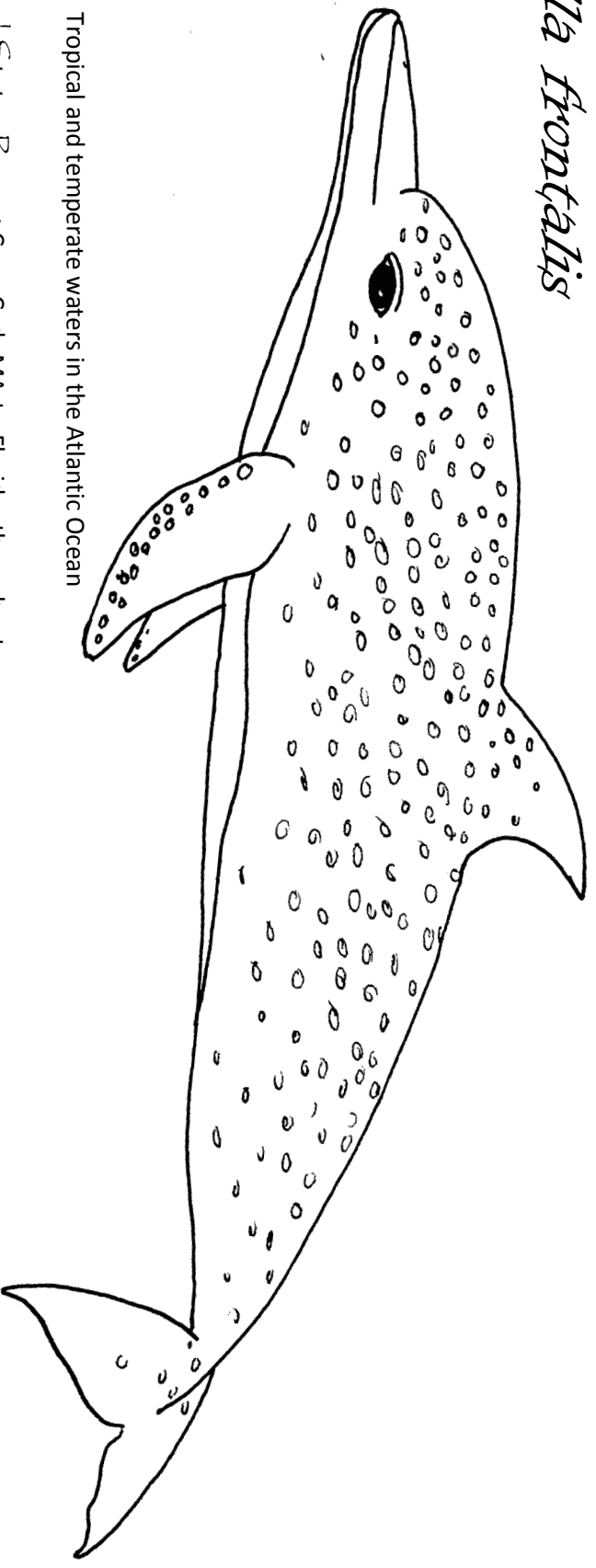
Connect the dots!

Connect the dots to see Heather Humpback Whale!



Atlantic Spotted Dolphin

Stenella frontalis



World Range: Tropical and temperate waters in the Atlantic Ocean

Eastern United States Range: Cape Cod, MA to Florida, throughout Gulf of Mexico

Size: 7.5 feet, females are slightly longer, 310 pounds, females are slightly lighter

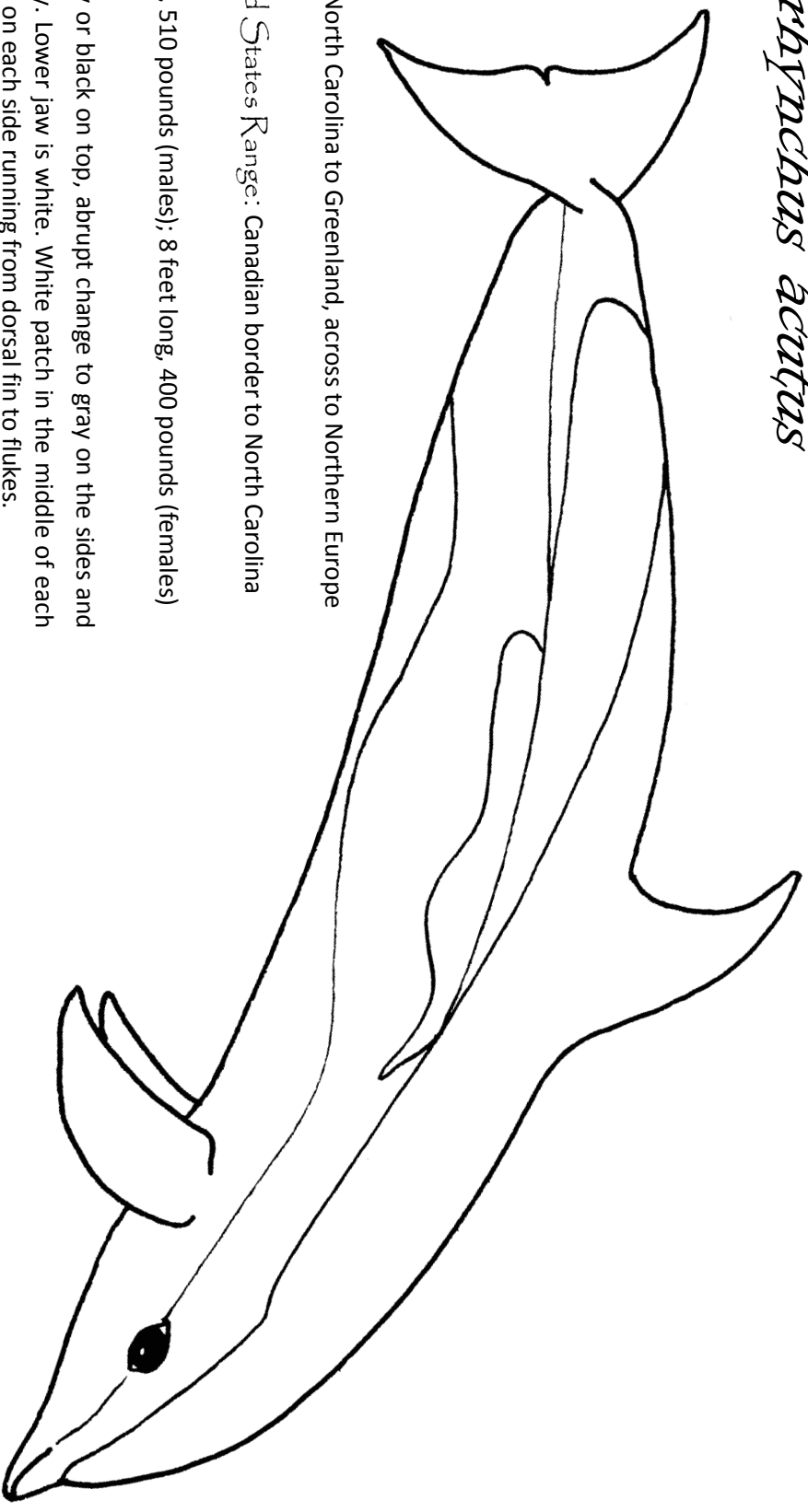
Color: Young are gray fading to off-white on the belly, acquiring darker gray with mottled spots as they age

Food: Small fish, squid and octopus

Life Span: Unknown!

Atlantic White Sided Dolphin

Lagenorhynchus acutus



World Range: North Carolina to Greenland, across to Northern Europe

Eastern United States Range: Canadian border to North Carolina

Size: 9 feet long, 510 pounds (males); 8 feet long, 400 pounds (females)

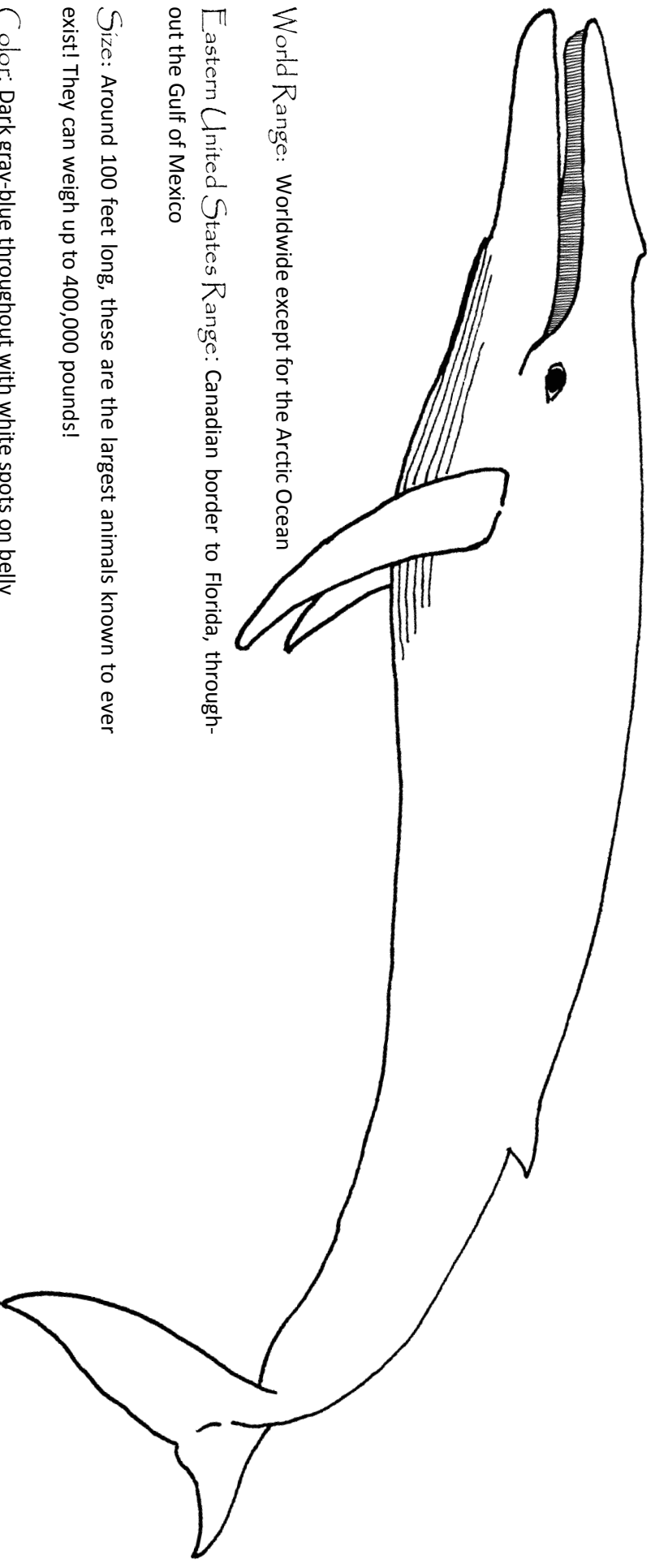
Color: Dark gray or black on top, abrupt change to gray on the sides and white on the belly. Lower jaw is white. White patch in the middle of each side, yellow patch on each side running from dorsal fin to flukes.

Food: Herring, hake, squid, mackerel.

Life Span: 25 years!

Blue Whale

Balaenoptera musculus



World Range: Worldwide except for the Arctic Ocean

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: Around 100 feet long, these are the largest animals known to ever exist! They can weigh up to 400,000 pounds!

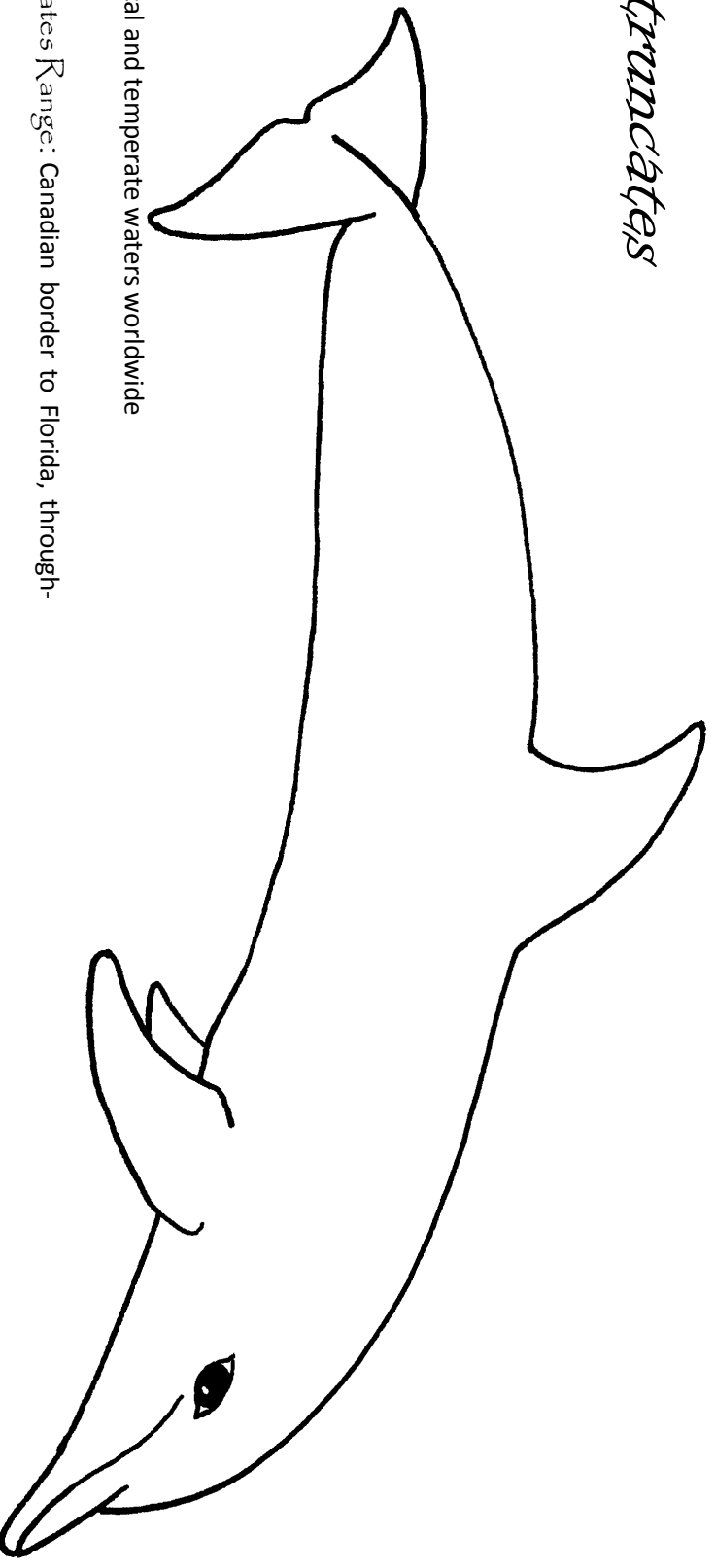
Color: Dark gray-blue throughout with white spots on belly

Food: Mainly krill and other zooplankton

Life Span: Over 70 years!

Common Bottlenose Dolphin

Tursiops truncatus



World Range: Tropical and temperate waters worldwide

Eastern United States Range: Canadian border to Florida, throughout Gulf of Mexico

Size: 7-12 feet, males are slightly longer; 570 pounds (females) to 1,100 pounds (males)

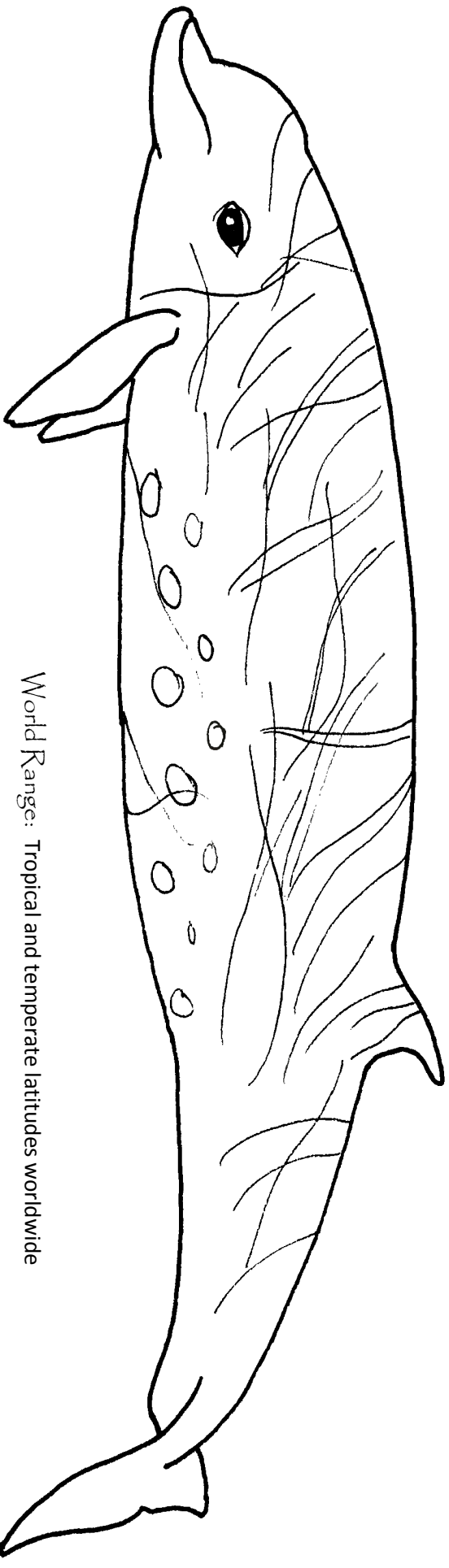
Color: Dark gray on top fading to light gray on sides and very light gray on the belly

Food: Fish, stingrays, octopus, squid

Life Span: Over 50 years!

Cuvier's Beaked Whale

Ziphius cavirostris



World Range: Tropical and temperate latitudes worldwide

Eastern United States Range: Canadian border to Florida including Gulf of Mexico

Size: 23 feet long, 5,700 pounds (males) to 6,600 pounds (females)

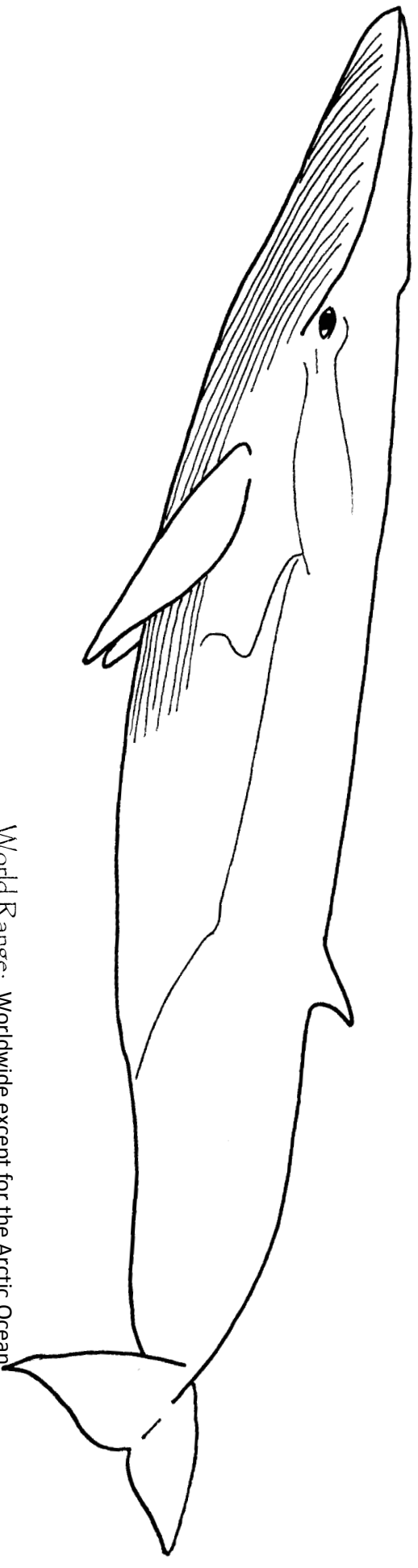
Color: Dark gray to red-brown. Adult males have a white head.

Food: Squid, small fish, crustaceans

Life Span: 40 to 60 years!

Fin Whale

Balaenoptera physalus



World Range: Worldwide except for the Arctic Ocean

Eastern United States Range: Canadian border to Florida

Size: 80 feet long, males slightly shorter, 260,000 pounds

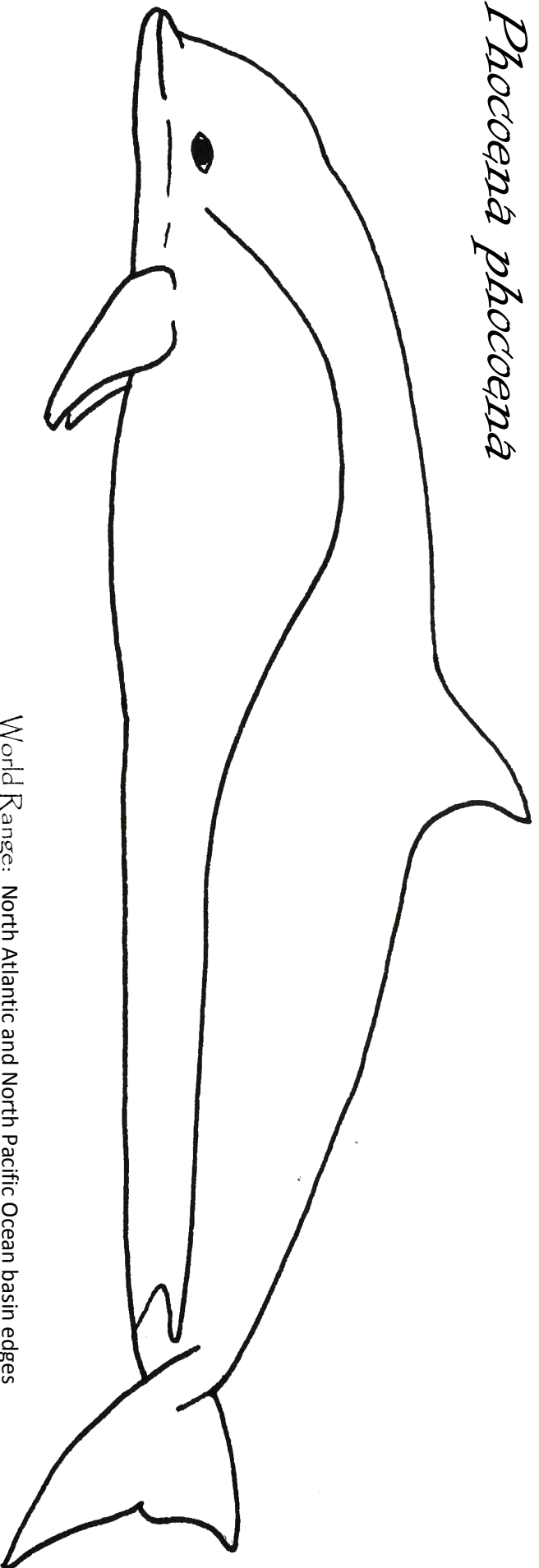
Color: Dark gray above and white or off-white on the belly, right side of the jaw is white while the left side is black.

Food: Mainly krill and small fish including herring, capelin, and sandlance

Life Span: Over 80 years!

Harbor Porpoise

Phocoena phocoena



World Range: North Atlantic and North Pacific Ocean basin edges

Eastern United States Range: Canadian border to North Carolina

Size: 5.5 feet, 170 pounds, males are slightly smaller

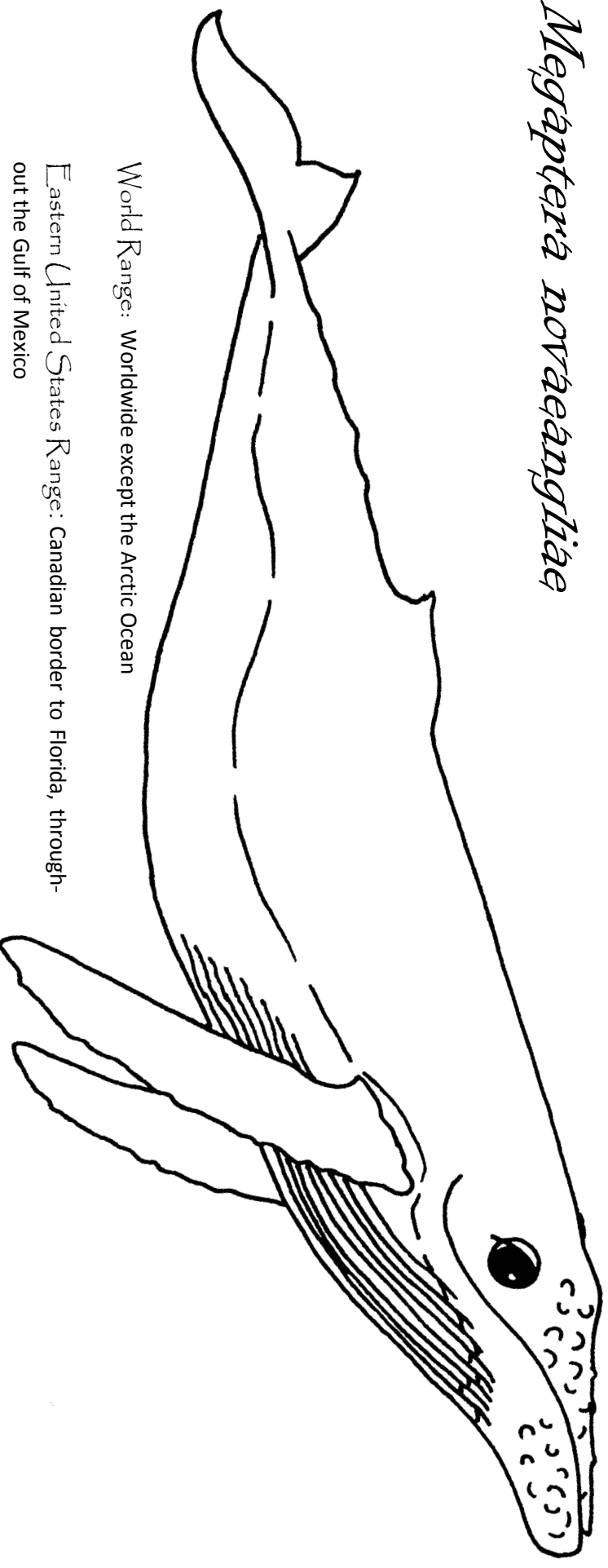
Color: Dark gray on the back fading through lighter grays on the sides to off-white on the belly. Flippers, flukes, and lips are dark gray.

Food: Mostly schooling fish, also squid and octopus

Life Span: 25 years!

Humpback Whale

Megaptera novaeangliae



World Range: Worldwide except the Arctic Ocean

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: Around 55 feet and 90,000 pounds, females are slightly larger than males

Color: Black above and either black, white, or mottled on the belly

Food: Mainly krill and schooling fish including herring, capelin, and sand-lance

Life Span: Over 50 years!

Minkie Whale

Balaenoptera acutorostrata



World Range: Above the equator in the Atlantic, Pacific, and Indian Oceans, not in the Arctic Ocean

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: 35 feet, males are slightly smaller, up to 20,000 pounds

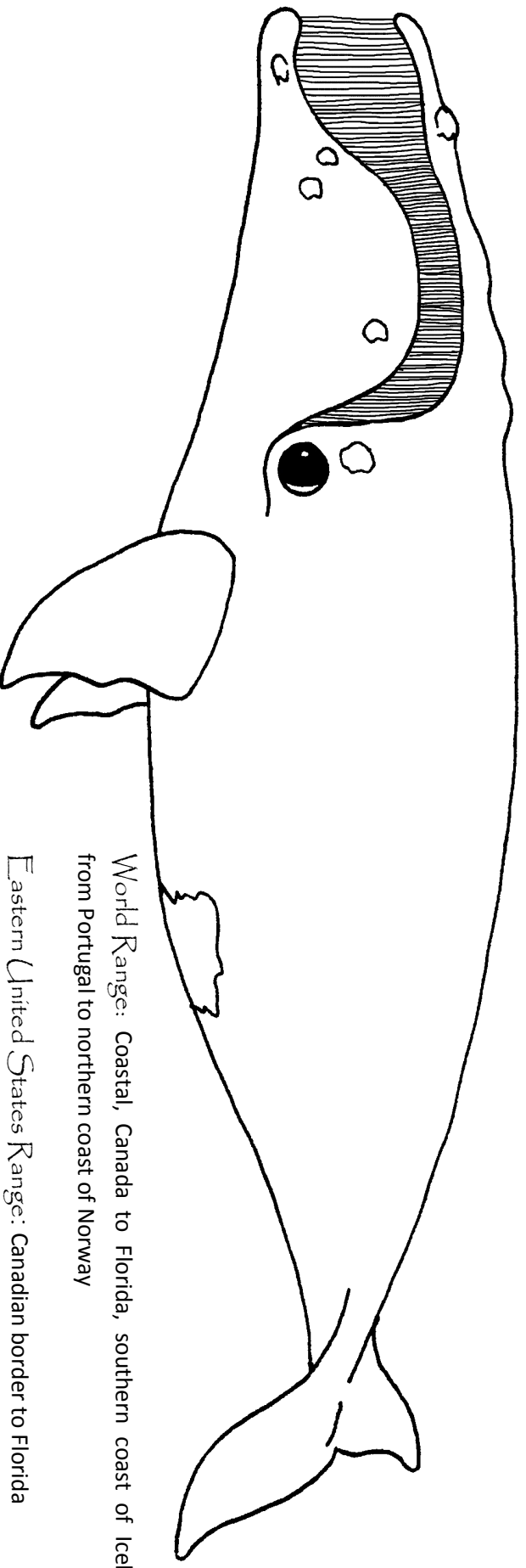
Color: Black or dark gray above with gray long sides and white on the belly, a white band runs across each flipper

Food: Small schooling fish like herring, capelin, and sand lance

Life Span: Up to 50 years!

North Atlantic Right Whale

Eubalaena glacialis



World Range: Coastal, Canada to Florida, southern coast of Iceland, from Portugal to northern coast of Norway

Eastern United States Range: Canadian border to Florida

Size: Around 55 feet, females are slightly larger, and 200,000 pounds

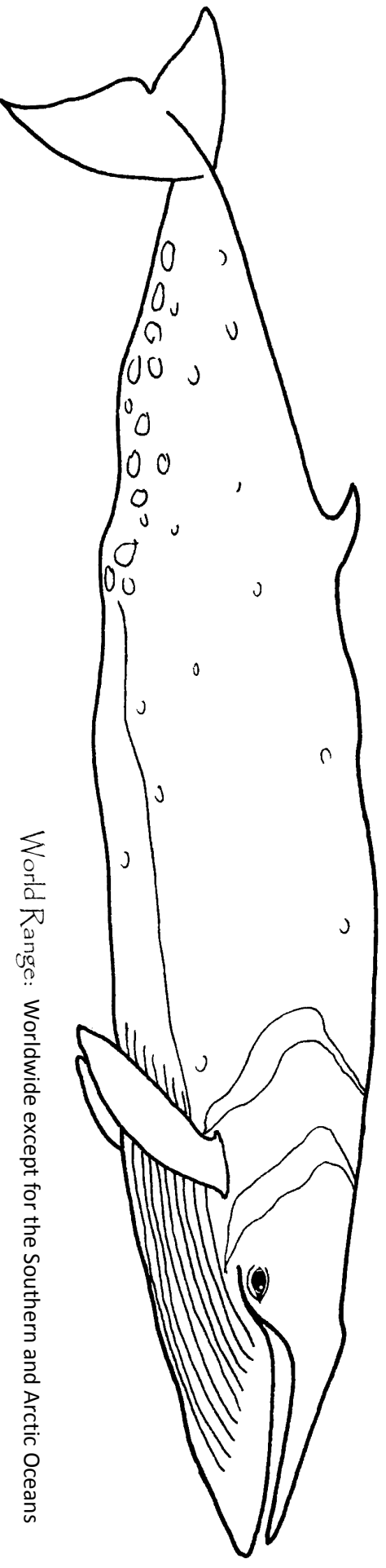
Color: Black with white areas on the belly. White patches on the head—called callosities—raised rough patches of skin

Food: Mainly krill and copepods

Life Span: Over 70 years!

Sei Whale

Balaenoptera borealis



World Range: Worldwide except for the Southern and Arctic Oceans

Eastern United States Range: Canadian border to Florida, throughout the Gulf of Mexico

Size: 64 feet, females are slightly larger than males, 100,000 pounds

Color: Dark gray on top, white or off-white on the belly

Food: Small schooling fish, squid, krill, and copepods

Life Span: Over 50 years!

How warm is blubber?

Do this fun activity to see how warm blubber can be!
(please be careful, the ice water bath can be very cold!)

You'll need:

A basin of cold water

Ice cubes

2 closeable gallon sized
bags

Tub of shortening (Crisco)

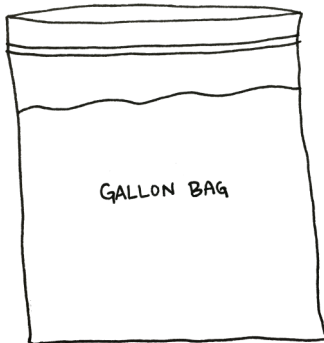
Optional—salt

1. Fill a basin with cold water, ice,
and salt (optional)

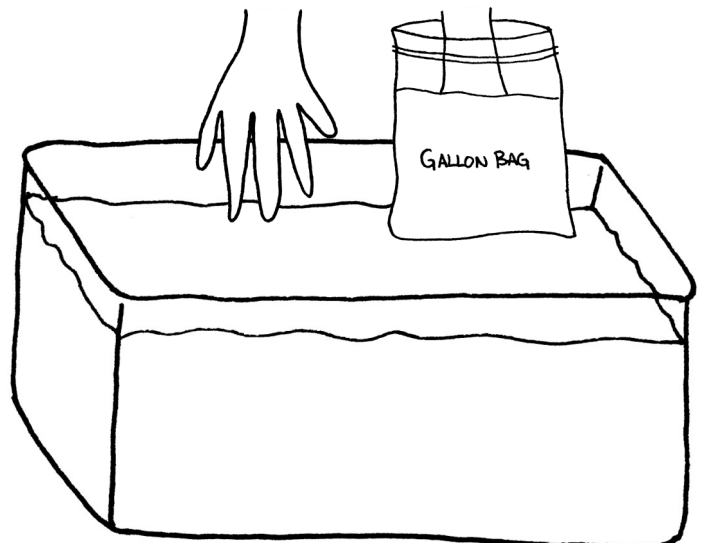
2. Fill one of the gallon bags 1/2
to 3/4 full with shortening



3. Flip other gallon bag in-
side-out and put inside the
other, already filled bag.
Press the seals from the
outside bag and the inside
bag together so no shorten-
ing escapes.



4. With one hand bare and
the other inside the gallon
bags, put both hands in the
ice water. Which one feels
warmer? Why?



Eat like a whale!

With help from a parent or guardian, see what it's like to eat like a baleen whale!

You'll need:

2 Plastic cartons (like a milk carton)

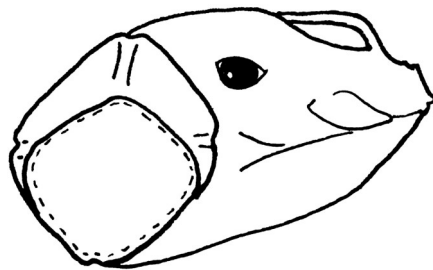
Scissors or utility knife

Marker

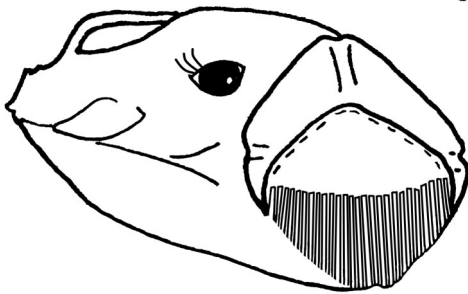
Some dried herbs

Basin full of water

1. Gather everything you need (and an adult!)



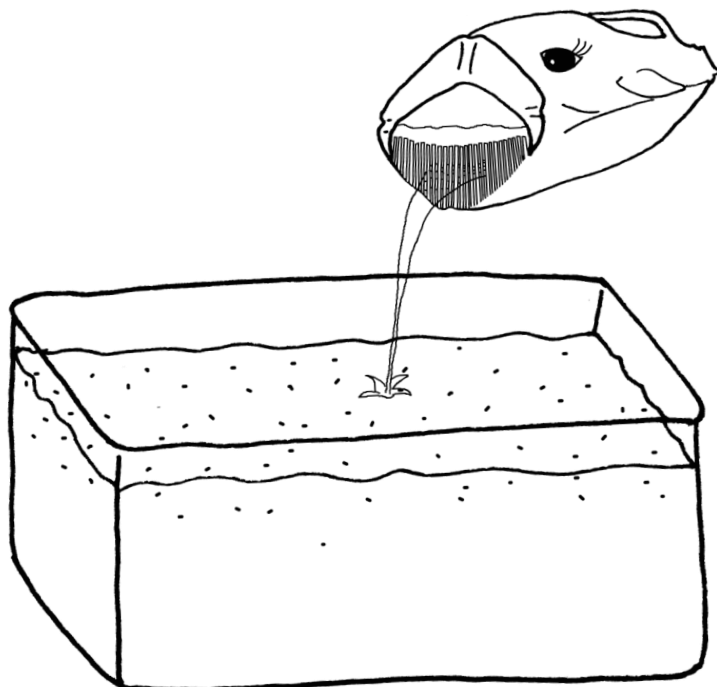
2. With adult permission, use the scissors or utility knife to cut an open mouth on the bottom of one of the plastic jugs—this is your toothed whale. Don't forget to draw a face!



3. On the bottom of the other plastic jug, cut out the top half of a mouth, then cut rows to make a fringe.—this is your baleen whale

4. With adult permission, pour some of the dried herbs into the basin full of water.

5. One at a time, dip the baleen and toothed whales into the water and have them 'feed'. Pour the water out of the plastic jugs slowly and see which one keeps the dried herbs (zooplankton) in better. Why does it do that?!



Draw your own whale!

Use your imagination to think up your very own species of whale! Don't forget to add flippers, flukes, and a blow hole!

For more information, visit our website!

<http://www.mass.gov/marinefisheries>

All content including information, games, and images, are the creation of Elaine Brewer for the Massachusetts Division of Marine Fisheries. She can be reached at:
elaine.brewer@state.ma.us

Massachusetts Division of Marine Fisheries
251 Causeway Street, Suite 400
Boston, Massachusetts 02114

Marine Fisheries
Commonwealth of Massachusetts

