

Toothed or Baleen?

A Whale Compare and Contrast Book



by Cathleen McConnell

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Marine mammals known as cetaceans are broken into two large groups: toothed whales (including dolphins and porpoises) and baleen whales. One group has a single blowhole to breathe air, the other has two. One group has tall dorsal fins to help maintain balance as they chase prey. The other scoops up water and prey in their large mouths as they swim slowly along—they don't need large dorsal fins. One group uses echolocation, the other doesn't. Learn more about what these animals have in common and how they are different in this latest installment of the Compare and Contrast Series.

Arbordale Publishing offers so much more than a picture book. We open the door for children to explore the facts behind a story they love.

The *For Creative Minds* includes

- Whale Adaptations
- Whale Sizes
- Toothed or Baleen?
- Conservation

Thanks to Chris Butler-Minor, Community Engagement Specialist at the Olympic Coast National Marine Sanctuary for verifying the information in this book.

Arbordale's interactive ebooks read aloud in both English and Spanish with word-highlighting and adjustable audio speed. Available for purchase online.

Cathleen McConnell loves all animals—especially those that live in the ocean. Having the opportunity to share her excitement for marine life with visitors is what inspired her to pursue a career in zoo and aquarium education. Currently, as part of her job with the Conservation Engagement team at the Point Defiance Zoo & Aquarium, Cathleen runs all kinds of family programs including day camps and “Zoo Snooze” overnight experiences. Over the years she has taught countless children about the wonders of wildlife when they have visited on field trips, or as part of an outreach program at their school. In addition to writing curriculum for teachers, Cathleen has also written *Seal or Sea Lion? A Compare and Contrast Book* and *Otters: River or Sea? A Compare and Contrast Book* for Arbordale. She hopes the books will get kids excited to learn more about animals and how each is uniquely adapted to survive in their natural environment. Cathleen lives in Washington state with her three cats and three guinea pigs. When she can, she also fosters kittens for the local animal shelter.



Cathleen McConnell

A note for parents and caregivers

Helping young children develop critical thinking skills is a gift they'll have for life. The book you are holding can help you to help them do just that.

Before reading the book, ask the child(ren) how they think these animals are alike or different. That helps you to understand what they already know or if they have any misconceptions.

After reading, go back through the book together looking at photos to find and discuss things. Ask verbal children to describe or explain what they see. Even young, non-verbal children can find and point to things. For example, have children find or point to:

- teeth and baleen
- dorsal fins
- blowholes

Ask the child(ren) to describe one new thing they learned or found most interesting.

Do the “For Creative Minds” activities in the back of the book with them.

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Whales, including dolphins and porpoises, make up the group of marine mammals called cetaceans (si-TAY-shens). There are two large groups of cetaceans: the toothed whales and the baleen whales.

When a toothed whale closes their mouth, their teeth fit together like a zipper. This helps them hold on to their prey.

bottlenose dolphin



sperm whale



Baleen whales strain small prey from the water through the baleen plates that extend from their upper jaw. Baleen is made of keratin, the same material as our hair and fingernails.



baleen



gray whale



humpback



Brydes whales



There are over 70 species of toothed whales that include dolphins and porpoises.

Some dolphins live in rivers instead of the ocean.



orca



Amazon river dolphin



beluga

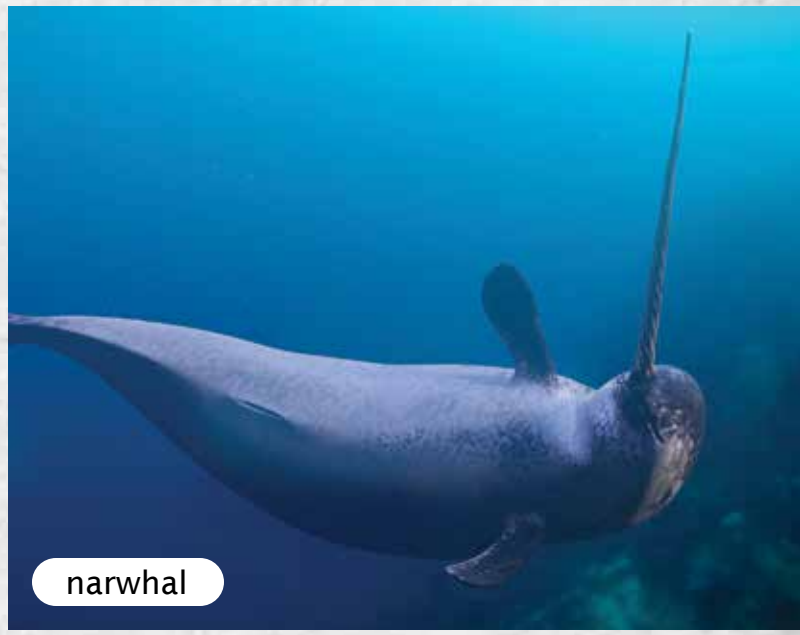


pygmy killer whales



spinner dolphins

Some more unusual species include Amazon river dolphins, belugas, narwhals, sperm whales and beaked whales.



narwhal



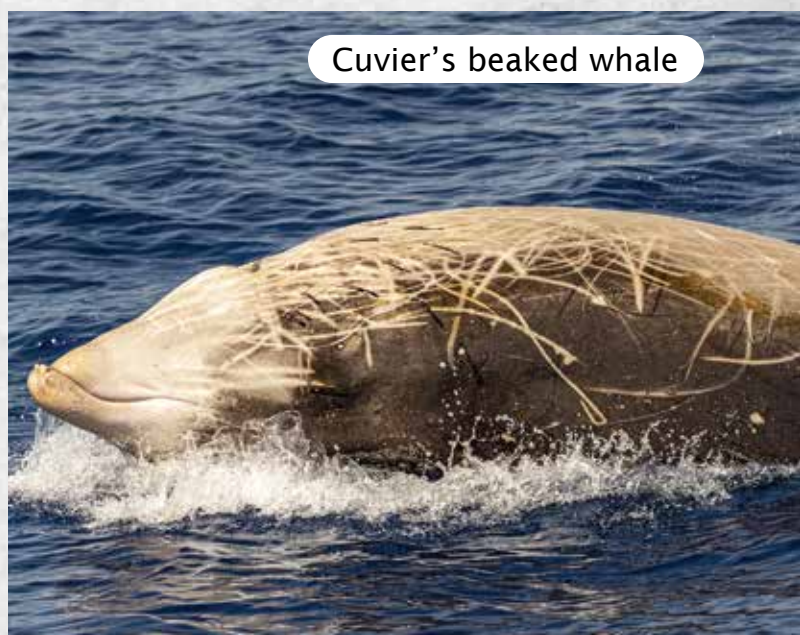
Fraser's dolphins



harbor porpoise



sperm whale



Cuvier's beaked whale

There are 14 species of baleen whales.



blue whale

Blue whales can grow to be 110 feet long. That's as long as 3 school buses!



humpback whale

Humpback whales can grow up to 60 feet in length.



Southern right whale



gray whale



bowhead whale



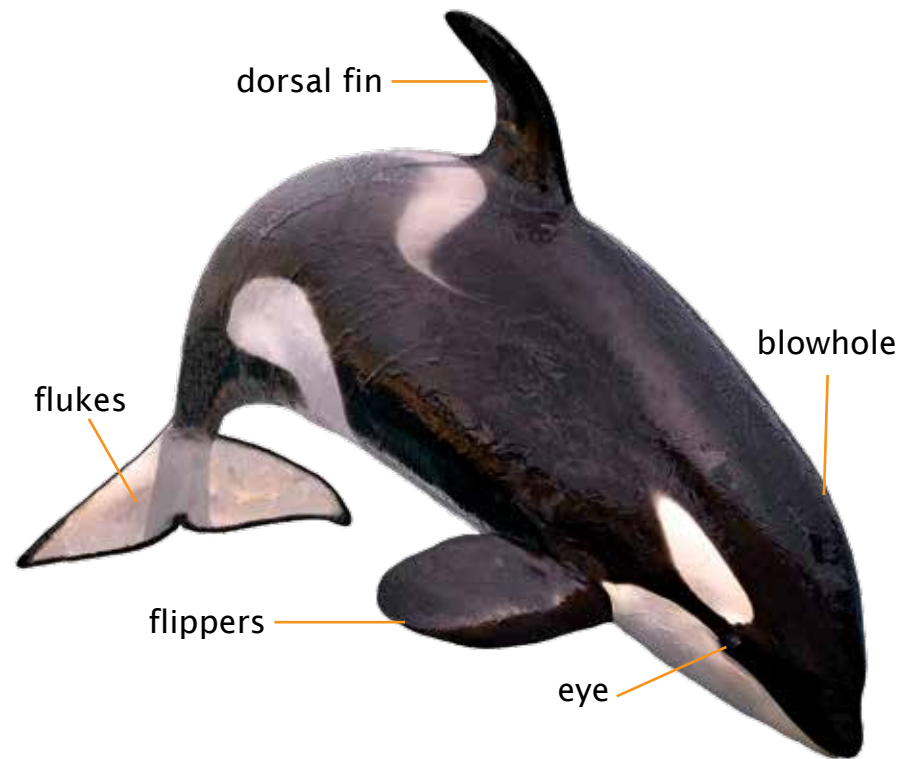
Antarctic minke whale

For Creative Minds

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Whale Adaptations

All animals have body parts or behaviors, called adaptations, that help them live in their habitat. A whale's adaptations make them best suited to live in water. While some dolphins live in rivers, most cetaceans live in the ocean.



Mammals get oxygen from the air. Whales come to the surface and breathe through their blowholes. Because they spend most of their time underwater, they can hold their breath for long periods of time. Sperm whales hold their breath for up to 90 minutes.

When a baleen whale opens their mouth, it fills with water full of fish, krill or other prey. The pleats along their throat, called rorquals (roar-kwöl), can expand to hold these large mouthfuls. When they close their mouth, the water is pushed out through the plates of baleen. The prey gets trapped in the fringed edges of the baleen, ready for swallowing!
Bowhead whales have the longest baleen, with plates reaching 14 feet.

Unlike other mammals, whales don't have hair or fur covering their bodies. Instead, they have a layer of blubber to keep them warm. How thick their blubber is depends on the temperature of the water where they live.

Whales use their tails (flukes) to push themselves through the water. They use their paddle-like flippers to change direction, like the rudders on a boat. Their dorsal fin helps them with balance so they can stay upright during fast turns.

Whale Sizes

Use the following chart to answer the questions below. This information was obtained from the National Oceanic and Atmospheric Administration (NOAA) Fisheries Species Directory.

type	whale	up to length in feet	
		adult	newborn
toothed	beluga	16	?
baleen	blue whale	110	?
baleen	bowhead	62	13
toothed	common bottlenose dolphin	13	?
baleen	fin whale	85	18
baleen	gray whale	49	16
baleen	humpback	60	16
toothed	long-finned pilot whale	25	6.5
toothed	narwhal	18	5.2
baleen	North Atlantic right whale	52	?
baleen	North Pacific right whale	64	?
toothed	orca / killer whale	32	?
toothed	pygmy killer whale	8.5	?
toothed	pygmy sperm whale	11.5	?
baleen	sei Whale	60	15
toothed	short-finned pilot whale	24	?
toothed	Sperm whale	52	13
toothed	spinner dolphin	7	?

How tall are you? Which adult whale has a length closest to your height?
Which newborn whale has a length closest to you in height?
Ask an adult (parent, grandparent, teacher) how tall they are. Are there any whales similar in length to your adult's height?
Which adult whale is the longest?
Which newborn whale is the longest?
Which adult whale is the shortest?
Which newborn whale is shortest?
In general, are toothed whales or baleen whales longer?

The whale lengths are given in feet.

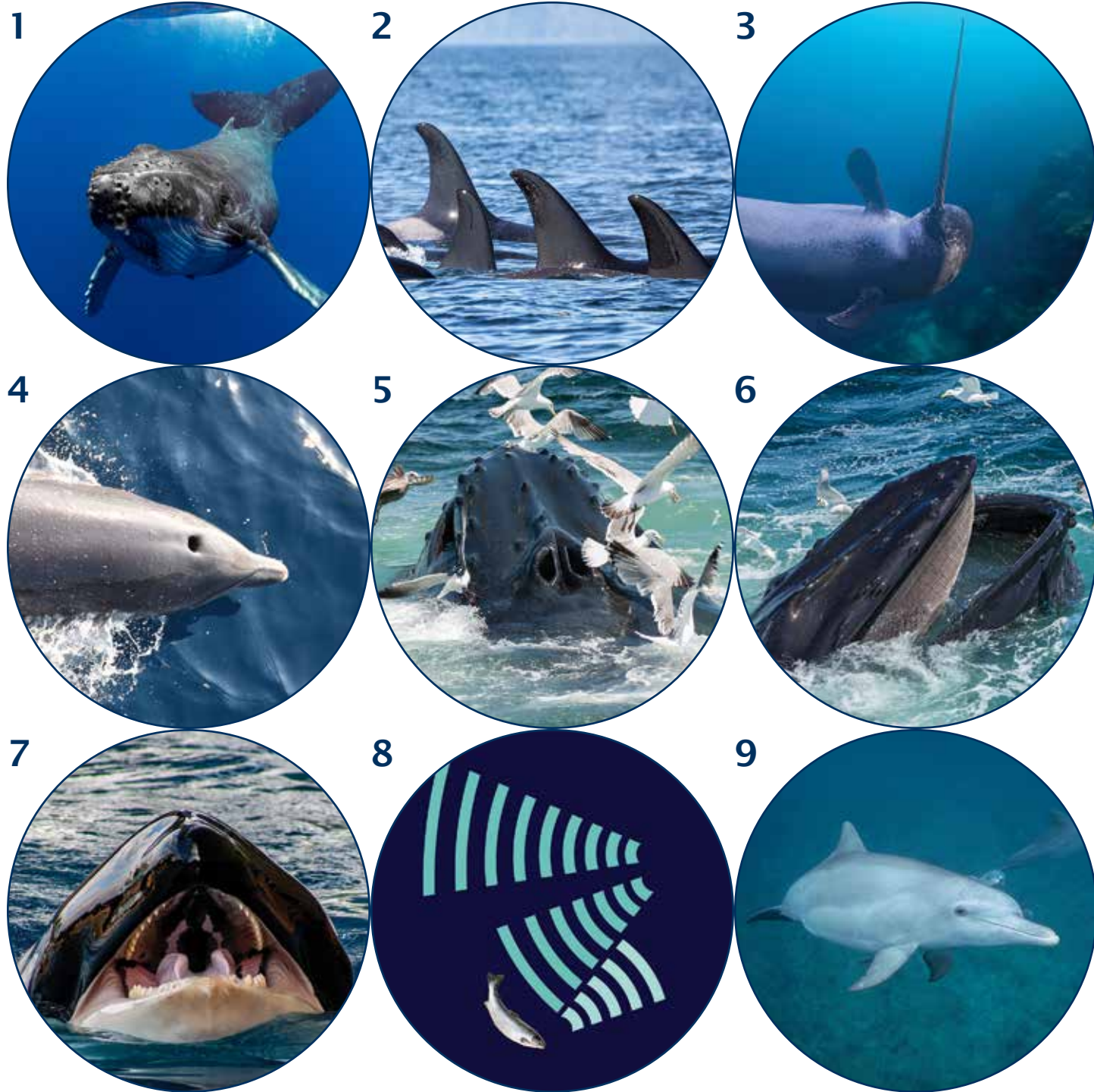
Pick a whale and determine their length in yards, feet and inches.

Optional: convert measurements to meters.



Toothed or Baleen?

Using what you learned in the book, identify whether the whale is toothed or baleen.



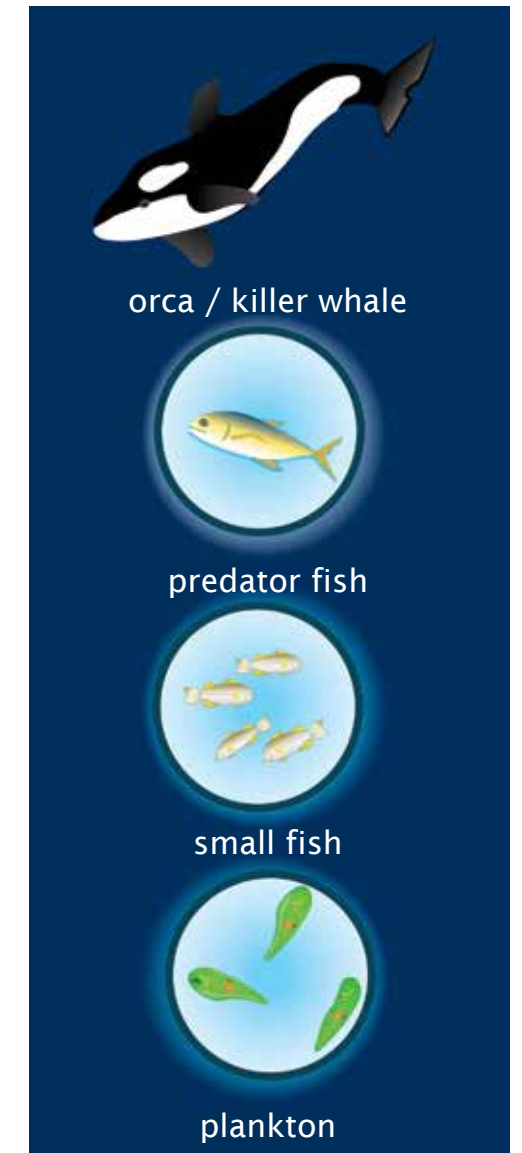
Answers: 1: baleen-small dorsal fin, 2: toothed-large dorsal fin for balance; 3: toothed-Narwhal identified as toothed (tusk is actually a long tooth); 4: toothed-single blowhole; 5: baleen-two blowholes; 6: baleen-baleen visible, 7: toothed-teeth visible; 8: toothed-echolocation; 9: toothed-dolphin

Conservation

Many years ago, people hunted whales for food, oil and cultural traditions. Overhunting nearly caused the extinction of some whale species. With the exception of some native tribes, it is now illegal to hunt or kill whales. Whales in US waters are protected by The Marine Mammal Protection Act. Some whales are also protected by the Endangered Species Act. Both of these laws are designed to help protect animals.

Even though it is illegal for most people to hunt whales, there are some things that negatively affect them and things that people are doing to try to help them. Do you think the following things hurt or help whales? Can you explain why?

1. Oil and gas exploration, dredging ports, and pile driving can all change offshore habitats where whales may live or through which they migrate.
2. Some whales may get caught on the beach or in shallow water (stranded). There are teams of people trained to help these stranded whales.
3. Pollution from land that runs off into the ocean and plastic may affect the ocean food chain.
4. Overfishing may affect the food chain. Whales may also get tangled in fishing lines or nets.
5. Southern Resident Killer Whales that live in the Pacific Northwest mainly eat endangered Chinook salmon. Recovery efforts are underway to protect the salmon spawning grounds.
6. Ships and boats may hit whales causing injury. Or the noise from some ships may affect their ability to communicate.
7. Whale SENSE programs educate whale watch boat captains on how to best keep whales safe during whale-watching tours and education programs.
8. Research projects help scientists learn more about whales and how we can help protect them.



Simple Food chain

Answers: 1: hurt, 2: help, 3: hurt, 4: hurt, 5: help, 6: hurt, 7: help, 8; help

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