



Flukes & Flippers General Information

Marine mammals are mammals that are found in aquatic environments. Like other mammals, they give live birth, they feed their young milk, they have hair or fur (whales and dolphins may have hair for a short period of time), they are warm blooded, and they breathe air.

There are three main groups of marine mammals: Pinnipeds (seals, sea lions, & walruses), Cetaceans (whales, dolphins & porpoises), and Sirenians (manatees & dugongs). Two other mammal species are considered marine mammals: sea otters and polar bears.

Three species of marine mammals are common to the San Francisco Bay: harbor seals, California sea lions and harbor porpoises. On rare occasions, whales stray off course and into the Bay.

.When trying to distinguish seals from sea lions, look for these physical characteristics:

- Sea lions have external ears on the sides of their heads that are easy to spot.
- Seals do not have external ear flaps.
- Sea lions' front flippers are much longer than those of seals.
- Sea lions are more mobile on land than seals because their hind flippers are pointed backward and cannot rotate. Therefore, when seals move on land, they can only drag their body using their front flippers.
- Sea lions tend to congregate in groups and lie very closely to each other.
- Seals almost always space themselves out on land and tend to be more solitary.

Marine mammals have adaptations that allow them to live in aquatic environments. Most marine mammals have flippers or flukes. A fluke is the tail fin of a cetacean which is horizontal instead of vertical and strokes up and down to propel the animal quickly through the water. Some whales can even reach speeds of 30 miles per hour or faster! Many marine mammals have fish-shaped bodies that are streamlined for easier and quicker movement through the water. Most marine mammals also have a layer of fat called blubber. Blubber helps to keep them warm in water that would otherwise cause hypothermia. Some marine mammals, like fur seals, also have a very thick coat of fur to help them stay warm. The sea otter, however, does not have blubber at all, but instead has the thickest coat of fur of any animal on Earth, with about 1 million hairs per square inch of fur. Marine mammals also have special adaptations for breathing air while living primarily in the water. Elephant seals can close off their nostrils so that it's easier to stay under water for longer periods of time. Cetaceans (whales, dolphins and porpoises) all have blow holes at the top of their head so they just need to surface when they come up for air.

There are two types of whales: Mysticeti (whales that have baleen) and Odontoceti (whales with teeth). Many whales do not have teeth, but rather baleen, which is made out of the same material that hair and fingernails are made out of. Baleen hangs from the upper jaw of whales in comb-like plates and is used to filter their food from the water. Most whales use baleen to filter plankton or krill from the water.



Marine Mammal Fun Facts

- Blue whales are the largest animals on Earth, reaching 100 feet in length.
- Gestation periods for whales range from 8 to 17 months. Blue whales at birth can be 23 feet long and weigh 4,500 pounds.
- The heart of a blue whale is about the size of a Volkswagen Bug car.
- The smallest marine mammal is the sea otter, which reaches about 4 feet in length. Along with polar bears, they are the only marine mammals that don't have blubber.
- The largest Pinniped is the Elephant Seals, which can reach 15 feet in length and weigh up to 5,000 pounds. Elephant seals dive deeper than any other Pinniped, reaching 2,000 feet deep and holding their breath for over 30 minutes.
- Among marine mammals, sperm whales are the deepest divers – they regularly dive 4,000 feet below the surface. The deepest dive ever recorded by a sperm whale was 6,560 feet. Most sperm whale dives are at least an hour, but the record dive is an amazing 2 hours and 18 minutes.
- Baleen whales have two blowholes that sit side-by-side; toothed whales have a single blowhole.
- Whales can reach such incredible sizes only because they water supports their weight. When a large whale such as a blue or sperm whale is stranded on the shore, it can not support its own weight and its internal organs are crushed.
- Male California sea lions can reach 9 feet in length and weigh up to 700 pounds. Male stellar sea lions can get much larger, reaching 13 feet long and 2,200 pounds. Stellar sea lions are seen in Northern California waters in large colonies at the Farallon Islands and Ano Nuevo.
- Sea otters are members of the weasel family.
- Sea otters have learned to use a rock as a tool that helps them to remove their prey from the rocky shoreline and then break through the hard shells that protect their prey. Without this tool, it would be very difficult for otters to get to the soft meat of such prey as crabs, mussels, oysters, abalone, urchins and more than over 40 other types of invertebrates eaten by otters.
- In 1974, Congress passed the Marine Mammal Protection Act. This act protects all marine mammals in the U.S. waters not only from hunting, but from harassment.



Flukes & Flippers Vocabulary

Adaptation: A structure or behavior of an organism that has developed over time to allow the organism to survive in a given environment.

Baleen: Plates of keratin hanging from the inside of the upper jaw of Mysticetes, used instead of teeth to filter feed krill and other small animals.

Blubber: Specialized layer of fat just under the skin of most marine mammals.

Brackish: The mixture of salt and fresh water. (i.e. water in the San Francisco Bay).

Camouflage: An adaptation that allows an organism to blend in with its environment through shape, color or behavior.

Calf: A young cetacean or sirenian.

Cephalopod: Group of invertebrates, including squid and octopuses, fed on by many marine mammals.

Cetacean: Taxonomic order of the class *mammalia* which includes whales, dolphins, and porpoises.

Copepod: Small crustacean fed on by some whales.

Counter Shading: Cryptic coloration with the upper surface dark and the lower surface light.

Crustacean: A class of animals that have an exoskeleton and jointed appendages, including lobsters, crabs, shrimp and barnacles.

Echolocation: The process of sending out sounds and using the returning echoes to locate objects.

Ecosystem: A community of organisms interacting with each other and the physical environment in which they live.

Endangered Species: An organism whose population is in decline and in danger of becoming extinct within the foreseeable future.

Estuary: An area partly enclosed by land, where saltwater and freshwater meet. The resulting mixture of fresh and salt water is called *brackish* water. (i.e. water in the San Francisco Bay)

Filter Feeders: An animal who feeds by filtering food out of the water using part of its body.

Flipper: Flattened fore- or hind limb of a marine mammal (supported by bone)

Flukes: The horizontally flattened and blade-shaped tail of cetaceans.

Habitat: The specific environment in which a species or community lives.

Herbivore: An animal that feeds only on plants.

Introduced Species: A species that has been transported to a new habitat through human activity and is able to maintain a reproducing population.

Krill: A small shrimp-like crustacean that forms the major food of many baleen whales.

Mammals: Animals that breathe air through lungs, are warm-blooded, have hair at some time during their life, bear young, and produce milk for their young.

Molt: Process of shedding the fur or skin to be replaced by a new set.

Mysticeti: Suborder of cetaceans that have baleen instead of teeth

Native Species: A species of plant or animal that has evolved in a particular habitat and continues to thrive.

Odontoceti: Suborder of cetaceans that have teeth

Pinnae: External ear flaps

Pinniped: Suborder of the order carnivora that includes seals, sea lions, and walruses.

Pod: A group of whales or dolphin.

Pup : A young pinniped or otter

Plankton: Plants or animals that drift with the ocean currents. They are usually, but not always microscopic. The drifting plants are called Phytoplankton and the drifting animals are called Zooplankton.

Predator: An organism that lives by preying upon other animals.

Prey: Any creature that is hunted or caught for food.

Red Tide: During certain months of the year, usually from May to October, dinoflagellates (a type of plankton) may reproduce in mass numbers creating discoloration of the surface waters of the ocean. These plankton are toxic and may cause illness or death when consumed in large numbers. Humans and marine mammals can be affected when they eat bivalves which have filtered out large numbers of this plankton.

Scavenger: An animal that feeds on dead plants or animals.

Vertebrates: Animals that have a spinal column.



Marine Mammal Quiz

1. The largest mammal on Earth is the _____.
A. Blue Whale B. Elephant Seal C. Sperm Whale
2. All marine mammals feed their babies _____.
A. Fish B. Milk C. Krill
3. Marine mammals have _____ that help them swim in the water.
A. Flukes & flippers B. Wings C. Claws & pinchers
4. Marine mammals breathe with _____.
A. Gills B. Lungs C. SCUBA gear
5. Whales that eat plankton use _____ to capture their food.
A. Teeth B. Beaks C. Baleen
6. One way to tell sea lions from seals is to look for _____.
A. External ears B. Color of fur C. How big they are
7. Sea otters are able to break shells open using _____.
A. Their teeth B. A rock C. A nutcracker
8. Marine mammals have _____ to keep them warm.
A. Blubber B. Scales C. Anti-freeze
9. _____ whales can diver deeper than any other animal.
A. Blue B. Sperm C. Grey
10. A blue whale's heart is the size of a _____.
A. Golf ball B. Football C. Car

Marine Mammal Quiz (Answer Key)

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Marine Mammal Word Search

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



Find the following words:

BALEEN
BLOWHOLE
BLUBBER
DOLPHIN
FLIPPER
FLUKE

MAMMAL
OTTER
PORPOISE
SEAL
SEALION
WHALE



