

College Guild
PO Box 6448 Brunswick, Maine 04011

Marine Biology

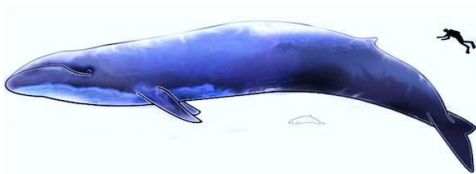
Unit 2 of 5

Marine Mammals

Although one might normally think of mammals as large, furry creatures that walk on land, numerous types are found within the ocean or along its shores. This unit will look at whales, seals, and dolphins both within their natural habitats and in the confines of domestic captivity.

Whales

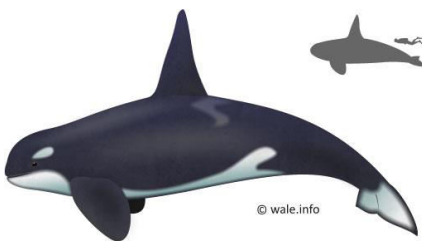
These large mammals have streamlined bodies and fins that allow them to glide through the water. As warm-blooded creatures, they have a thick layer of blubber beneath their skin to protect them from the frigid water. A blowhole on the top of their heads allows them to remain submerged: this is how oxygen reaches their lungs. Species are divided into two classes: baleen (characterized by a comb-like mouth that allows them to filter plankton and krill) and toothed whales (characterized by sharp teeth that allow them to feed on larger fish and creatures). Here is an introduction to a few species:



As the largest animals on the planet, the blue whale weighs about 200 tons (400,000 lbs) and grows to be 80-100 ft. in length. It needs nearly 8,000 lbs of food each day (typically krill -- small shrimp). With a call of 188 decibels (forty-eight decibels louder than a jet plane!), it is also the loudest animal on earth.



The small beluga whale is immediately recognizable by its creamy white skin, which allows it to blend in with the ice in its arctic habitat. It is a social creature, and lives in a pod with up to hundreds of members that communicate with one another through chirps, clicks, and squeals. Its malleable forehead easily changes shape, seemingly producing facial expressions.



The orca whale or (killer whale) is one of the fastest marine mammals, often swimming as fast as thirty-five miles per hour. Members of an orca pod will cooperate to catch and devour a meal together: this might consist of fish, squid, birds, or marine mammals. Each pod has a social hierarchy led by a dominant female.



A grayish species known for its long pectoral (front) fins, the humpback whale is beloved by whale watchers -- it leaps into the air with graceful spins, flips, and slaps. In the summer, it is native to North American gulfs, but migrates to warmer regions in the winter. Mate selection is only temporary, and males might initiate aggressive displays to win the affection of a female.

1. If you were one of the above whale species, which would you be and why?

2. Without using the word "whale" or the name of a specific species, write a short free-verse poem that incorporates some of the information you've just learned.

3. Imagine that you are the director of a film (either informational or fictional) about a whale. Which song would you use for its theme? Keep in mind that the theme song is often carefully crafted to elicit a certain emotion in the audience -- consider how you would want your audience to feel about the whale in your movie.

SeaWorld is a marine life-themed amusement park with numerous locations in the United States. One segment that attracts thousands of tourists is its orca whale shows, performances featuring live whales and their trainers. This practice has been the subject of much debate, especially after a single whale - Tilikum -- caused the deaths of three trainers between 1991 and 2010. Generally, there is much literature against whale captivity -- the following is a fact sheet, or summary of arguments against the practice, from the Humane Society:

** Previous analyses using data through 1992 showed that captive orcas have higher mortality rates than wild orcas; new analyses examining data through 2012 confirm that the situation has not improved in the past 18 years, and in fact has worsened. Captivity is, in essence, poor habitat for orcas, causing early death.*

** Captive female orcas give birth too young and too often, leading to both high adult and high infant mortality.*

** The most common cause of death for captive orcas is infection. Chronic stress may be an important factor in weakening the animals' immune response.*

** Captive orcas have poor dental health compared to wild whales, which may be another factor in their susceptibility to fatal infections.*

** Orcas in captivity are more aggressive toward each other than in the wild. Females also behave abnormally toward their calves more often than in the wild.*

** Since captive orcas have been publicly displayed, they have seriously threatened the lives and safety of dozens of people, and four people have been killed. However, wild orcas have injured only a handful of people -- none seriously -- and there are no records, at any time in history, of them killing anyone.*

It is much more difficult to find literature that supports whale and dolphin captivity, other than statements that attempt to refute pleas from animal conservation organizations. This elicits some thought-provoking questions:

4. Even if you personally disagree with this practice, list three reasons (in full sentences) why parks and aquariums might have begun and continue to hold such animals in artificial environments.

5. Which side of the debate do you support? Why?

Seals

In this playful, seemingly jolly family of marine mammals, there are thirty-three species of seals. They spend about half of their lives in the ocean and the other half on land: in the winter, these creatures can easily find ample food (fish, squid, shrimp, and crabs) throughout coastal waters but much prefer to mate, give birth to, and raise their young pups under warmer, dryer conditions. The gestation period for most mother seals lasts around eleven months -- nine weeks longer than the average human! Nonetheless, the young pups develop quickly and can swim within hours of birth. A hearty animal, most seals live for twenty to forty years. Here is a look at a few species:



A relatively small species (5.25 - 6.25 ft. in length), the harp seal is native to the northern Atlantic and Arctic oceans. Pups are easily recognizable by their fluffy, white coats, which allow them to blend in to the surrounding ice and snow. A mother can recognize her pup amid thousands of others by scent alone! Unfortunately, the pups' fur is extremely valuable and poachers kill thousands each year.



Harbor Seals are a common species and are frequently spotted in cold coastal waters. An iconic behavior is their resting shape, banana-like with head and back flipper elevated. They mainly feed on fish and crustaceans and are non-migratory (prefer to stay in one general location). One might often see them in groups, as they are friendly, social creatures.



The leopard seal is perhaps the most frightening, as it has enormous canine teeth and sharp molars. Smooth, streamlined skin allows them to dash quickly through the water. These impressive adaptations allow it to eat nearly everything, from crustaceans to penguins and other seals. It is also a large species, reaching lengths of almost ten feet. Their only predator is the orca.



While not "true" members of the seal family due to external ear flaps and the ability to move on all four flippers, sea lions are extremely intelligent and playful. They have a dog-like face and a matching bark. Like most seals, they're social and like to live in groups, but they can distinguish their young through the pups' vocalizations. They are popular animals at aquariums because they LOVE to perform!

6. Some of these seal species have similar adaptations, personalities, and habits as the whale species featured earlier in this unit. Name two pairings (one seal and one whale species each) and write at least one sentence for each pair that describes their similarities.

7. Do you believe that the practice of aquariums holding sea lions in captivity involves the same ethical concerns as theme parks holding orcas in captivity? Why or why not?

Andre the Seal

Among New Englanders, one particular seal has become a legend. Adopted by the Goodridge family in 1961 when Harry found him as an abandoned pup, Andre quickly became a family member himself. Quite understanding of his needs as a wild animal, Harry released Andre back into the ocean when he was fully-grown. Andre, however, refused to abandon his family permanently. This newspaper article from the April 18th, 1977 issue of *The Nashua Telegraph* gives a glimpse of the habits of the beloved seal.

ROCKPORT, Maine (AP)-- After a snappy four-day swim from Marblehead, Mass., Andre the seal is back home in Rockport. The 16-year-old domesticated seal slipped into the harbor at 3 p.m. Sunday and began cavorting around his dockside pen as crowds gathered to welcome his arrival.

"He was jumping all over his pen, trying to get in," said Norma Allen, the first to tell Andre's trainer, Harry Goodridge, the seal was in Rockport Harbor. "I honestly think he was just waiting to see Harry-- he seemed so anxious."

As Goodridge, who has raised Andre from infancy, rushed to greet the seal, Andre jumped onto the dock. Goodridge kneeled down and Andre planted a big wet kiss on his cheek. The crowds were not disappointed as Andre performed a sampling of tricks, for which he was duly rewarded with a dinner of fresh fish.

"Andre's looking so good. I'm so glad the worrying and waiting is over," Goodridge said. [He] said Andre was sighted off Owls Head at about 11 a.m. Sunday, so it wasn't a complete surprise to have him home so soon.

In 1974 Andre swam home in three days and in 1975 in four days. But last year, heavier than usual, he took his time and did not make it home for two weeks. The swim to Rockport has become a spring tradition for Andre who spends his winters at the New England Aquarium in Boston. The swim has also become a beloved event for Maine coastal residents who try to keep tabs on his travels.

Andre was released on Thursday in Marblehead by aquarium officials and did not peep into public view until Saturday, when he made a weekend rest stop in South Bristol where he entertained a crowd of 1,000 who gathered to watch his antics. The display was not unusual for Andre, who has been an entertainer ever since Goodridge, Rockport's harbormaster, found the seal abandoned on a rock in 1961 and made him his pet.

During the summer, Andre lives in Rockport harbor, spending his days in a cage below the dock and performing nightly shows for tourists. The cage measures 32 feet long and eight feet wide and deep. It became necessary in 1972 after fishermen complained that the playful seal was swamping their boats during social calls.

Goodridge predicts that this summer Andre may become a father as the cage can be adapted for two seals. The aquarium, reportedly, is considering sending a female seal named Snow to Rockport by June for the mating season.

Exactly how Andre finds his way to Rockport each spring remains a mystery to scientists. However, scientists studying seal migration along the New England coast note that each spring 200 to 500 harbor seals migrate from their winter quarters along Cape Cod, Connecticut, and Long Island to their breeding ground along the Maine coast.

After passing away at the age of twenty-five, Andre became the feature of two renowned children's books and a full-length film. Ironically, the "actor" chosen to play Andre was actually a sea lion, as filmmakers deemed harbor seals too difficult to train. There is also a large marble statue of Andre in Rockport Harbor, on permanent display to convey his story to visitors.

8. Why do you think Andre is so memorable? Why was he (and his story) so beloved among audiences?

9. If you discovered a very young seal pup abandoned on the beach, what would you do?

10. Obviously, a harbor seal makes quite an odd "pet". If available space and current laws regarding wildlife weren't potential issues, which of the species discussed in this unit (you may read ahead to the "Dolphins" section is you'd like) would you select as a pet? why?

11. Imagine that you are Andre the seal, arriving in Rockport after a long winter away. Write one paragraph from Andre's point of view, being sure to include his thoughts and feelings as he reunites with the Goodridges.

Dolphins

These marine mammals are closely related to whales; both belong to the "cetacean" category (in fact, the orca whale is technically a type of dolphin!). This section will focus mainly on the bottlenose dolphin, the species you probably know best.

There are thirty-six species of dolphins: thirty-two reside in oceanic habitats while four are native to freshwater rivers. All dolphins must surface for air at intervals that last between twenty seconds and half an hour. When a dolphin sleeps, only half of its brain functions relax; the other half ensure that the dolphin gets enough oxygen during its slumber.

Even though each dolphin has about 100 teeth, it only uses them for the initial capture of the fish it consumes. The pod unit works together to surround a school of fish and then surge through in order to scoop up a catch. Afterwards, the dolphin swallows the fish whole: it may eat up to thirty pounds of fish in this manner each day!

Another mark of this species is the centrality of echolocation in its day-to-day survival. This ability stems from the dolphin's brow: the animal produces sound waves which bounce off of nearby objects and allow the dolphin to accurately identify them. It also serves as a means of communication with other members of a pod: messages might convey approaching danger or a call out to locate a calf. These sound waves are undetectable to humans; after all, a dolphin's sense of hearing is nearly ten times keener than ours.

Each member of a dolphin pod has acute interpersonal relationships with other members of the clan. Besides using a complex communication system and working together to catch a meal, dolphins have been observed caring for sick and elderly members of the group and playfully teasing their young. They rarely venture out alone.



Dolphins have also been known to interact with humans in incredible ways, ranging from seeming to "ask" for help from fishermen to protecting swimmers from shark attacks. In August 2010, the *Daily Record* of Scotland reported one such story:

A friendly dolphin has saved a teenage boy from drowning. Non-swimmer Davide Ceci, 14, was within minutes of death when dolphin Filipo came to his rescue. The friendly 61-stone [850 lb] creature has been a popular tourist attraction off Manfredonia in southeast Italy for two years. But now he is a local hero after saving Davide from the Adriatic [sea] when he fell off from his father's boat.

While Emmanuele Ceci was still unaware his son had fallen into the waves, Filipo was pushing him up out of the water to safety. Davide said, "When I realized it was Filipo pushing me, I grabbed on to him." The dolphin bore down on the boat and got close enough for Davide's father to grab his gasping son.

Davide's mother Signora Ceci said, "It is a hero, it seems impossible an animal could have done something like that, to feel the instinct to save a human life."

Filipio has lived in the waters off Mandredonia since he became separated from a visiting school of dolphins. Maritime researcher Dr. Giovanna Barbieri said, "Filipio seems not to have the slightest fear of humans. I'm not surprised he should have done such a wonderful thing as to save a human."

12. Using what you've just learned about dolphin's physical and behavioral adaptations, why do you think they're more likely than many other animals to rescue humans during times of need?

13. Write a story in which a dolphin and a human share some type of interaction. It can be realistic or fictional.

14. Irish tradition features legends about selkies, mysterious women who turned into seals when they wrapped themselves in cloth made from sealskin: in essence, they were human at times and seal at others. If you could exist as a marine mammal for part of your life, which would you be and why?

15. Hopefully you've learned some new and interesting bits of information about whales, seals, and dolphins: nonetheless, six pages certainly can't cover everything! List five questions or inquiries you have after completing this Unit.

Remember: First names only & please let us know if your address changes

Appendix Marine Biology: Unit 2 of 5

Citations

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