



Marine Mammal Commission: Education Curriculum Lesson Plan Outline for 3rd-5th Grade

SLIDES

1. Cover slide
 - a. The Marine Mammal Commission is an independent, science based government agency that oversees all federal activities impacting marine mammals and their ecosystems.
2. Can anyone name some of these animals?
 - a. **Allow for guesses from students**
 - b. Answers (from top left, counter-clockwise)
 - i. Bottlenose dolphins
 - ii. Killer whales (which are actually dolphins!)
 - iii. Humpback whale
 - iv. Walrus
 - v. Polar bear
 - vi. Sea lions
3. What do all these animals have in common?
 - i. **Allow for guesses from students.**
 - ii. Answer: they are all marine mammals!
4. What is a mammal?
 - a. A mammal is warm blooded, usually has hair or fur, breathes air through lungs, has live young, and produces milk for its babies. Cats and dogs are mammals.
5. What is a marine mammal?
 - a. Allow for guesses from students.
 - b. What makes a marine mammal special is that it needs the ocean to survive. All marine mammals still breathe air like we do, but they find their food in the water and some species must live their whole lives in the water.
 - c. How are we similar to marine mammals?
 - i. We have hair and we are born alive—we aren't hatched from eggs! We also are also warm blooded, breathe through lungs, and produce milk... which makes us mammals too!
 - d. As you saw in some of the first pictures, marine mammals come in all shapes and sizes.
 - e. There are around 129 species of marine mammals!
6. Marine mammals are classified into four different groups: pinnipeds, the sea otters / polar bears, sirenians, and cetaceans.
 - a. Here are some examples of different marine mammals on the next slides. Try to remember what group they are a part of!
7. Seals, Sea Lions, and Walruses

- a. There are 33 species of pinnipeds – the name for seals, sea lions, and walruses.
 - b. They spend most of their lives diving for food, mostly fish, or relaxing in the sun.
8. How do you tell the difference between a seal and a sea lion?
 - a. Seals: small flippers, crawl on their bellies, and don't have visible ear flaps
 - b. Sea Lions: large flippers, 'walk' on land, and have visible ear flaps
9. Seal v Sea Lion
 - a. Left image: Seal – no visible ear flaps
 - b. Right image: Sea lion – visible ear flaps, 'walking', large flippers
10. Walruses
 - a. Walruses can weigh more than 4000 pounds!
 - b. Their tusks are made of ivory and can reach 1 meter long!
11. Polar Bear
 - a. There are two kinds of marine mammals that you might not expect – polar bears and sea otters.
 - b. Polar bears look different than other marine mammals, but they still need the water to survive—they eat other marine mammals like seals. They are good hunters, and walk across the ice for long distances looking for seals to hunt.
12. Polar bear
 - a. If the ice melts, it becomes harder for them to find food because they have to swim long distances between ice flows that support them and their prey.
13. Sea otters
 - a. Sea otters have very thick fur which keeps them warm in cold water.
 - b. They are the smallest marine mammals and live in coastal waters, mostly in kelp beds.
 - c. To keep from drifting apart while they sleep, sea otters sometimes sleep holding paws.
14. Sea Otters- Tool Use
 - a. Sea otters are able to use tools – rocks – to open shellfish!
15. Manatees
 - a. What kind of marine mammal is a manatee? (Sirenian)
 - b. Manatees are often called 'sea cows' because they feed on seagrasses.
 - c. You can find manatees around Florida and the eastern USA.
16. Dolphins
 - a. What kind of marine mammal is a dolphin? (Cetacean)
 - b. There are over 80 species of cetaceans and 44 species of dolphin in the world.
 - c. Maybe you've seen a dolphin before? What do you know about them?
 - d. They are very smart animals and even know who they are when they look in a mirror.
 - e. They are often very social and live in groups called pods.
 - f. While otters have fur, cetaceans and pinnipeds use blubber, which is a thick layer of fat to help keep them warm in cold water.

- i. **Optional activity:** Show how blubber works. (NOAA activity:https://www.afsc.noaa.gov/education/activities/PDFs/NFS_K-6_Sept2013_Act5.1_BlubberMitt.pdf)

17. Dolphins

- a. Some dolphins even live in rivers, like this one that lives in the Amazon!

18. Toothed Whales

- a. There are two different types of whales: Those with teeth and those with baleen.
- b. This whale has teeth- the sperm whale. It feeds primarily on squid in the deep-sea!

19. Sperm Whale Teeth

- a. Does anyone know how to figure out the age of a tree?
- b. Just like trees, whale teeth lay down layers of growth that we can count to figure out the age of a whale!
- c. Sperm whales have teeth that can weigh over 2 pounds each! They are useful, but not required to eat squid; some sperm whales have been found without teeth and yet were well fed.

20. Baleen Whales

- a. This is a humpback whale, a baleen whale.
- b. Does anyone know what baleen is?

21. Baleen

- a. Baleen whales take BIG mouthfuls of water and then they shoot the water back out of their mouth through the baleen, which has tiny cracks for water to go through. Only the tiny fish and krill stay inside and get eaten. They are some of the biggest animals, but they eat the smallest food.
- b. Baleen is made out of keratin, the same material that your fingernails and hair are made out of.

22. Does anyone know what type of baleen whale this is? Hint: it is the largest whale on earth, and the largest animal to ever exist on earth.

- a. Blue Whale- an endangered whale that can be up to 30 meters long and weigh 300,000 lbs!

23. Whales like humpbacks and blue whales sing underwater. These songs were recorded and you can listen to them-

http://hawaiihumpbackwhale.noaa.gov/explore/sounds/whale_song.mp3

- a. Whale song is used to communicate across vast distances.

24. Some whales also produce sound to locate prey, much like bats, through echolocation. Killer whales are an example of a species that uses echolocation to locate fish and other marine mammals.

- a. As you can see, there are many kinds of marine mammals that live all over the world. Sometimes, human interactions with them can create challenges.

25. Why do we need to protect marine mammals?

- a. One reason is due to fishing.
- b. Who here likes to eat fish?
- c. Do you know how we get fish? Let's see how many types of fishing we can think of.

- d. **Pause for student responses.**
 - e. Sometimes fishermen use traps and other gear to catch fish and shellfish, like crabs. Other times, they use enormous nets called purse seines that scoop up entire schools of fish!
 - f. But sometimes whales and other animals can swim into the ropes attached to those traps, or even into fishing nets themselves, and get tangled.
 - g. This makes it hard for them to swim and in US waters alone up to 80% of all whales show some evidence of being entangled in fishing gear or other marine debris at some point in their lives.
 - h. **Optional activity:** In groups of two, one person tries to move, while the other holds them back around the stomach to show what it's like to be weighed down. Ask the students to reflect on this activity- what if something was always holding them back? Would it be hard to swim? Eat? Play?
26. What is bycatch?
- a. Does anyone know what the term bycatch means?
 - i. Any animal that gets accidentally caught when fishermen are trying to catch other fish are called bycatch.
 - ii. Bycatch is the biggest threat to marine mammals. Over 600,000 marine mammals are caught as bycatch every year!
 - iii. Check out this video from NOAA, the National Oceanic and Atmospheric Administration, to learn more. NOAA is a government agency that is responsible for taking care of our fisheries:
<https://www.youtube.com/watch?v=xz8q6uHSdmg&feature=youtu.be>
27. Ocean Noise
- a. So we just learned about animals getting caught in ropes, but why else do they need our help?
 - b. Has anyone ever been on a boat? Was it very loud, and maybe a little scary?
 - c. Big boats like this one are really important for moving things around the world, but they can be very loud to animals in the water. We're going to play a game to see what it's like to be a marine mammal underwater trying to talk to its family while a boat is near.
 - i. **Optional Activity:**
 1. Get students to form pairs.
 2. Place the students in two lines with partners placed randomly in the lines.
 3. Ask the students to close their eyes. Turn on music and see if the students can find their partner (or without music, just get them to try to find each other by the sound of their voices- it will get loud!).
28. Thank you! Feel free to look up more information at mmc.gov!