



Grades 4-5
Pinniped Lesson Plans

I. Lesson - (Before Visit)

Objectives:

1. Students will be able to identify pinnipeds as mammals by their characteristics.

A. Pre-assessment discussion:

1. How many of you have seen pinnipeds (seals and/or sea lions) at a zoo or aquarium?
2. Do pinnipeds have a backbone?
3. What covers a pinnipeds body? (fur, feathers, scales, etc.)
4. How do pinnipeds breathe?
5. How do they have their young?
6. Are pinnipeds warm blooded or cold-blooded?
7. What group of animals do you think pinnipeds belong to? (Reptile, bird, mammal, fish, etc.)

2. Students will learn how seals and sea lions are adapted to be efficient swimmers.

A. Pre-assessment discussion:

1. What kind of habitat do pinnipeds live in?
2. What do you think pinnipeds eat?

B. Discuss how pinnipeds are marine mammals that spend most of their life in water, how they are well adapted for their aquatic lifestyle, and what makes them such good swimmers.

Pinnipeds have several adaptations that allow them to survive in the ocean and be able to catch fish and squid:

1. thick blubber - for insulation against cold water
2. fin-footed, paddle like flippers for swimming
3. torpedo shaped, streamlined body for ease of motion in water
4. dense fur for warmth
5. myoglobin - in addition to hemoglobin in the blood that stores oxygen, pinnipeds also have a pigment in the muscles to store additional oxygen - this allows pinnipeds to dive for extended periods of time (up to 40 minutes) to catch their food

3. Students will learn the similarities and differences between seals and sea lions:

Seals (true seals):

- Lack external ears
- Short necks
- Short, haired fore flippers
- Intermediate length, haired hind flippers that cannot be turned forward - movement on land is clumsy

Sea Lions (eared seals):

- Visible ears
- Long necks
- Long, hairless fore flippers
- Long, hairless, webbed hind flippers that can rotate forward for movement on land

II. During your visit to Atlantis Marine World

Visit the Seal Exhibit at the entrance to the aquarium. Compare the seals to our California Sea Lions, which can be observed at the underwater viewing area and during the regularly scheduled Sea Lion Shows. Check out the Riverhead Foundation Center to learn how they rescue sick and injured seals.

A. Observe Pinniped behavior. Have students note pinniped anatomy.

B. Teacher led Q & A

1. Can you see the structural differences between the seals and the sea lions?
2. Which pinniped uses its fore flippers to swim?
3. Which pinniped uses its hind flippers to swim?
4. Which pinniped has larger flippers?
5. Which pinniped could use ear muffs?
6. Draw your favorite pinniped.

III. After visit

A. Watch the video **Andre**. Note: **Andre** is a true story about a Harbor Seal (true seal), but a California Sea Lion (eared seal) starred in the movie.

B. Read a story about pinnipeds.

C. Class can adopt a seal from the Riverhead Foundation for Marine Research and Preservation.

Extensions for grades 4-5

Objectives:

1. Students will learn about different species of pinnipeds.

A. Have students use template below to research their favorite species of pinniped.

Common Name

Scientific Name

Description:

Size:

Diet:

Life History:

Distribution:

Interesting Facts:

Status:

Conservation Efforts: