



Cabrillo Marine Aquarium Lesson Plan

Grade Level: Fifth Grade

Title: Pinniped Races: A Lesson on Seals & Seal Lions

Objective: Students will learn about pinniped characteristics as they participate in a relay race.

California Science Standards: 5th: 6a-f

Time to Complete: approximately 30 minutes

Materials provided by CMA Ocean Discovery Kits: *Reading Handout: All about Pinnipeds, Worksheet: Sea Lion Coloring Sheet, Worksheet: Sea Lion Skeleton Coloring Sheet* Seal and Sea Lion specimens, posters, books and DVDs

Materials provided by Teacher: Photocopies of Reading Handout, Adaptation props: dive mask or swim goggles (two sets), snorkel (two sets), heavy coat or wet suit (two sets), swim fins (two sets), fake teeth (few sets), pipe cleaners twisted and taped together (two sets). Substitutions may be made depending on availability (i.e. paper towel tube instead of a snorkel, rain gear instead of wet suit, mittens instead of swim fins).

- ❖ **NOTE:** All Marine Mammals are protected by Federal Law. It is illegal to collect or possess marine mammals or any parts of a marine mammal (bones, baleen, etc.).

Vocabulary: Mammal, pinniped, endothermic, carnivorous, semi-aquatic, sagittal crest

Lesson Outline:

- **Part 1 - Reading Handout: All about Pinnipeds**
- **Part 2 - Pinniped Races - Outside Activity**

Background: What makes a mammal a mammal? Mammals share the following characteristics: hair or fur, breathe air, warm-blooded, live birth, and nurse their young with milk. There are exceptions, however, like the egg-laying echidna and platypus. We share each of these characteristics with marine mammals, but our habitat is extremely different. Marine mammals spend all or most of their life in the ocean. Seals, sea lions and walruses are carnivorous marine mammals that belong to the suborder Pinnipedia (*PINN-ih-PED-ee-ah*). The “pinniped” means “feather-footed” or “fin-footed.” There are three families in this suborder. The family Phocidae (*FOE-sih-day*) includes the “true” or “earless” seals. The true seals have tiny ear holes but no external ear flaps. Members of the family Otariidae (*O-TAR-ih-Day*) are known as the “eared” seals and includes sea lions and fur seals. Walruses are the

largest pinnipeds and belong to the family Odobenidae (*O-doe-BENN-ih-day*). Walruses are neither a seal nor sea lion, but share characteristics with each. Like sea lions, walruses have long front flippers that they can use to “walk” on land and hind flippers that rotate underneath their body. Like seals, walruses lack earflaps and use their hind flippers in a side-to-side motion for swimming. To survive in this environment, all three groups have developed many successful adaptations. Adaptations are body parts of an animal that make it more suited to live in its environment. Some pinniped adaptations including fins and/or flippers for swimming, nostrils high on their head for breathing, blubber for keeping warm, slimy tears for eye protection, whiskers to help explore their surroundings and find food, and specialized pointed teeth to catch prey and swallow it whole. There are three common pinnipeds in southern California: The Harbor Seal, Elephant Seal, and the California Sea Lion. No walruses are found this far south.

Activity 1: Read as a class and discuss *Reading Handout: All about Pinnipeds*

Activity 2: Pinniped Races - Outside Fun!

Discuss mammal characteristics and adaptations. Show each **adaptation prop** and explain the function it represents. Divide the class into two teams, explain the rules and play!

- Dive mask or goggles - sight and slimy protective tears for the eyes
- Snorkel - nostrils to breathe above the surface
- Heavy coat or wet suit - blubber and fat to keep warm
- Ear muffs - sea lion ear flaps (distinguishes it from seals)
- Fake teeth - specialized pointy teeth to grab prey
- Swim fins - front and hind flippers for swimming, steering and walking
- Twisted pipe cleaners - whiskers to explore surroundings

Game Guidelines:

- The first student in line from each team, runs to the adaptation props pile, picks up an “adaptation” and puts it on.
- They must shout out the pinniped adaptation before they can leave the pile. (i.e. student should call out “goggles for eye sight and slimy tears for protection”)
- They run to their team, take off their adaptation, give it to the next person and sit at the end of the line.
- The next student puts on the "adaptation" that was given to them, runs to the adaptation props pile, picks up a second adaptation, puts it on, shouts out the adaptation, runs back, takes off both of their adaptations and gives them to the next student, then sits at the back of the line.
- Play continues, adding adaptations, until each team has all players sitting down or all "seven (7) adaptation props" on a team member.
- The first team to have all players sitting down wins!

Note: When the pile is empty, players may continue to relay, putting on and taking off adaptations, or add as many adaptations as there are players, depending on class size.

Lesson Extension:

- Add the *Worksheet: Sea Lion Coloring Sheet* and *Worksheet: Sea Lion Skeleton Coloring Sheet* to the lesson.
- Read the book “*Zoobooks Seals & Sea Lions*” (provided in the kit)

References:

- Oregon Coast Aquarium: Newport
<http://aquarium.org/education/teacher-resources>