

WHAT LIVES IN AN OCEAN?

UNIT 6: Ecosystems Lesson 12 — Grades K-1 INSTRUCTIONS



Overview

In this lesson, students will learn about some of the ocean animals that live in the Arctic.

Objectives

On successful completion of this lesson, students will be able to:

- identify ocean animals that live in the Arctic ;
- compare ocean animals that live in the Arctic; and
- draw and label ocean animals that live in the arctic.

Alaska Standards

[K-1] SA1 Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.

[K-1] SC1 Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution.

Alaska Cultural Standards

[D] Culturally knowledgeable students are able to engage effectively in learning activities that are based on traditional ways of knowing and learning.

[D.3] Students who meet this cultural standard are able to interact with Elders in a loving and respectful way that demonstrates an appreciation of their role as culture-bearers and educators in the community.

[E] Culturally knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them.

[E.2] Students who meet this cultural standard are able to understand the ecology and geography of the bioregion they inhabit.

Bering Strait School District Scope & Sequence

1st grade sequence #7: Ecosystems

B. Understands the characteristics of life in the ocean.

E. Use scientific processes to directly support the concepts of the ecosystems.



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Materials

- *In Arctic Waters* by Laura Crawford
- Yarn
- Index cards or small pieces of paper
- *Student Worksheet: Ocean Animals in the Arctic*

Additional Resources

Seals and Sea Lions by Bobbie Kalman

Seals (Polar Animals) by Emily Rose Townsend

Destination: Polar Region by Jonathon Grupper

Polar Animals (Scholastic Reader Level 1) by Wade Cooper

National Geographic Readers: Polar Bears by Laura Marsh

Eye Wonder: Ocean by Samantha Hall

Ocean Alphabet Book by Jerry Pallotta

Activity Preparations

1. Watch the multi media: Ocean Ecosystem.
2. Review Whole Picture section of the lesson for teacher background information.
3. Cut enough yarn to make two large circles on the floor for a Venn diagram.

Whole Picture

An ecosystem is a community of living (biotic) and non-living (abiotic) things that interact in the same environment. Biotic organisms include things like plants, animals, microbes, and people; abiotic components include things like rocks, minerals, and water. Ecosystems can be vast, like the ocean, or they can be small, like a classroom aquarium. In either case, each component of the ecosystem depends on the others for survival. When one part is disrupted, it can throw the entire system out of balance.

One major ecosystem found in the Bering Strait School District is the marine, or ocean, ecosystem. The ocean is alive with many fish, mammals, sea birds, and plants. In the waters near St. Lawrence Island for example, is an extremely rich and productive pocket of life that includes many different kinds of fish (pollock, halibut, salmon, and forage fish, such as herring, Pacific sandlance, capelin, and lanternfish), as well as mollusks and



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crustaceans (ADFG, “Lands and Waters,” p. 44). This rich diversity of life beneath the surface of the water supports other marine species, including several seal species (ribbon, spotted, bearded, and ringed), whales (bowhead, gray, beluga, and minke), walrus, and polar bear, not to mention the plethora of sea birds including “Black-legged kittiwake, Parakeet auklet, Crested auklet, Least auklet, Northern fulmar, Red-faced cormorant, Pigeon guillemot, Leach’s and Fork-tailed storm-petrels, and Common and Thick-billed murre” (ADFG, “Lands and Waters,” p. 43).

Sea ice is a particularly important component of the marine ecosystem. There are two major types of sea ice: “fast ice” and “pack ice.” Shore-fast ice is attached to the coastline or to other large ice floes that are grounded. This type of ice forms annually in winter and melts during the summer months. Pack ice, on the other hand, is not anchored to the land. It grows annually, but does not completely melt each year. It may include old sea ice, or icebergs and floes that have moved from other locations (ADFG, “Sea Ice Habitats,” p. 1).

Sea ice provides important habitat for nine mammal species in Alaska. “These are the arctic fox; polar bear; beluga and bowhead whales; the walrus; and the bearded, ringed, spotted, and ribbon seals. Each species of marine mammal requires a certain type of sea ice for resting, molting, socializing, breeding, rearing, migration, and access to prey” (ADFG, “Sea Ice Habitats,” p. 2). Other animals also depend on the sea ice, though somewhat more indirectly. For example, in the summer, as fish and small marine prey-species move north following the ice retreat, so do the animals that depend on them, like sea birds, larger fish, and marine mammals. Thus, the availability of sea ice is vastly important for the survival of these species, as well as for the people who subsist off of them.

Iñupiaq, Yup’ik, and Siberian Yupik people have called the area home for thousands of years. A key component of the Alaska Native philosophy toward the ecosystem is to respect and maintain its delicate balance. People recognize that they are active players in the system and that certain ways of caring for the system are required in order to maintain the natural cycles (Kawagley, 2006). One such example of maintaining balance is the Yup’ik Bladder Festival, where seal bladders are sent back to their watery world in order to “help insure the rebirth of the yuit, or ‘persons,’ of the animals” and ensure continued abundance of the seals the following season (Fienup-Riordan, 1994, p.256). Similarly, in many Iñupiaq communities ceremony practices dictate that when a marine mammal is harvested and brought to land, it should be given a sip of fresh water. By respecting the animals in this way, the animal spirit will go back to others of its kind and encourage them to give themselves for harvest, as well.



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Vocabulary

Ocean - large body of salt water

Activity Procedure

1. Show students the multi media-Ocean Ecosystem. Discuss the animals named. Tell students the multi media will also be available for them to view in a small group or individually later.
2. Read *In Arctic Waters* and discuss the animals in the book.
3. Have students think of ocean animals that live in the Arctic and list them on the board.
4. Do a Venn diagram comparing two ocean animals that are listed on the board (eg: whale/salmon, gull/crab, walrus/halibut, polar bear/walrus. Use the yarn to make a two circle Venn on the floor. The students will say a characteristic of the animals chosen and the teacher will write it on an index card. The students will tell the teacher where the card should be placed on the Venn. The teacher or students may place the card in the correct section. Do this several times to compare pairs of animals.
5. Invite a culture bearer in to the classroom to discuss how sea ice has affected the ocean animals in the local area during their lifetime.
6. Have students take the *Student Worksheet: Ocean Animals in the Arctic* home to complete with help from their family members. Tell them to return the worksheets to class so they can be shared with their classmates.

Extension Activities

Have students role-play an ocean animal that lives in the Arctic.

Answers

Will vary depending on which animals the students choose.

References

Alaska Department of Fish and Game [ADFG]. "Ecological Framework: The Lands and Waters that Produce Our Fish and Wildlife." Accessed from: http://www.adfg.alaska.gov/static/species/wildlife_action_plan/section3b.pdf.



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Alaska Department of Fish and Game [ADFG]. "Wildlife Action Plan Appendix 5: Sea Ice Habitats." Accessed from: http://www.adfg.alaska.gov/static/species/wildlife_action_plan/appendix5_sea_ice_habitats.pdf.

Fienup-Riordan, Ann. (1994). *Boundaries and Passages: Rule and Ritual in Yup'ik Eskimo Oral Tradition*. Norman and London, University of Oklahoma Press.

Kawagley, Angayuqaq Oscar (2006). *A Yupiaq Worldview: A Pathway to Ecology and Spirit*. Long Grove: Waveland Press.



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Student Worksheet: Ocean Animals in the Arctic

Names of people who helped do the worksheet _____

Instructions: Draw two ocean animals that live in the Arctic. They may live in the water, land or in both the water and land. Write the name of the animal to identify it.

1.

Animal name _____

2.

Animal name _____

