

# HOW DO PLANTS AND ANIMALS NEED EACH OTHER?



## Overview

In this lesson, students will learn about what plants and animals need to survive and how plants and animals are interdependent. They will explore the interdependency and impact of the local community on the local environment.

## Objectives

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

- list four things plants and animals need to survive;
- identify how plants and animals need each other;
- draw and label a picture showing the relationship of plants and animals in the environment; and
- describe how the local community and the plants and animals in the local environment are interdependent.

## Alaska Standards

### Alaska Science Standards / Grade Level Expectations

- [3] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SA1.2 The student demonstrates an understanding of the processes of science by observing and describing the student's own world to answer simple questions.
- [3] SA3.1 The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by observing local conditions that determine which plants and/or animals survive.
- [3] SC1.1 The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution by sorting Alaskan plants and /or animals using physical characteristics. (e.g., leaves, beaks)
- 3] SC1.2 The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, the process of natural selection, and biological evolution by describing how some traits (e.g., claws, teeth, camouflage) of living organisms have helped them survive as a species.
- [3] SC2.1 The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by sorting animals and plants into groups based on appearance and behaviors.



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[3] SC.2.2 The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by observing and comparing external features of plants and animals that may help them grow, survive, and reproduce.

## Alaska English / Language Arts Standards

W.3.2.a-d Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

## Alaska Cultural Standards

[A] Culturally knowledgeable students are well grounded in the cultural heritage and traditions of their 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. Students who meet this cultural standard are able to:

[E.1] recognize and build upon the interrelationships that exist among the spiritual, natural, and human realms in the world around them, as reflected in their own cultural traditions and beliefs as well as those of others.

[E.2] understand the ecology and geography of the bioregion they inhabit.

## Bering Strait School District Scope & Sequence

2nd grade sequence #4: Living Things (Animals)

- B. Understand the needs of animals.
- C. Understands how we classify animals.
- D. Understands how animals grow and change.
- E. Uses scientific processes and inquiry to directly support the concepts of living things.

3rd grade sequence #4: Living Things (Animals)

- B. Observe and compare external features of animals that may help them grow, survive, and reproduce.
- C. Sort Alaskan animals using physical characteristics.
- E. Sort animals into groups based on appearance and behaviors.
- F. Understand what vertebrates are.
- G. Understand what invertebrates are.
- H. Use scientific processes and inquiry to directly support concepts on animals.



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## Materials

- *A Log's Life* by Wendy Pfeffer
- Chart paper
- Marker
- Plant and Animal Cards (one set per group of three students)
- Student Worksheet: How Plants and Animals Need Each Other
- Optional: Student Worksheet: Plants, Animals, and the Local Community

## Multimedia

REACH Multimedia K-3: "Watch the Balance of Nature"

Available at: [www.k12reach.org](http://www.k12reach.org)

## Additional Resources

*The Busy Tree* by Jennifer Ward

*This Is the Sea that Feeds Us* by Robert F. Baldwin

*One Small Place in a Tree* by Barbara Brenner

*Over and Under the Snow* by Kate Messner

*Who Will Plant a Tree?* by Tom Leonard

*Wildlife Notebook Series*, Alaska Department of Fish and Game

## Activity Preparations

1. Read through the entire lesson, including the teacher background information in the Whole Picture section.
2. Create a chart with the title "Interdependency of Plants and Animals". Construct it according to the example.



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Example of chart:

<b>Interdependency of Plants and Animals</b>
1. Animals breathe oxygen and exhale carbon dioxide. Plants take in carbon dioxide and release oxygen back into the air.
2. Animals need plants for food and shelter.
3. Plants need animals for seed dispersal and pollination.
4. Some animals eat plants. Some animals eat other animals. When animals die and decompose, the plants use the nutrients that were deposited back into the soil from the decomposing organism.
5. Forests and wetlands filter water so it is clean, and animals need clean water to drink.

3. Make copies of Student Worksheet: How Plants and Animals Need Each Other  
If needed, make additional copies of the Plant and Animal Cards (Appendix).
4. If using, make copies of Student Worksheet: Plants, Animals, and the Local Community
5. If doing the extension activity with a guest speaker, that visit will need to be arranged. Invite a cultural knowledge bearer or elder to speak to the class about the traditional ways the local community is dependent on the environment and how living things in the environment are dependent upon the local community.

## Whole Picture

Iñupiaq, Yup'ik, and Siberian Yupik people have an intimate knowledge of the landscape, plants, animals, and seasonal timing of life in their local area (Barnhardt and Kawagley, 2005). This understanding is crucial for subsistence living, for plants, animals, and humans all depend on one another for survival.

Plants are producers — they take energy from the sun, nutrients from the ground, and water to grow and produce their flowers, seeds, and berries. They also release oxygen, which all animals, including humans, need to survive. Animals are consumers and they all depend on plants for survival. Some eat plants directly, while others eat animals that eat the plants. In turn, some plants depend on animals to help spread their seed. Decomposing animal carcasses can also provide nutrients for plants to grow.

Flowering plants, like berries, have a symbiotic relationship with pollinating animals; the



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plants depend on bees and insects for pollination, while the pollinators need the nectar from the flowers. After the flowers have been pollinated, they can turn into berries, which are then eaten by animals like bears, ptarmigan, fox, and people. The berry seeds pass through the consumer's system, and then are deposited in new areas — thereby helping the plant to reproduce.

In northwest Alaska, people depend on numerous plants and animals for survival. Depending on the season, people may eat caribou, moose, ptarmigan, bear, fox, wolf, seal, walrus, salmon, and other types of fish including sheefish, blackfish, herring, and cod. People also depend on the plants that these animals eat, like lichen, sedges, grasses, willows, birch, mushrooms, and berries. In addition, people directly use many plants — eating some and using others for medicinal purposes; these include: labrador tea, a variety of berries, beach greens, seaweeds, willow, and others.

Native knowledge bearers teach the wisdom that because all things are connected and depend on one another, mutual respect must be shared by all (Kawagley, 2006). For example, when picking berries, even the bears are selective, and leave some on the plants, or eat only from the plants that hold the most to harvest. Similarly, elders teach that when harvesting — whether from plants or animals — people must show restraint and take only what they need. They must respect the plant or animal if they hope for more of its kind to be available in the next season.

Ways of showing respect can vary from community to community. In some communities, elders and culture bearers teach that it is vital to communicate with plants and animals that are harvested — to thank them and tell them how they will be used (Garibaldi, 1999). In other communities after processing fish, children have traditionally taken fish bones to the river or ocean, releasing them back to the wild and asking the spirits to return again (Krupnik and Jolly, 2002). Other ways of showing respect include giving harvested sea mammals a drink of fresh water, turning drying salmon skin side up if it begins to rain, and not wasting any part of the plant or animal (Barnhardt and Kawagley, 2005; Krupnik and Jolly, 2002; Charles, 2002). By showing mutual respect, people helped to ensure their own survival, as well as the survival of the life around them.

To learn more about what is commonly accepted practice in your community, talk to elders and culture bearers to learn best practices for showing respect to all life around you. Spending time with elders and cultural knowledge bearers on the land can afford plethora of learning opportunities — a chance to know and learn tastes, textures, smells, sights, and sounds, in addition to appropriate ways to behave.



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## Vocabulary

**environment** – all the living, nonliving, and once living things in a place

**ecosystem** – the living and nonliving things that interact in an environment

**interdependency** – when living things rely on each other to survive

**predator** – an animal that hunts another animal for food

**prey** – an animal that is hunted by another animal for food

**pollination** – the process by which pollen is transferred from one plant to another

**seed dispersal** – movement of seeds away from the parent plant

## Activity Procedure

1. Read *A Log's Life* by Wendy Pfeffer and discuss the book as it is being read. Explain that the book illustrates the interdependency of plants and animals in an ecosystem. Define the vocabulary terms interdependency and ecosystem. Ask students to name ways that plants and animals were dependent on each other in the ecosystem represented by the log.
2. Show students the chart labeled "Interdependency" and explain that plants and animals are interdependent in several ways. Go over the chart, defining new vocabulary words as you go down the list.
3. Tell the students to think about the local environment.
  - Ask (pre-assessment questions):
  - Where do plants and animals live in the local environment?
  - What do they need to survive?
  - How do the local animals depend on the plants?
  - How do the local plants depend on the animals?
  - How do the animals depend on the other animals in the area?
  - How do you think plants depend on other plants?
  - What would happen if a plant or animal was no longer available or quit existing?
4. Explain to the students that they are going to participate in an exercise that demonstrates how plants and animals are interdependent. Using the Plant and Animal Cards assign each student the role of a living thing from the local environment. Have land plants and animals stand on one side of the class and water ones stand on the other side. Randomly choose a card and ask those animals to sit down (e.g. would the caribou sit down?). Explain that the students sitting down represent the dying or disappearing caribou. Ask the students



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which other animals depend on the caribou. (bear). Have those students sit down. If any plant or animal depends on those plants or animals that just sat down, then they also need to sit down. Continue until there are no, or very few students left standing up. Note: If needed, students may make a card of a local plant or animal that is not included in the cards.

5. Repeat the simulation beginning with a different plant or animal. The class may do this multiple times.
6. Assessment questions (student assessment):
  - What happens to the plants and animals in an area when one type of animal leaves or dies out?
  - How were the land and water environments affected? Were they affected the same?
  - How do animals (including insects) use plants?
  - How do plants benefit from animals?
  - What happens when an animal dies?
  - What happens when a plant dies?
  - What would happen if all the lichens burned in a fire?
  - How do humans use plants and animals?
  - How should humans show their respect to the plants and animals?
  - What are some traditional ways of respecting the environment?
  - How could we as members of the local community protect the environment?
7. Divide students into groups of 3. Hand each group a set of Plant and Animal Cards. Instruct them to use the cards to complete the Student Worksheet: How Plants and Animals Need Each Other. If they do not complete the worksheets in class, they may take them home to complete them. Worksheets should be returned to class the next day to share and discuss with the class.

## Optional

1. Have students take the Student Worksheet: Plants, Animals, and the Local Community along with a set of set of Plant and Animal Cards and complete the worksheet. They may begin in class and finish at home for homework. Have them return to class the next day to share with the class.



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## UNIT 7: Your Environment Lesson 18 — Grades 2-3 INSTRUCTIONS



### Extension Activities

- Have a cultural knowledge bearer or elder speak to the class about the traditional ways the local community was dependent on the environment and how living things in the environment were dependent upon the local community. Have them explain which traditional ways are still present today and what can be done to help living things thrive and survive locally.
- Create a conservation profile of a plant or animal from the local environment. In the profile include a picture of the plant or animal, how it meets its need for food, shelter, and water, physical and behavioral adaptations, and how the interdependency it has with plants and animals in its environment. Also include any threats to its survival and interesting facts.
- Take hand lenses and science journals and go explore a rotting tree or log, looking for the interdependent relationships with other plants and animals.

### Answers

1. Ways that plants and animals were dependent on each other in the ecosystem represented by the log: Answers will vary, but should include mention of woodpeckers, squirrels, porcupines, carpenter ants, millipedes, slugs, fungi living in, on, or within the tree. The tree decomposes and a new tree begins to grow from the rotting log. Connections made should be that the rotting log provided shelter for animals and insects and nutrients for the new tree. Other animals were dependent on the tree for food, or other animals and insects for food.
2. Pre-assessment questions:
  - Where plants and animals live in the local environment: Answers will vary. Tundra, ocean, rivers, forest, under the snow, in dens, under the grass, out at sea
  - What they need to survive: food, shelter, water, space to reproduce and grow, air
  - How local animals depend on the plants: food, shelter
  - How local plants depend on the animals: decomposing to provide nutrients, pollination
  - How animals depend on the other animals in the area: food
  - How plants depend on other plants: nutrients, shelter, attracting pollinators to the area
  - If a plant or animal was no longer available or quit existing: other plants and animals would be affected and might lose their food or shelter.





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## 3. Student assessment questions:

- What happens to the plants and animals when one type of animal leaves or dies out: Animals that depend on the missing plant or animal for food will be without food. They may die or leave the area in search of other food and shelter sources.
- How land and water environments affected: Some living things were dependent upon the animal that died. If an animal lived in both environments, then both were impacted.
- Affected the same: Impact was determined by how much time the animal spent in each environment.
- How animals use plants in environments: food, shelter, oxygen, water
- How plants benefit from animals: pollination, seed dispersal, carbon dioxide, nutrients
- Impact when an animal dies: other animals may be without a food source and may need to search for other food
- Impact when a plant dies: plants and animals lose a food source, shelter, and a producer of oxygen
- Impact if all the lichens burned in a fire: all lichen eaters would have no food; small animals and insects that lived under the grass would have no shelter.
- Human use of plants and animals: food, shelter, medicines, oil and fat, clothing
- How humans show their respect to the plants and animals: in traditional ways
- Traditional ways of respecting the environment: answers will vary depending upon the community
- How the local community could protect the environment: by not over hunting or over harvesting plants and animals



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## UNIT 7: Your Environment Lesson 18 — Grades 2-3 INSTRUCTIONS



### References

- Alaska Department of Fish and Game, "Alaska Wildlife Notebook Series", Accessed from: [www.adfg.alaska.gov/index.cfm?adfg=educators.notebookseries](http://www.adfg.alaska.gov/index.cfm?adfg=educators.notebookseries)
- Barnhardt, Ray, and Kawagley, Angayuqaq Oscar. (2005). "Indigenous Knowledge Systems and Alaska Native Ways of Knowing." *Anthropology & Education Quarterly*, 36(1): 8-23.
- Charles, Walkie. (2002). "See Connections — All Things are Related." In: *Alaska Native Ways: What the Elders Have Taught Us*. Roy Corral, Ed. Portland: Graphic Arts Center Publishing.
- Ecokids: "Reindeer Moss", Accessed from: [www.ecokids.ca/pub/eco\\_info/topics/field\\_guide/plants/reindeer\\_moss.cfm](http://www.ecokids.ca/pub/eco_info/topics/field_guide/plants/reindeer_moss.cfm)
- Garibaldi, Ann. (1999). "Medicinal Flora of the Alaska Natives: A Compilation of Knowledge from Literary Sources of Aleut, Alutiiq, Athabaskan, Eyak, Haida, Inupiat, Tlingit, Tsimshian, and Yupik Traditional Healing Methods Using Plants", Anchorage: Alaska Natural Heritage Program.
- Kawagley, Angayuqaq Oscar (2006). "A Yupiaq Worldview: A Pathway to Ecology and Spirit". Long Grove: Waveland Press.
- Krupnik, Igor, and Daynna Jolly. (2002). "The Earth is Faster Now: Indigenous Observations of Arctic Environmental Change". Arctic Research Consortium of the United States and Smithsonian Institution Presses.
- Wikipedia, "Bering Sea" Accessed from: [en.wikipedia.org/wiki/Bering\\_Sea](http://en.wikipedia.org/wiki/Bering_Sea)



# HOW DO PLANTS AND ANIMALS NEED EACH OTHER?



## Student Worksheet: How Do Plants and Animals Need Each Other?

Name \_\_\_\_\_

All animals and plants depend on each other to survive. This is known as interdependence. How do the following plants and animals depend on each other? Choose words from the word bank to complete the sentences.

1. Plants provide bees with \_\_\_\_\_ *nectar* \_\_\_\_\_.

Bees help to \_\_\_\_\_ *pollinate* \_\_\_\_\_ flowers.

Grasses provide \_\_\_\_\_ *food* \_\_\_\_\_ for snowshoe hares.

\_\_\_\_\_ *Seeds* \_\_\_\_\_ from the plants are spread by snowshoe hares.

2. Animals breathe in \_\_\_\_\_ *oxygen* \_\_\_\_\_ and exhale carbon dioxide.

Plants use \_\_\_\_\_ *carbon dioxide* \_\_\_\_\_ in photosynthesis and exhale oxygen for animals to \_\_\_\_\_ *breathe* \_\_\_\_\_.

3. Spruce trees provide \_\_\_\_\_ *shelter* \_\_\_\_\_ for porcupines. Spruce cones are \_\_\_\_\_ *spread* \_\_\_\_\_ to other areas by porcupines.

4. Some animals eat \_\_\_\_\_ *plants* \_\_\_\_\_ and \_\_\_\_\_ *animals* \_\_\_\_\_.

When plants and animals die, they decompose and provide

\_\_\_\_\_ *nutrients* \_\_\_\_\_ in the soil for plants.

5. Forest and wetlands \_\_\_\_\_ *filter* \_\_\_\_\_ water and provide

\_\_\_\_\_ *clean* \_\_\_\_\_ water for plants and animals



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## Student Worksheet: How Do Plants and Animals Need Each Other?

Name \_\_\_\_\_

Select an animal from the local environment. Determine the type of environment the animal lives in. Draw a picture of that animal, including all the necessary things the animal needs to survive, how it uses the environment, how it depends on plants and other animals, and how plants and animals depend on it. Also show the interdependency of the animal on the plants and other animals in its environment.

Type of environment: Land or water (circle one) Answer will vary

Pictures will be dependent on animal chosen.

Write a short description of your picture of your animal, including all necessary factors of how your animal survives in its environment.

Answers will vary. Factors should include animals relying on plants (grasses, berries, sedges, trees, bushes) for food, shelter, and oxygen. The forest floor and wetlands filter water, providing clean water. Some animals are prey and provide food to predators. Insects and zooplankton are food sources. Animals help plants by helping pollinate flowers or by dispersing seed. They also help supply nutrients when they die and decompose.



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## UNIT 7: Your Environment Lesson 18 — Grades 2-3 ANSWER KEY



### Student Worksheet: Plants, Animals, and the Local Community

Name \_\_\_\_\_

Name two ways that the local community depends on the local environment.

1. As a food or clothing source (answers may vary)
2. To provide oil, shelter, medicine (answers may vary)

Name two ways the local plants and animals depend on the local community.

3. To be selective in harvest (answers may vary)
4. To show respect for the environment in a culturally appropriate way (answers may vary)

5. If the people in the local community gathered all the blueberries and left none to regrow, how would that impact the local environment? Include in your answer which plants and animals would be affected and why.  
(answers may vary):

Bears, rodents, small mammals, and birds that are dependent on blueberries would no longer have them as a food source. This could impact the reproduction of different organisms because some, like wolves, reproduce fewer pups when food is scarce. Animals without this food source would have to look elsewhere for food, which may cause them to migrate and leave the area. Since plants are oxygen producers, less oxygen would be available because there would be fewer plants.

6. What is the responsibility of the local community to the local environment? Give examples to support your response.

(answers may vary):

Examples should be given that illustrate the local, traditional ways of respecting and taking care of the environment. The local community needs to treat the plants



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## Student Worksheet: How Do Plants and Animals Need Each Other?

Name \_\_\_\_\_

All animals and plants depend on each other to survive. This is known as interdependence. How do the following plants and animals depend on each other? Choose words from the word bank to complete the sentences.

1. Plants provide bees with \_\_\_\_\_.

Bees help to \_\_\_\_\_ flowers.

2. Grasses provide \_\_\_\_\_ for snowshoe hares.

\_\_\_\_\_ from the plants are spread by snowshoe hares.

3. Animals breathe in \_\_\_\_\_ and exhale carbon dioxide.

Plants use \_\_\_\_\_ in photosynthesis and exhale oxygen for animals to \_\_\_\_\_.

4. Spruce trees provide \_\_\_\_\_ for porcupines. Spruce cones are \_\_\_\_\_ to other areas by porcupines.

5. Some animals eat \_\_\_\_\_ and \_\_\_\_\_.

When plants and animals die, they decompose and provide \_\_\_\_\_ in the soil for plants.

6. Forest and wetlands \_\_\_\_\_ water and provide \_\_\_\_\_ water for plants and animals.

nectar	food	shelter	seeds	oxygen	animals	pollinate
spread	clean	filter	plants	breathe	nutrients	carbon dioxide

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## Student Worksheet: How Do Plants and Animals Need Each Other?

Name \_\_\_\_\_

Select an animal from the local environment. Determine the type of environment the animal lives in. Draw a picture of that animal, including all the necessary things the animal needs to survive, how it uses the environment, how it depends on plants and other animals, and how plants and animals depend on it. Also show the interdependency of the animal on the plants and other animals in its environment.

Type of environment: Land or water (circle one)

Write a short description of your picture of your animal, including all necessary factors of how your animal survives in its environment.

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## Student Worksheet: Plants, Animals, and the Local Community

Name \_\_\_\_\_

Name two ways that the local community depends on the local environment.

1. \_\_\_\_\_

2. \_\_\_\_\_

Name two ways the local plants and animals depend on the local community.

3. \_\_\_\_\_

4. \_\_\_\_\_

5. If the people in the local community gathered all the blueberries and left none to regrow, how would that impact the local environment? Include in your answer which plants and animals would be affected and why.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. What is the responsibility of the local community to the local environment? Give examples to support your response.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



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## Living Things Information Cards

**Arctic Fox**



**Caribou**



**Snowshoe Hare**



**Ermine**



# HOW DO PLANTS AND ANIMALS NEED EACH OTHER?



## Living Things Information Cards

**Brown Bear**



**Ptarmigan**



**Beaver**



**Lemming**



# HOW DO PLANTS AND ANIMALS NEED EACH OTHER?



## Living Things Information Cards

**Arctic Bumblebees**



**Spruce Tree**



**Reindeer Moss**



**Labrador Tea**

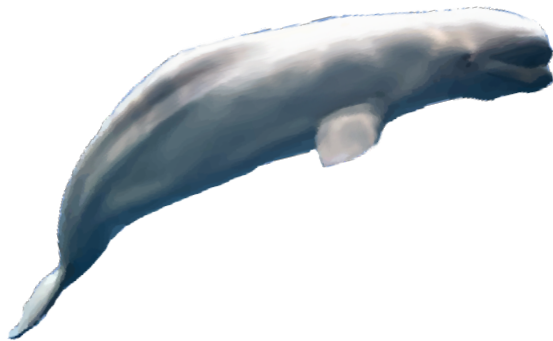


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## Living Things Information Cards

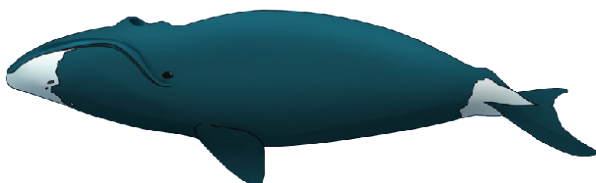
**Beluga Whale**



**Walrus**



**Bowhead Whale**



**Bearded Seal**



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## Living Things Information Cards

**Alaska King Crab**



**Polar Bear**



**Puffin**



**Phalaropes**

