ALASKA'S WILD WONDERS

PREDATOR vs. PREY

In this Issue:

Would you rather be a predator or prey species? Learn about both, and the senses, physical tools, and behaviors that help each survive.

For Educators:

Find Alaska wildlife-inspired curricula and lots of other learning resources: **alaska.gov/go/n4ug**

Contents:

Alaska Department of Fish and Game, Division of Wildlife Conservation, 2025

Predator research sheet!

A **predator** is an animal that hunts and eats other animals to get the food and energy it needs to survive. Predators have **adaptations** that help them find and capture prey, or the animals they eat. Match predators to the senses, tools, and behaviors they use to hunt. Some adaptations apply to many predators, so there are many correct answers! Check out **adfg.alaska.gov** and search under the "Species" tab for more clues! You can list each predator more than once. You can also include predators that you know that are not listed on this page. The first one is done for you.

Senses

Binocular vision:
Both eyes face forward for **depth perception**, which helps predators know how far away their prey is. Binocular vision also helps predators see long distances.

Example: Owls, eagles, lynx

Sharp hearing:
Some predators listen for the presence or movement of prey.

Example: _____

Sense of smell:
Predators often key into scents of prey, including body odor, urine, and scat.

Example: _____

Sensitivity to motion/touch:
Many predators can detect movement with their sense of touch. Whiskers and some feathers, for example, are sensitive to movements of prey in air or water.

Example: _____

Physical tools

Sharp teeth:
Most predators have sharp teeth to help them eat prey.

Example: _____

Specialized feet:
Talons (birds) and claws (mammals) help predators catch, carry, and **subdue** their prey. Some predators have specialized feet to swim, run, float on snow, perch, and hold onto prey.

Example: _____

Streamlined bodies:
Predators are often speedy! They have bodies that help them move quickly through air and water as they hunt and catch prey.

Example: _____

Chemical toxins:
Certain predators can make poisons to weaken their prey.

Example: _____

Hunting behaviors

Cooperative/pack hunting:
Some predators hunt in groups.

Example: _____

Silent stalking:
Many predators are very quiet when they hunt, both to better hear the movements of their prey, and to avoid being noticed by prey.

Example: _____

Surprise attacks:
Predators use the element of surprise to startle and catch prey.

Example: _____

Sit still and wait:
Predators can hold very still or stay hidden to avoid detection by prey.

Example: _____

Speedy pursuits:
Using speed to chase down prey on land, in water, or in the air can be a predatory hunting behavior.

Example: _____

Questions to build on: If you could create your own predator, what senses, tools, and behaviors would you want it to have? What animals would it hunt to stay alive? Where in Alaska (or beyond!) would it live? How many predators on this page are also hunted by other animals?

Prey research sheet!

Prey are animals that are hunted and eaten by other animals. Prey have defensive **adaptations** that help them stay safe, escape, or survive when they meet a predator. Look for a prey species for each sense, tool, or behavior below, and click on the **adfg.alaska.gov** "Species" tab for clues! You can use each example of prey below more than once. You can also list prey species you know that are not listed on this page. The first one is done for you.

Senses

Eyes on the side:
Prey often have eyes on the sides of their head, which allows them to see predators coming from any direction.

Example: Moose, sheep, hares

Sharp hearing:
Prey species need good hearing to listen for approaching predators.

Example: _____

Ability to smell:
Prey animals rely on smell less than predators do, but there are some prey species that have good noses. Which ones have the best sniffers?

Example: _____

Sensitive to motion/touch:
Prey species can sense changes or vibrations in the air, water, or on the ground. This senstivity helps them to detect approaching predators.

Example: _____

Physical tools

Specialized body parts:
Ungulates have horns or antlers and hooved feet that they can use to fight off predators. Other prey species have protective body parts like quills, pointy spines, or hard shells.

Example: _____

The need for speed:
Prey animals have to be fast. Many have to run, swim, or fly away quickly to escape from predators. Which prey species do you think are the fastest?

Example: _____

Chemical defenses/toxins:
Just as some predators can produce toxins to subdue prey, prey species can also create chemical defenses or toxins to make them unappealing to predators.

Example: _____

Defensive behaviors

The ability to hide:
Prey can hide in burrows, in trees, in water, or by blending in with their surroundings, which is called **camouflage**.

Example: _____

The ability to escape:
Speedy prey can survive by outracing predators chasing them.

Example: _____

Warnings and alerts:
Many prey species alert others in their group that predators are near.

Example: _____

Safety in numbers:
Prey species often form large groups to fight off predators more effectively, or to increase their chance of survival because there are so many. Certain prey species also rely on the opposite: remaining solitary and spread out, so that they are harder for predators to find.

Example: _____

Questions to build on: If you were a prey species, what defenses would you want? How many prey animals on this page are both prey and predators? Prey and predators use competing senses, tools, and behaviors to survive. This competition is key to understanding complex food webs.

Close relationships

Snowshoe hares and Canada lynx are both found in many parts of Alaska, especially in **boreal forests**. Lynx are predators that **specialize** in catching and eating snowshoe hares, as hares make up more than 90% of their diet. Hare **populations** rise and fall for a variety of reasons, and lynx populations follow the same pattern a year or two later. When there are a lot of hares, lynx survive and reproduce more offspring. When there are fewer hares, lynx have to work much harder to find enough food to survive.

Canada lynx vs Snowshoe hare

Sharpest Senses:
Binocular and night vision
Good hearing and smell

Strongest tools:
Large paws and long legs
Sharp teeth and claws

Helpful to hunting:
Speed
Silent stalking
Ability to **pounce**/surprise prey
Adaptable in different terrain

Sharpest senses:
Hearing, eyes on the side for vision in all directions

Effective tools:
Big hind feet (snowshoes!)
Strong back legs

Dynamic defenses:
Hiding: fur as camouflage, holding still, finding a shelter
Speedy escape: bounding and quick maneuvering

Ringed seal vs Polar bears

Sharpest senses:
Whiskers detect movement in water
Eyesight, hearing, and smell

Effective tools:
Streamlined body (swimming)
Flippers with claws

Dynamic defenses:
Snow lairs to protect pups
Staying underwater (15+ min)
Swimming fast and deep
Alertness when hauled out on ice

Sharpest Senses:
Smell
Tactile paws for walking on sea ice

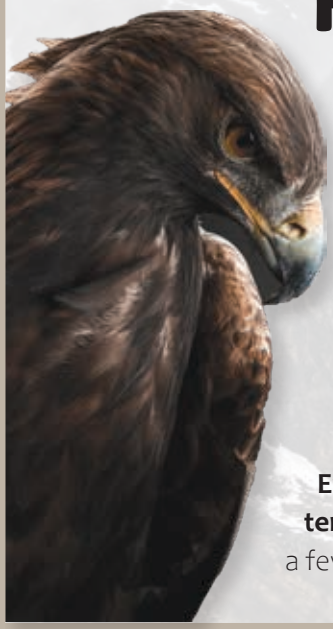
Strongest tools:
Large paws
Powerful legs
Sharp claws

Helpful to hunting:
Camouflage with sea ice
Ability to sniff out snow lairs

Polar bears need the fat and calories they get from eating seals to keep their layer of **blubber** (fat) thick enough to survive cold Arctic winters. They can sniff out seal **lairs** (dens) in the snow, and sit and wait for seals at **breathing holes**, sometimes for hours.

Seals living on ice are also predators, and rely on **sea ice** to be near their **marine** prey - mostly fish and invertebrates. Living on sea ice through the winter is tough. Ringed seals make breathing holes in the ice and keep them open all winter using claws on their flippers. They make several holes, which is one way they avoid predators. If they sense a polar bear at one hole, they can escape to another.

Fascinating match-ups



Golden eagles vs Young ungulates

Golden eagles are large **raptors** - birds that attack prey from the air. They eat many animals like birds, small mammals, and even hooved animals, called **ungulates,** like caribou and Dall sheep. Golden eagles may try to push **lambs** (baby sheep) off of steep cliffs or hunt **calves** (baby caribou) on **calving grounds**, the places female caribou gather to give birth.

However, sheep and caribou are good at avoiding predators. Sheep usually stay on steep slopes where it is hard for predators to reach them. **Ewes** (female sheep) are good at protecting lambs, using big rocks, steep **terrain**, and their bodies to keep lambs safe. Caribou calves grow quickly and after a few weeks, are strong and quick enough to escape eagles.

Swallows, dragonflies, bats vs Mosquitoes

Often, people tend to think of mosquitoes as predators of humans - and female mosquitoes do feed on the blood of birds and mammals to get enough protein to lay their eggs. But, mosquitoes are also an important food source for many Alaska animals in the summer.

Migratory birds fly north to Alaska every spring to make nests, lay eggs, and raise chicks. They need lots of food after flying so far. **Songbirds** called swallows are great at zooming, darting, and catching mosquitoes in the air! Dragonflies live in the water for years as baby insects called **larvae**, and then grow into adults that fly around and eat mosquitoes all summer long. Little brown bats, which are the most common bat in Alaska, eat tons of flying insects every summer night (~1,500 mosquitoes!). They use **echolocation** to find and catch their prey, which means they make a high-pitched sound that bounces off insects in the air, letting them know where to go. Next time you get a mosquito bite, remember that birds, bats, and dragonflies are out there eating as many mosquitoes as they can!

Red knots vs Marine invertebrates

Young bird in winter

Shorebirds look for food along the edges of oceans, lakes, rivers, or wetlands. They have special beaks (mouths) that help them grab prey – often marine **invertebrates**, or animals without backbones like worms, snails, clams, or crabs that live in the ocean – from the sand, mud, or soil on shores. Red knots are a species of **shorebird** that have an extra cool trick: the tip of their **bills** (beaks) can feel tiny changes in water pressure when they **probe** in the sand or mud, which helps them find hidden prey along shorelines.

Adult bird in summer

ADF&G biologists are studying what red knots eat in a place called Controller Bay south of Prince William Sound, which is part of their **migration** to Alaska each year to nest and raise young. Places like Controller Bay are important **stopover sites**. Red knots fly thousands of miles and cannot swim, so they need places to land, rest, and eat. So far, it is clear that they eat a lot of small **bivalves** (soft animals in two hard shells with a hinge–think clams!). They can lose up to half of their bodyweight while migrating, so finding lots of good food is a big deal!

Predator with many prey: wolves

Gray wolves are **carnivores** (meat-eaters) that are known to prey on **ungulates** (hooved animals) such as moose, deer, and mountain goats. ADF&G biologists in Southeast Alaska have found that Alexander Archipelago wolves, a **subspecies** of gray wolf (*Canis lupis*), also eat a lot of other prey, and survive on islands that have no ungulates.

To figure this out, biologists collected wolf poop from many islands and tested the **DNA** in it to see what the wolves were eating. They found that the wolves were preying on ocean animals like marine mammals (especially sea otters), fish, and marine invertebrates, in addition to birds and other land mammals. Sometimes, wolves **scavenge**, or find and eat animals that are already dead, or they try to steal prey from bears! This research highlights that wolves can survive on many different islands in part because they can eat a **diversity** of prey.

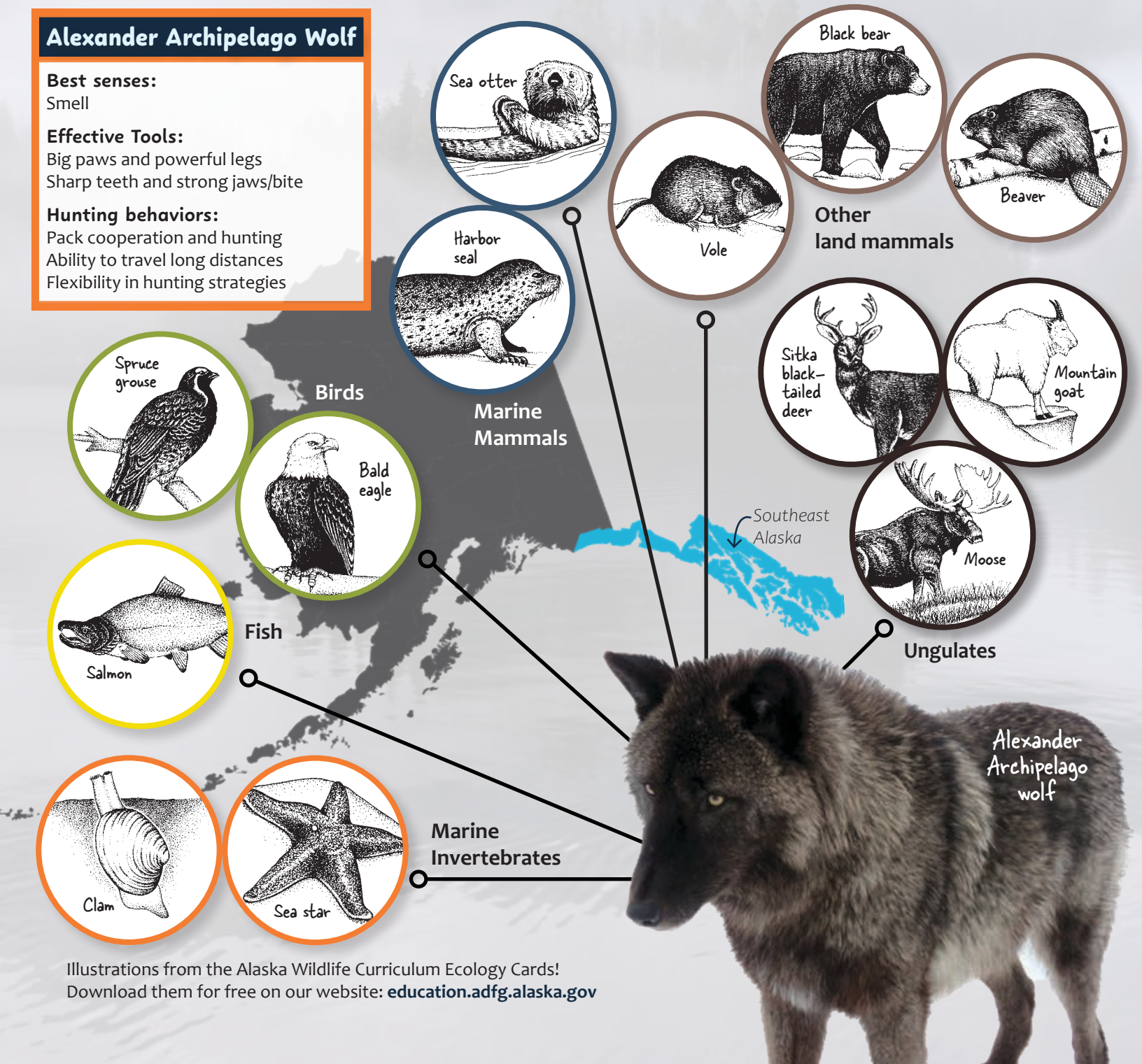
Questions to build on: What other predators do you know that eat many types of prey? Can you think of any other predators that eat both plants and animals? Those are called **omnivores**. One example – humans!

Alexander Archipelago Wolf

Best senses:
Smell

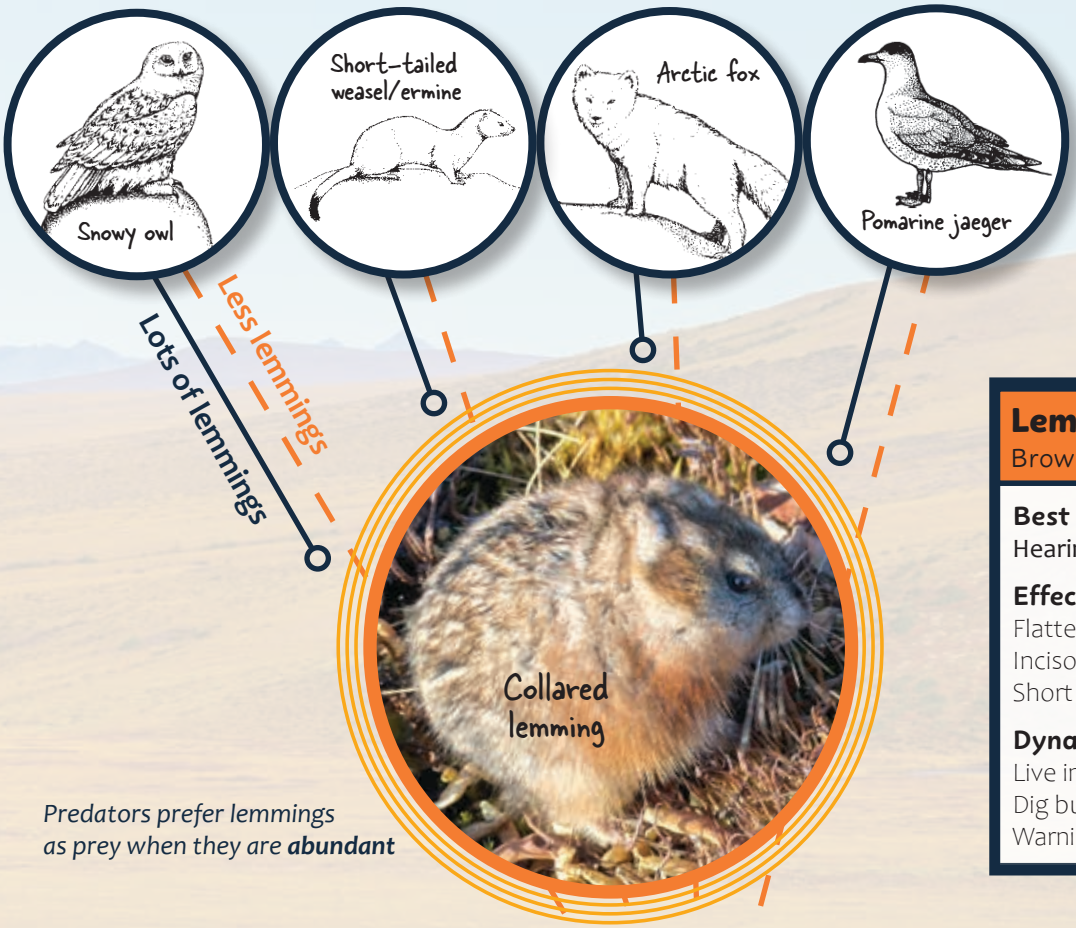
Effective Tools:
Big paws and powerful legs
Sharp teeth and strong jaws/bite

Hunting behaviors:
Pack cooperation and hunting
Ability to travel long distances
Flexibility in hunting strategies



Illustrations from the Alaska Wildlife Curriculum Ecology Cards!
Download them for free on our website: **education.adfg.alaska.gov**

Prey with many predators: lemmings



The **interactions** between predators and prey play an important role in **food webs** and **ecosystems**, and are often complex.

*Predators prefer lemmings as prey when they are **abundant***

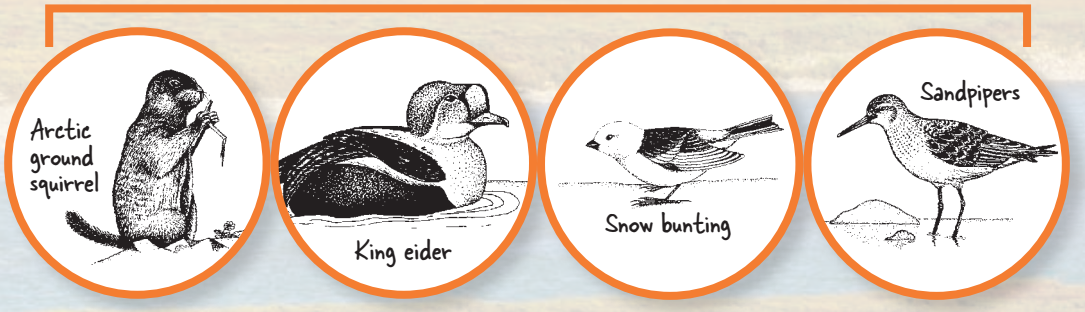
Lemmings
Brown, Northern collared, Northern bog

Best senses:
Hearing and smell under snow

Effective Tools:
Flattened claws for digging
Incisors for snipping vegetation
Short legs, ears, tails to minimize heat loss

Dynamic defenses:
Live in the subnivean zone in winter
Dig burrows and make nests
Warning call/display if they sense predators

*When lemmings are **scarce**, predators have to hunt other kinds of animals to survive. These are just a few examples.*



Lemmings are small **herbivorous** (plant-eating) rodents, similar to voles, beavers, and porcupine. In winter, they make tunnels and live in the area under the snow, called the **subnivean zone**, to stay warm. Lemmings are important in the Arctic because many animals eat them to survive. Like hares, the number of lemmings goes up and down over time. These **population fluctuations** may happen because of changes in the weather, climate, available food, or number of predators around.

Some animals such as snowy owls, ermine, and pomerine jaegers depend on lemmings as a food source that gives them the energy to reproduce and raise young. Other animals, like Arctic foxes, are more flexible. They eat lots of lemmings if there are plenty, but also hunt other prey animals. When lemmings are few, predators seek out other prey species like nesting birds or other small mammals.

Lemmings have a big effect on many other species in their environment, making them a **keystone species**. Keystone species have a large role in the health of their ecosystem.

Questions to build on: What other animals in Alaska do you think might be considered a keystone species? Do you think that keystone species are always predators, always prey, or could be either? Why?

What would you be - predator, prey, or both?

DESIGN AN ANIMAL!

Use the information from this issue and other resources you can find at **adfg.alaska.gov** (like other issues of Wild Wonders, the Alaska Ecology Cards, and species pages) to inform what senses, tools, and behaviors your animal will have. Is it a predator, prey, or both? Where does it live? What adaptations does it have to survive? Also think about the physical environment your animal will live in: temperature, weather, habitat, other animals and plants you know about that live there.

DRAW YOUR SPECIES:

BONUS:

Write a short description of a survival situation for your species:

_____

_____

_____

_____

_____

_____

_____

What is the name of your species?

What senses does your species rely on?

What physical tools does your species have and use?

What behaviors (hunting or defensive) help your species survive?

Where does your species live? Describe the habitat it needs:

Are there are any other adaptations that help your species survive?