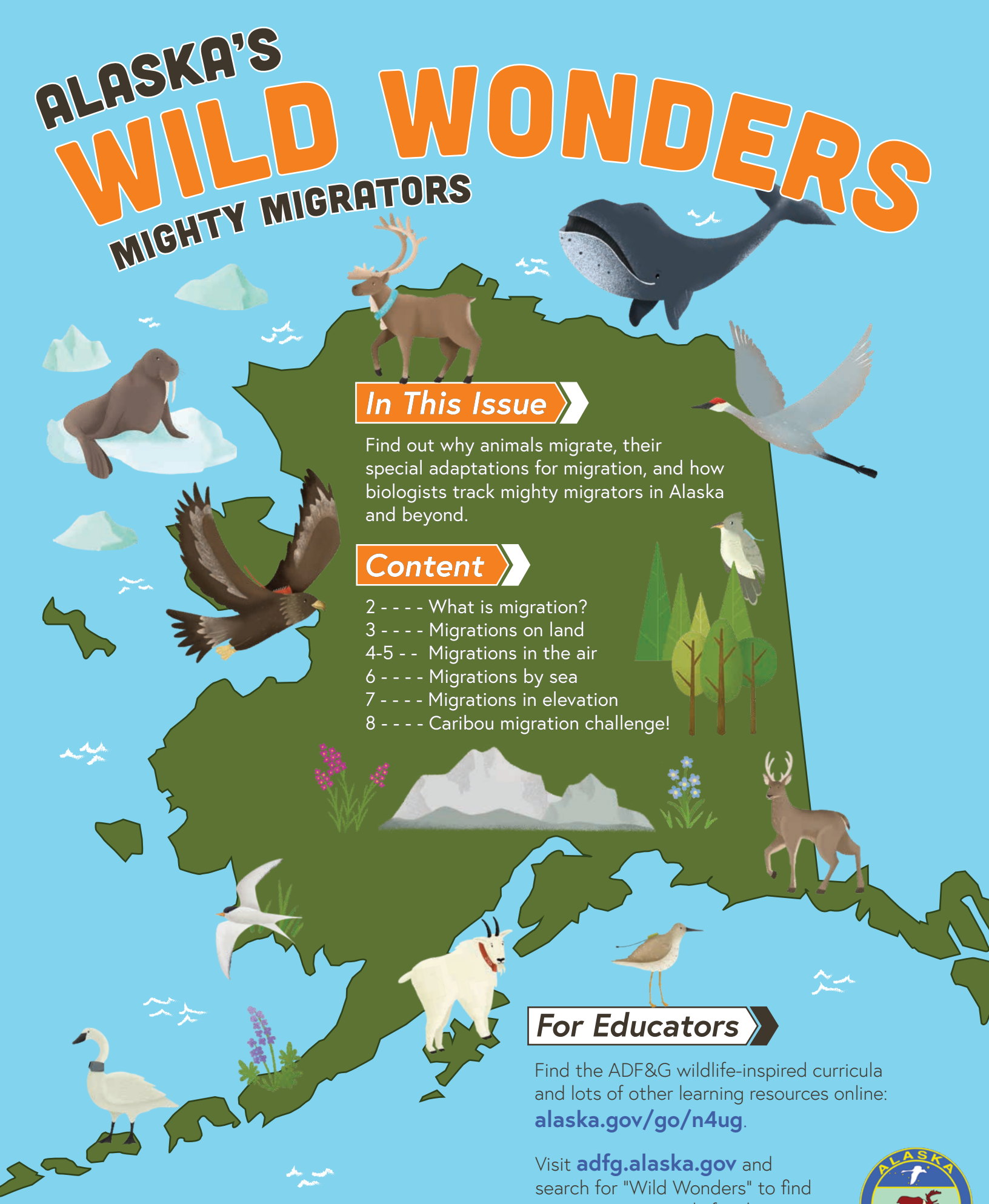
ALASKA'S WILD WONDERS

MIGHTY MIGRATORS



In This Issue

Find out why animals migrate, their special adaptations for migration, and how biologists track mighty migrators in Alaska and beyond.

Content

For Educators

Find the ADF&G wildlife-inspired curricula and lots of other learning resources online: **alaska.gov/go/n4ug**.

Visit **adfg.alaska.gov** and search for "Wild Wonders" to find supporting materials for this issue.

Alaska Department of Fish and Game, Division of Wildlife Conservation, 2021

WHAT IS MIGRATION?

Migration can seem complicated. A simple description of migration is the process where animals move between different **habitats**, multiple times a year, in a seasonal cycle.

Arctic terns
(*Sterna paradisaea*)
migrate the farthest of any animal on earth, from Arctic to Antarctic and back again. The longest recorded migration was 59,650 miles in one year - two times the distance around the earth!

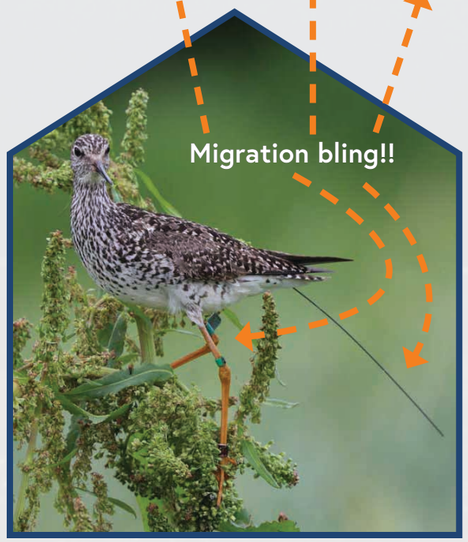
Why do animals migrate?

Animals migrate to find the best **habitat** and food during specific seasons. Animals may also migrate to breed, give birth, raise young, or escape predators.

Types of migration

Not all migrations are the same. A lot of animals do a **round-trip migration** each year, moving in spring to get to a **summer range,** and then again in fall to a **winter range**. This can occur over land, through the air, or across oceans.

Altitudinal migrations occur when **terrestrial** animals change elevations such as deer and mountain goats. These animals move up and down mountains due to weather and food availability.



How do biologists study migration?

Tracking animal movements to study migration is important to wildlife conservation. Knowing where animals travel and what habitats they need helps identify important areas to protect.

Methods for tracking animals include number and color bands on bird legs (have you ever seen a banded bird?), or devices that use different kinds of signals such as light, depth, time, radio, or satellite to indicate where an animal has traveled. These devices are all different shapes and sizes, from a collar to a leg band to a backpack.

Read on for a few of the many migratory stories of Alaska: amazing animals, where they go, and how scientists track them.

MIGRATIONS ON LAND

Caribou *(Rangifer tarandus)* have some of the longest known terrestrial migrations on earth. Larger herds like the Western Arctic Herd walk an average of 2,000 miles per year and can walk a distance equal to circling the entire planet over their lifetimes. Caribou migrate to find food, avoid insects and predators, and to give birth on the **calving grounds**.

Migratory Marvel

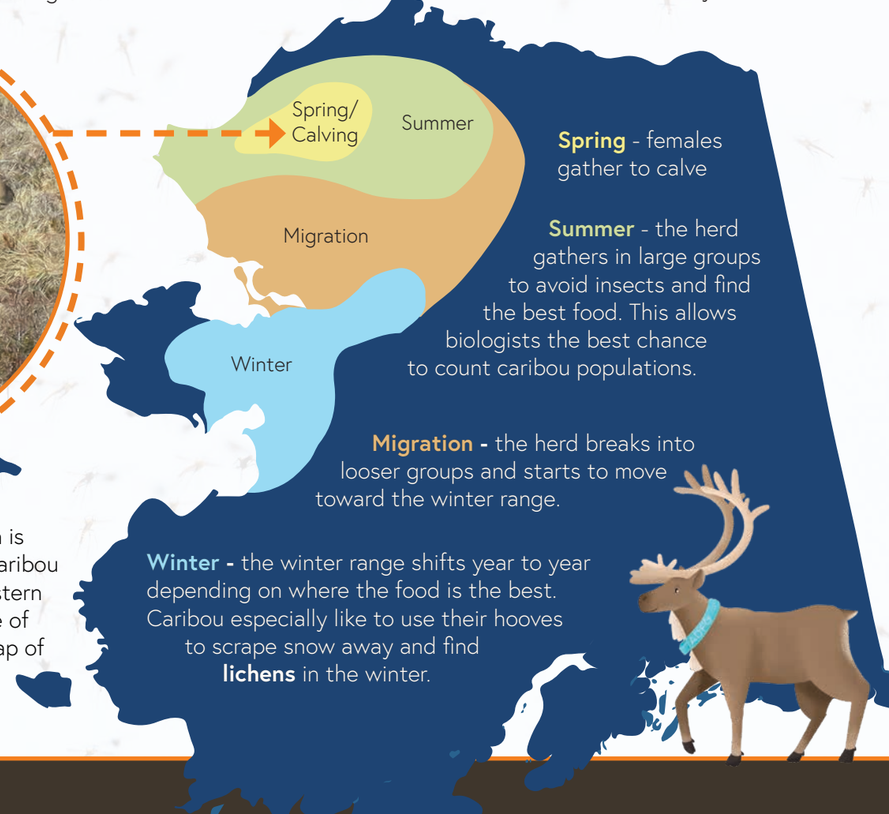
Caribou are made to migrate. As soon as they are born, they are on the move keeping up with the herd. Their large, scoop-like hooves spread out to help support them on snow, in soggy tundra and even in water when they swim - they work like paddles!

Tagging Trivia

Biologists place collars on adult female caribou to keep track of herd migrations to and from calving grounds. Calves get collars, too. In the 30 seconds it takes to fit a calf with a collar, biologists can also determine sex, weight and overall health. These collars are special - they are expandable and break off as the calf grows.

Adult caribou are fitted with **radiocollars** that record **GPS locations** determined by satellites, and transmit a **VHF radio signal** that can be picked up with a receiver and antenna nearby.

Alaska caribou herds have unique migration patterns, which is why biologists collar and track caribou in many different herds. The Western Arctic caribou herd (WAH) is one of the largest in Alaska. This is a map of the WAH seasonal ranges - areas where caribou spend specific seasons.



Spring - females gather to calve

Summer - the herd gathers in large groups to avoid insects and find the best food. This allows biologists the best chance to count caribou populations.

Migration - the herd breaks into looser groups and starts to move toward the winter range.

Winter - the winter range shifts year to year depending on where the food is the best. Caribou especially like to use their hooves to scrape snow away and find **lichens** in the winter.

MIGRATIONS IN THE AIR

Every year, birds migrate to and from Alaska from all seven continents. A few birds brave winter and stay in Alaska their whole lives, but most of the more than 470 bird species found in Alaska are migratory. Birds fly north for the summer abundance of food, to nest and have young on their **summer breeding grounds**. They head south again in the fall, towards their **wintering grounds**, to find new forage when Alaska is mostly snow-covered and frozen.

Trumpeter Swan *(Cygnus buccinator)*

With an 8-foot **wingspan**, trumpeter Swans migrate thousands of miles, stopping in shallow ponds, lakes, rivers, and marshes along the way. As the largest waterfowl species, the most difficult part of their migration just might be takeoff — they need a 200-foot runway just to get off the ground!

Migratory Marvel

How do birds find their way? Birds use multiple "compasses" to navigate. Bird species use the position of the sun, the position of the stars (many birds migrate at night!), and the **magnetic field** of the earth to find specific locations.

Sandhill Crane *(Antigone canadensis)*

Sandhill cranes mate for life and migrate with their mates and families. Cranes are **omnivorous** and eat whatever is available in the habitats they visit - seeds, berries, small insects, and snails. They are speedy migrators - they can fly more than 200 miles a day and 35 miles per hour. For many people, calls from groups of hundreds of cranes flying overhead signal the change of seasons in spring and fall.

Golden Eagle *(Aquila chrysaetos)*

Although golden eagles have 6-7 ft. wingspans, they only weigh 12 lbs. Golden eagles are really good at using weather and landscape features to their advantage when migrating - eagles get lift and speed from rising columns of air created when the ground warms from direct sun, called **thermals**. Eagles like open areas of tundra or grassland, where they can find small (or sometimes large!) mammals to eat.

Lesser Yellowlegs *(Tringa flavipes)*

Lesser Yellowlegs fly all the way to South America in the winter. They weigh only as much as a deck of cards, yet fly 4,000 miles twice a year! They are known for their distinctive alarm call when intruders are near their nest. Unlike most other shorebirds, both parents **incubate** the nest. Females fly south in July, and males will care for chicks until they migrate together in August.

Tagging Trivia

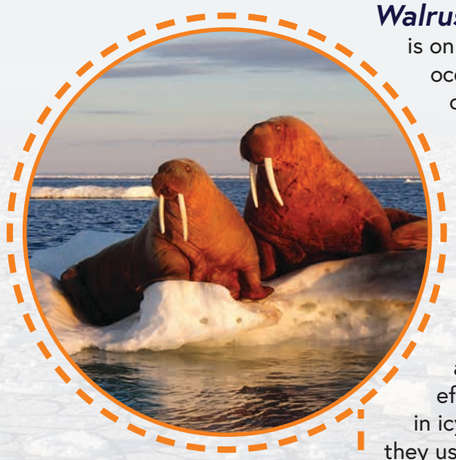
To avoid interfering with flight, tracking devices have to be lightweight. Devices for olive-sided flycatchers are among the smallest and lightest weight available - they weigh only 1 gram, the weight of a raisin! Olive-sided flycatchers weigh 35 grams, or a handful of raisins. Despite the smallest of batteries, these GPS tags work for a whole year!

Olive-sided Flycatcher *(Contopus cooperi)*

Olive-sided Flycatchers fly among the longest migrations of any North American songbird. This tiny but mighty traveler racks up a total of 12,500 miles per year, from Alaska to wintering grounds in South America and back again, feeding only on insects to power their entire journey. Some birds travel as far south as the country of Bolivia. Yet somehow, flycatchers can **navigate** to the same area - within a football field - of their previous nest the following summer! Placing bands or tags on them is one way that biologists can recognize and identify a returning bird.

**Migration arrows are generalized in terms of distance and direction - research each species on our website (and beyond) for more details!

MIGRATIONS AT SEA



Walrus *(Odobenus rosmarus)* are **benthic foragers**, which means their food is on or near the sea floor. Their diet includes clams, crabs, octopus and occasionally fish. They use their whiskers to locate prey, then suck out the contents with their powerful lips and tongue (like a strong vacuum!).

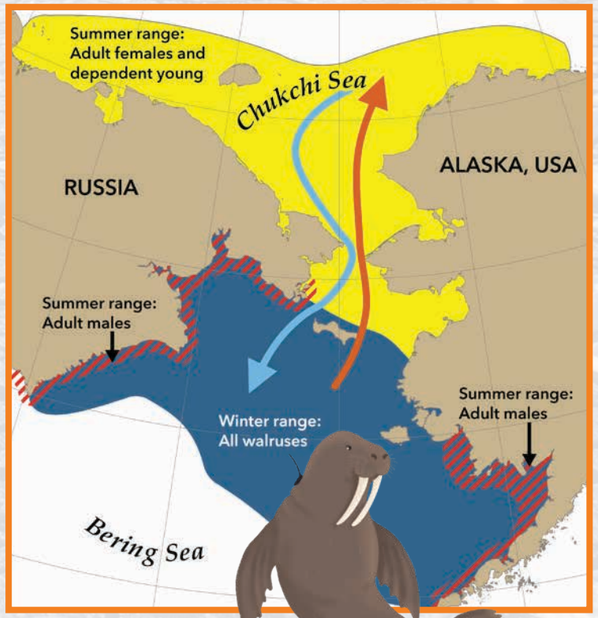
In winter, Pacific walruses group up in the Bering Sea. In spring, females and young move northward into the Chukchi Sea in the Arctic, while males head to Southwestern Alaska and Russia. In fall, walruses come together again, as females head south to the Bering Sea for winter.

USFWS Permit: MA220876-0

Migratory Marvel

Walruses have blubber that can be more than six inches thick (as thick as the length of a smartphone!) and missile-shaped bodies, so they are efficient swimmers and can stay warm while swimming hundreds of miles in icy water. They can also use their tusks to help haul out on **ice floes**, which they use to rest.

Biologists have some ideas about why female and male walrus go different ways when they migrate - looking at this map, what do you think? Make a guess, then see the additional information at the bottom of the page.



Tagging Trivia

Data from satellite transmitters that researchers attach to walruses show that they move at least 15 miles per day and thousands of miles over the course of a year. Walrus tags collect information like how much time walrus spend in or out of the water, **dive durations**, and **dive depths**. Tagging walruses not only helps scientists understand where walrus go, but also how they adjust their behavior to changing sea ice and ocean conditions around them.

Bowhead whale *(Balaena mysticetus)*

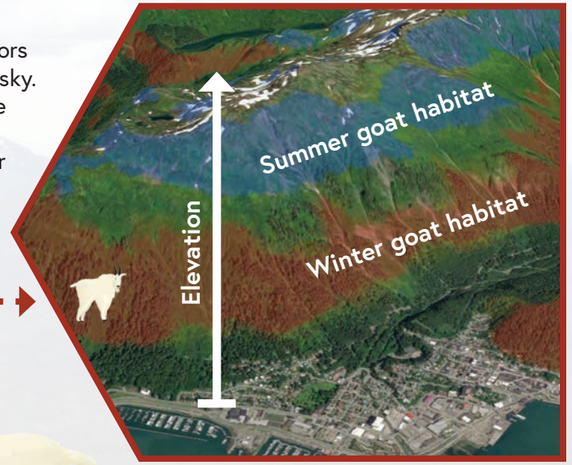
Like walrus, bowhead whales migrate through long distances where sea ice can be **continuous**. Bowheads use their heads to break ice up to two feet thick, creating holes that they use to breathe. Tracking devices biologists use to follow bowhead movements also collect information like **salinity** (or the amount of salt), temperature, and depth of the water whales are moving through.

What other animals can you think of that migrate on or through sea ice?
Check out our website for species profiles of walrus, bowhead, and more: **www.adfg.alaska.gov**

MIGRATIONS IN ELEVATION

Mountain goats and **Sitka black-tailed deer** migrate every year. Instead of going many miles north and south, these **ungulates** - hoofed animals - move from areas of forests and meadows at lower elevations to **alpine** ridges at higher elevations. Why? Like birds, caribou, and marine mammals - for food first, and safety second.

Mountain goats *(Oreamnos americanus)* in Alaska move up to high, steep terrain in spring. Predators like wolves are less likely to follow - it is too steep and risky. In winter, the alpine, or mountain tops above tree line, are harsh places to live. Snow drifts, strong winds and cold temperatures means less or no food. Goats migrate lower to protected forests, where trees block a lot of the snow from covering food.



Migratory Marvel

Mountain goats migrate upward into rocky treeless areas. Powerful hind legs are key to allowing goats to climb and jump up steep slopes. Goat hooves are also soft and rubbery on the bottom, and have two toes that spread and grip rock like climbing shoes.

Sitka black-tailed deer *(Odocoileus hemionus sitkensis)* also migrate...but not all of them do. Some deer live in the same forest their entire lives, no matter the season.

Migratory deer move for the same reasons as mountain goats – it's all about the food! Deer spend summers in alpine meadows and winters in big forests where snow isn't as deep and their favorite foods are available. Deer will even wander out to the beaches in search of food.

Tagging Trivia

Goat and deer collars also use GPS and VHF signals. Collars can last up to six years, and are programmed to record locations at different time **intervals**, depending on the project. Collars are usually programmed to drop off the animals just before the batteries die, so that biologists can recover and resuse them.

Did you know that GPS tracking devices like radiocollars use the same technology that some smartphones do? You can study your own movements using GPS satellites in many different apps.

What would your movements look like? Where do you hang out the most? Where do you forage?

Females and juveniles follow the edge of sea ice as it recedes northwards in summer. They rest on sea ice, which they especially need when they are caring for calves. Sea ice also allows them to stay near good foraging areas without needing to travel to land to rest.

CARIBOU MIGRATION CHALLENGE!

Calving grounds

GAME RULES

Choose a partner, each of you have a herd of 20 caribou.
To begin, pick a # between 1 and 5 on the number on the board and read the corresponding cue below. Each player should choose a different number. Follow the directions for your first move, then your next cue is the same as the # on the board you land on. Track the changes in your herd as you go.
How many caribou do you have left at the end? Did your partner have more or less?

1. Food is plentiful, move +4
2. Predators are scarce, move +5
3. New caribou calves, add 3 caribou, stay one turn then move +1
4. Predators are scarce, stay one turn then move +1
5. New calves but wolves get a few, add one caribou, stay one turn then move +1
6. Food is scarcer, move +1
7. Mosquitoes are out! Time to move +2
8. MIgrating continutes, move +1
9. Good food while migrating, +2
10. Mosquitoes make herd weak, stay one turn then move +1

11. Swim a river successfully, +2
12. The river is swift, a caribou dies, stay one turn then move +1
13. Mosquitoes thick and a bear attacks, 2 caribou die, move +1
14. Wolves abound, a caribou dies, +2
15. Summer caribou groups form, stay one turn then move +1
16. Caribou groups are safer together, stay one turn then move +2
17. Mosquitoes spook group to run, a caribou dies, move +2
18. Herd is very large, must keep moving, +1
19. Successfully avoid wolf predation, +2
20. Calf eaten by golden eagle, move +1

21. Bugs are still biting, wait in the water, stay one turn then move +1
22. Mosquitoes thick and a bear attacks, 2 caribou die, move +2
23. Food is thinning, stay one turn then move +1
24. Males are in the rut, a male caribou dies in the fight, stay one turn then move +1
25. An exhausted male caribou is eaten by a bear, move +2
26. It is mating season now, move +1
27. Eat lichen and blueberry bushes, move +2
28. A hunter kills a caribou and spooks the herd, move +2
29. The first snow storm of the fall, wait it out, stay one turn then move +2
30. The rut is ending, food is scarcer, move +1

31. Caribou are traveling up to 50 miles per day, move +3
32. The weather is getting colder and windier, move +2
33. Caribou are breaking into small groups, one dies of starvation, move +2
34. There is now snow on the ground, you have to dig for lichens, move +1
35. The snow is deeper, wolves eat a caribou, move +2
36. You find a muskrat push-up with fresh greens, stay one turn then move +2
37. Your hooves work as snow shoes, move +2
38. Caribou cross the ice, one falls in and dies, move +1
39. The weather is warming, you pick up speed, move +2
40. Cows are pregnant, you move towards calving grounds, but wolves get a tired female caribou, move +1

BONUS

Make a set of game rules for any other migratory animal that spends time in Alaska.

What cues them to migrate?

When do they migrate?

What are the challenges of migration?

FOR EDUCATORS:

Check out the Wild Wonders page on our website for supporting materials for this activity from the Alaska Wildlife Curriculum, and links to other migration activities.