Alaska's Wild Wonders

Amazing Adapters

Animals live in many different unique environments. Some live on land, others at sea, and some even live in the air. To survive these different environments, animals have adapted both behaviorally and physically. This issue of *Wild Wonders* introduces the world of Alaska animal adaptations!

What is an adaptation?

A physical feature or behavior that helps a plant or animal survive in its environment.

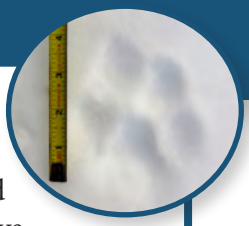
In This Issue

Alaska Department of Fish and Game, Division of Wildlife Conservation, Issue No. 6, 2016

On Land

Snowy Travel

Measure it



Compared to their body sizes, the lynx and snowshoe hare both have giant feet that help them stay afloat on snow. In fact, to be as light as a lynx is on the snow, a person weighing 150 pounds would need 30-inch feet!

Predators & prey alike

One of Alaska's best examples of a predator-prey relationship is the **lynx** and **snowshoe hare**. Although they are foes, they share several features that have earned them *Star of Survival* Status! The hare's big ears listen for lurking predators, and the lynx's pointy ears tune in to detect the whereabouts of nearby prey.

Frozen Ground

A long winter's rest

Wood frogs and **Arctic ground squirrels** are super star survivors when it comes to....that's right, sleeping! Since they are not adapted to being active during Alaska's cold winter, these animals sleep. Could you be awarded for your sleep habits too? Kids need plenty of sleep, because they are growing.

Super cool!

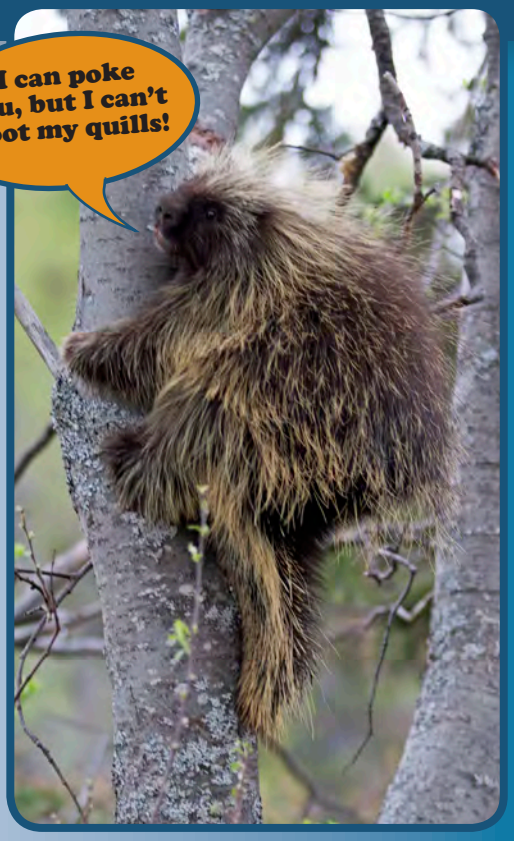
Arctic ground squirrels spend seven to eight months in hibernation. Research has shown that during this time, their body temperature drops below freezing- a condition called supercooling. Every two to three weeks, hibernating squirrels shiver and shake for about 12 hours to create heat, warming them back to a normal body temperature of about 98˚F. Try it! Shake your body and jump in place for one minute. Do you feel warmer?

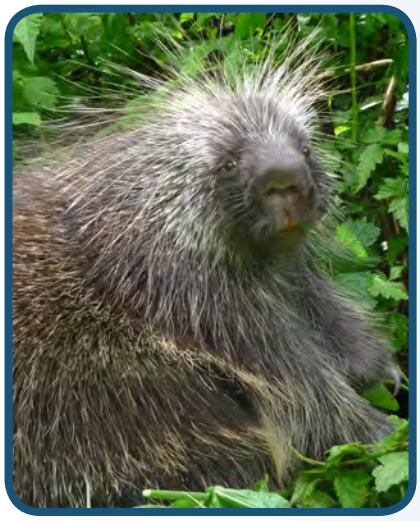
Frozen solid

Wood frogs have adapted to super cold climates by freezing solid over the winter. They stop breathing and their hearts stop beating. They produce a type of antifreeze that prevents ice from freezing within their cells, which would be deadly. Ice does form between cells though. With warm spring days, the frogs thaw and become active again.

Pokey Porcupines

With bodies covered by more than 30,000 sharp quills, **porcupines** have a very effective defense mechanism. Predators must be very clever to catch porcupines and even then, it is likely that they'll get poked! What exactly is a quill? It's a stiff, hollow hair made of keratin that measures about 3-inches in length and has a sharp barb at the end.





Looking sharp

Porcupines are actually large rodents, and similar to beavers, they have self-sharpening, wood-chewing teeth that grow throughout their lifetime.

Climb on! How do porcupines climb so well? With four toes on the front feet and five toes on the hind feet, they have strong claws to help dig plants, tear tree bark, and anchor their bodies when climbing trees!

Winter Warmth

To reduce heat loss during the winter, **muskoxen** have adapted a low surface to volume ratio with large bodies, stocky legs, short ears and an abundance of fat. Try it! Wear a glove on one hand and a mitten on the other. Which is warmer?

Eye slits Horizontal eye slits act like sunglasses in bright white environments.

Defense circle In winter muskoxen form groups of up to 60 individuals. Large groups offer protection against predators like wolves. If they sense danger, adults form a defensive circle around their young.

Two coats? Muskoxen grow a thick undercoat of soft brown fleece, and a thick overcoat of shaggy, long hair. Artists use the soft underwool called "quiviut" (kiv-ee-oot) to weave shawls, hats and scarves!

At Sea

Staying Warm at Sea

A human only has 20,000 hairs on their entire head.

Hairy survival! Instead of blubber to keep warm in icy waters, **northern sea otters** have the densest hair of any mammal. One square inch of pelt can have up to one million hairs! They take special care of their pelts and when they aren't foraging they are often seen grooming. They dry, clean, and fluff their fur, trapping air between the hairs. This provides insulation to stay warm when diving for clams, mussels, fish and other prey.

Crackin' shells Sea otters are one of the few mammals that use tools. Even when diving, they can carry a rock under their "arm pit" which they use to pry open shells.

Torpedoes With torpedo-shaped bodies, **Steller sea lions** are streamlined for fast and efficient movement in the water (they can swim 25 mph). Like a bird, they use their front flippers to "fly" through the water. These 1500 pound animals are incredibly powerful and can dive up to 1500 feet, staying under water for up to 16 minutes in search for food.

Plastic loops, such as rubber bands and rings from a 6-pack of soda, can kill me! Keep trash out of the ocean!

All about that blubber Like sea otters, Steller sea lions stay in frigid northern waters year-round. Unlike otters, they don't rely on their fur to keep warm. Instead they have a thick layer of oily fat called blubber. Blubber not only helps insulate sea lions from the cold, it makes them float, and provides an excellent source of rich nutrients, allowing them to go long periods without food.

Thick fat! Steller sea lion blubber can be over 4-centimeters thick!

Ocean Music

Both whales and dolphins are known to communicate through songs. Their "music" can be heard for miles.

During the winter breeding season male **humpback whales** produce complex and elegant songs. Each song can last up to 20 minutes and can be repeated for hours! Although scientists are not sure why humpbacks sing, they think the high squeals and low roars of the males' songs helps attract females.

Humpbacks blow bubbles around schools of herring to keep the fish from escaping!

Filter feeders While humpback whales can be 60 feet long, their prey are tiny. In a single gulp, not only can humpbacks capture hundreds to thousands of prey, they also engulf about 15,000 gallons of water! To get rid of the water, they strain their prey through hundreds of rows of filters called "baleen" (baleen is made out of keratin, just like your fingernails). The extra water is forced through the baleen and out of their mouths, while the prey is trapped inside.

Can you see my baleen?

Predator packs! One of the Steller sea lion's only predators is the **orca**. Also known as the killer whale (but they are really dolphins), these fierce predators prey on any available large marine animal. Like packs of wolves, orcas hunt in groups called pods. The pods work together to corral their prey. Especially when hunting smaller prey like seals, orcas are known to hit prey so hard with their heads or tails that the prey are knocked unconscious.

Sing-along! Orcas communicate through high pitch calls that bounce off nearby objects, returning as echoes. This technique, called echolocation, also helps locate prey. Each pod has a unique call that is recognizable to the other members. Scientists found that the pod calls remain the same for as long as 25 years.

Who's that? Scientists can identify individual orcas by the coloration of the "saddle" patch right behind the dorsal fin.

My dorsal fin can be 6 feet tall and helps me stay stable at speeds of up to 30 mph.

In the Sky

Chickadee dee dee

Black-capped chickadees are the smallest over-wintering bird in Alaska. Just like humans, chickadees shiver to stay warm. They also put on an additional 10% of their body weight in fat **every single day**. The fat is stored in the furculum (wishbone), which is a V-shaped bone in the center of their chest. During the long, cold winter nights chickadees burn this fat off to stay warm.

That would be the same as a 120 pound human gaining 12 pounds in a single day!

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Caching seeds! Chickadees also have a remarkable memory. When conditions are good, they cache seeds for later consumption when food may become scarce. Hours or sometimes weeks later, the chickadees use cues such as the arrangement of trees to relocate these stores. Chickadees can cache up to 10,000 food items each year.

Mammals Fly Too!

Just like orcas, **little brown bats** use echolocation to hunt for insects and other prey in complete darkness. As they fly they make incredibly high pitch calls. When this sound hits another object, it comes back as an echo. Just like humans can identify our food by sight, bats can tell the size, shape and texture of even tiny insects by the echo.

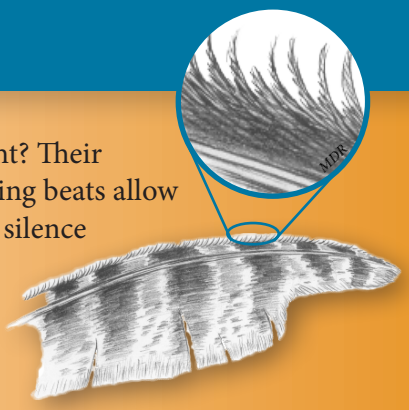
Winglets made of cartilage help reduce drag, just like wingtips on airplanes!

The **northern flying squirrel** evades owls with a single leap taking them **100 feet** through the tree tops.

How do they do it? They don't actually fly, instead they glide! Flying squirrels have a thin, furred membrane that stretches from ankles to wrists. When the squirrel wants to travel to a different tree, it launches itself off a high branch and spreads its limbs. When preparing to land the squirrel flips its tail downward to steer and slow down.

Ear piercing call! Bat calls are so intense in order to keep from harming their own ears, special muscles close their ear canals whenever they call.

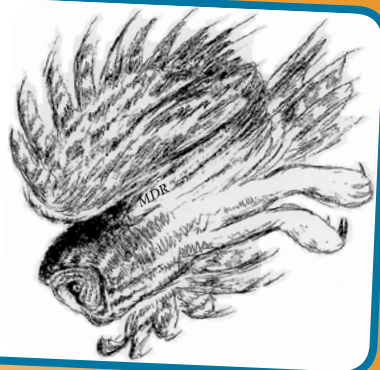
Silent but Deadly



Have you ever seen an owl in flight? Their broad wings and slow, strong wing beats allow them to float silently through the night air. This silence gives them a lethal advantage when hunting for unsuspecting prey, like voles.

How do they do it? The leading edge of owl wing feathers (called primaries) have soft comb-like fringes that reduce the sound of air rushing through them. Their wings and legs are also covered by soft downy feathers that further reduce noise in flight.

The **great gray owl** is the largest owl in the world in size, but it's just a ball of feathers! Other smaller owls, such as the Great Horned Owl, weigh twice as much. With all those fluffy feathers, the great gray owl has silent flight and great insulation from the cold. The huge facial disk channels sound into their ear canals, magnifying sound. They can hear voles scuffling under two feet of snow. A thick mat of feathers between the owl's eyes protects its face when plunging into the snow after prey.



Aquatic Songbirds

Did you know that some songbirds can swim? **American dippers** live along fast moving streams and hunt for aquatic insects, invertebrates, fish eggs and small fish by diving under the water. They can dive up to 20 feet and walk on river bottoms in search of food.

Feathers, not scales? To keep them warm and dry, dippers have an abundance of specially adapted waterproof feathers. Dippers also have the ability to carry extra oxygen in their blood making it possible to remain under water for long periods of time. While under water, dippers can close their nostrils with nasal flaps, preventing water inhalation.

©Ken Marsh

Adaptation Adventures

Is your memory as good as a chickadee's?

Chickadees can remember thousands of locations where they previously stored seeds. Their amazing memory is an adaptation to help them survive when food is scarce. Can you help this chickadee find its cache? Along the way test your memory of animal adaptations with these word games.

What feature? What special feature helps me stay warm in icy waters?

_____

_____

Point to it →

How do scientists tell me apart from other orcas?

Solve the riddle! I have fur, but you won't want to pet me. I'm no beaver, but you'll find me chewing on a tree. I have 18 toes, but no fingers. Who am I?

_____

SEED CACHE!

Guess the word! This special kind of fur is very soft, provides great insulation, and is used by weavers! Songbirds even put it in their nests to keep their eggs warm!

_ _ _ _ _ _ _

Who made the plunge? Which animal made this imprint in the snow? Hint: I can hear voles under 2 feet of snow!

_____

_____

Answer key: Dense fur (what feature?), "saddle" patch (point to it), porcupine (riddle), great horned owl (plunge), quiviut (guess the word)

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