



# Alaska's Wild Wonders

## A Mustelid Mystery

### In this Issue:

Follow Ferocity as she meets other Alaska mustelids on a journey to find out who she is.



### Contents:

- Ch. 1.....What is a mustelid?
- Ch. 2.....Built to burrow
- Ch. 3.....Tracks and gaits
- Ch. 4.....Functional Fur
- Ch. 5.....Feisty feasters
- Ch. 6....Habitat is where it's at
- Epilogue.....Match mustelids!

### For educators:

Find Alaska wildlife-inspired curricula and lots of other learning resources online:  
[alaska.gov/go/n4ug](https://alaska.gov/go/n4ug)



# Chapter 1: Who am I?

Something mysterious had happened. Ferocity opened her eyes to realize she could not remember much of anything—who her family was or where she belonged. She started to search for clues. “Who am I?” she wondered. She noted her warm fur, small head, sharp teeth, long slender body, strong neck, and claws.

Direct register walk

## Meet the Mustelids of Alaska

The family Mustelidae is made up of **carnivorous**, or meat eating, mammals. **Mustelids** are known for their curiosity, high energy, and ability to hunt prey. With long, narrow bodies, mustelids do not retain heat as well as animals with stockier bodies, so they must eat A LOT to maintain their body heat and survive. Get to know the species of mustelids in Alaska, their size (body length without tail in feet or inches), and general habitat.



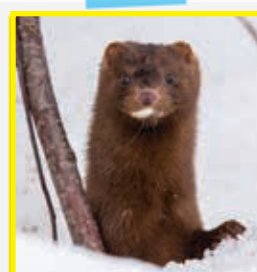
**River otter** (*Lontra canadensis*) 2.5–4 ft.; near fresh water and coasts



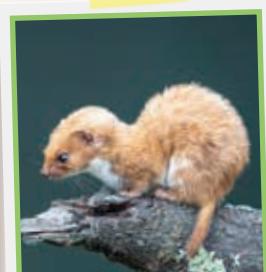
**Fisher** (*Pekania pennanti*) 24–36 in.; coastal forest in Southeast Alaska only



**Ermine** (*Mustela erminea*) 6–12 in.; edges of forests and wetlands



**Mink** (*Neovison vison*) 12–18 in.; forests and areas near fresh water



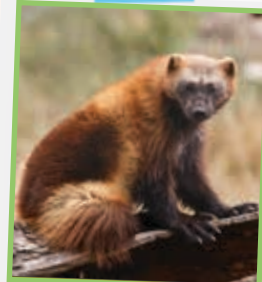
**Least weasel** (*Mustela nivalis*) 5–8 inches; meadows, shrubby areas, and open forests

### Mustelid checklist:

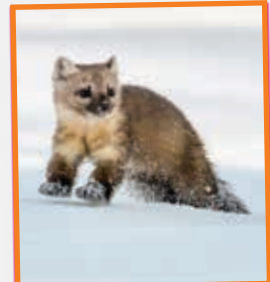
- Long, narrow bodies
- Strong necks
- Small heads
- Narrow skulls
- Carnassial teeth
- Five toes
- Sharp claws
- Males bigger than females



**Sea otter** (*Enhydra lutris*) 3–5 ft.; ocean, most often in kelp beds near the coast.

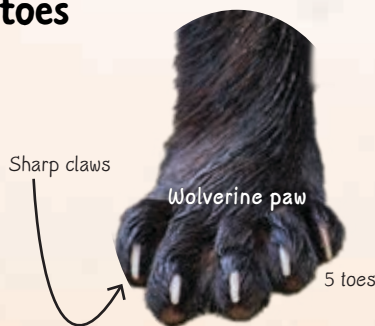
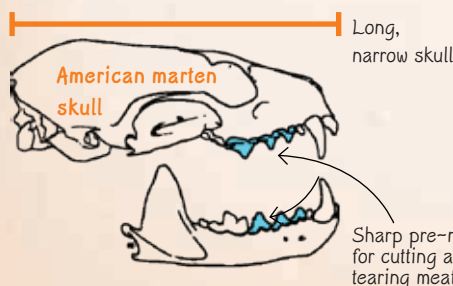


**Wolverine** (*Gulo gulo*) 2.5–4 ft.; ranges across forests and tundra



**American Marten** (*Martes americana*) 19–25 in.; forests

### Mustelid skulls, teeth, claws, and toes



Now, you know some of the characteristics that mustelid species share. What differences do you notice between them?

Visit our website for more clues:  
[adfg.alaska.gov](http://adfg.alaska.gov)  
 and click on “Species.”

# Chapter 2: Where am I?



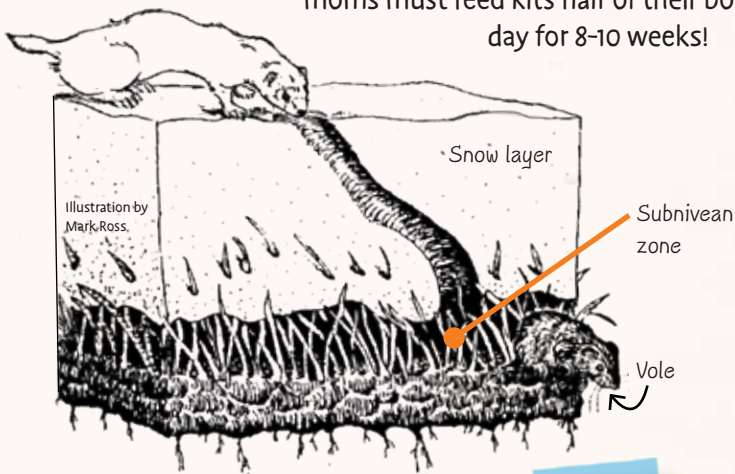
Ferocity poked her head out of the dark den to find she was in a tree, and blinked at the bright wintery world. She carefully climbed onto a branch and was surprised at how steady she felt. She bounded effortlessly from the limb to the trunk and then leapt from the tree, landing on the cold snow below. She spotted a small tunnel leading into the snowpack. Ferocity tried to squeeze in but soon realized that it was a burrow belonging to an animal smaller than her.

Direct register walk



## Built to live in burrows

Mustelids, with their small heads and long bodies, often use abandoned dens made by other animals as **burrows** for themselves. Ermine and least weasels, the smallest Alaska mustelids, are predators, but they are also prey to larger animals like owls, coyotes, and lynx. Smaller weasels often take over and live in the burrows of prey they consume—like voles. Burrows provide cover, warmth, and protection, especially for mother mustelids with young, called **kits**. Kits are born completely helpless and depend on their mother for survival until they are able to hunt on their own. Least weasel and ermine moms must feed kits half of their body weight every day for 8-10 weeks!



Ermine often spend time beneath the snow in burrows and tunnels in the winter, called the **subnivean zone**.



A mink burrow along the banks of a creek. The size and location of a burrow can help identify who lives in it.

### Solve a science mystery: Snow Blanket

Can snow really keep animals warm? How? Scan the code to find the activity and details!



Can you spot the American marten peeking out of a tree den?

Fishers and martens prefer to find shelter in hollow trees or the abandoned dens of porcupines. Mink burrow near water, including in the former homes of muskrats. River otters also den near water, sometimes in old beaver lodges, and often with underwater entrances. Wolverines generally den in boulders and fallen trees that are often **insulated** by snow in the winter. Sea otters are the exception, and live in the ocean. No burrow needed!

# Chapter 3: Are my tracks clues?

Ferocity bounded across the snow, landing lightly and springing off the snowpack. She found the tracks of many animals, large and small. Perhaps she could find tracks that matched her own. She spotted a set of tracks that had five toes with claw marks on both the front and back feet—just like hers! But as she approached and looked at their size, they were much larger than her own. And the tracks looked very different. Are those feet...webbed?



## Tracks and gaits

Mustelid **tracks** have an overall round shape and usually show five toes with claws on the front and **hind** (back) feet. **Track size** is a good clue to which species left the tracks. Ermine tracks, for example, are tiny compared to the tracks of larger mustelids like wolverines and otters. River otters have **webbed** hind feet and sea otters have **fused toes** on their hind feet that create a paddle.

All track sizes are in inches. Track graphics are proportional but not actual size



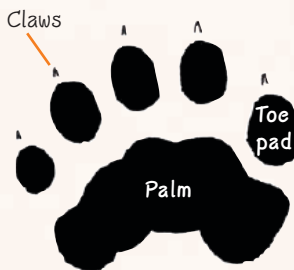
### Ermine

length: 0.875 - 1.25"  
width: 0.375 - 0.875"



### River otter

length: 2.125 - 3.25"  
width: 2.125 - 3.75"



### Wolverine

length: 3.625 - 6"  
width: 3.25 - 5.25"



The word **gait** describes the patterns of how animal moves. Mustelid species have long bodies and short legs. Because of their body shape, mustelids prefer to use a **loping gait**: they push off with their hind feet and **bound** through the air leaving groups of four tracks. What gaits do you (humans) use?

**Move like a Mustelid**

Find three common gaits that mustelids use on each page under the story! Hind feet are blue, front feet are pink. See if you can move like mustelids do on all fours.

**Bonus question!**  
Why are there only hind feet in two of the gait diagrams? Answer on the bottom of the next page.

To move through snow, river otters often slide on their bellies and propel themselves forward with their hind feet.

River otters have webbed feet that help them swim efficiently.

**Stride length** for animals that bound and lope is the distance between the groups of tracks.

Measure the stride length of this animal trail: \_\_\_\_\_ in.



# Chapter 4: What fur do I have?

The tracks led to a creek and disappeared into a hole in the ice. Underneath, dark water bubbled. Would she be able to survive down there? She touched her nose, then one of her feet to the rushing water and immediately shivered. No, she decided, she must not have the kind of fur to keep her warm enough in cold water. Looking a bit further downstream, she spied a dark familiar shape swimming in a slow pool along a bank of the creek. Ferocity noticed shiny dark brown fur, and that this mustelid looked comfortable in the frigid, icy water.

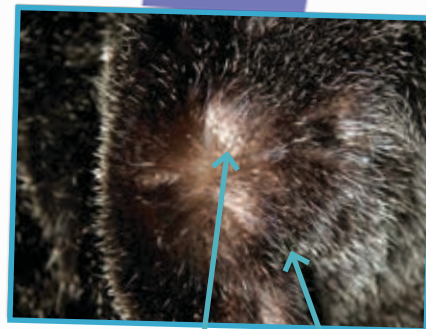
## Functional fur

Dense hair that completely covers an animal is called **fur**. Mammals have different types of fur—it is important for **insulation** (warmth), protection, and **sensory perception** (like touch for humans). Mustelid species have different fur qualities that allow them to better survive in their preferred habitat.

### Warmth in water

Animals that live in the water have a short, dense woolly under-layer of **underfur** covered by longer protective **guard hairs** that lay over the underfur. Mustelids that spend a lot of time in water—sea otters, river otters, and mink—produce a layer of oil on the fur that helps keep water away from the skin, so that animals stay dry and warm.

Sea otters have the densest fur of any mammal with over 800,000 hairs per square inch! Sea otters groom to remove salt crystals and excess oil from their fur. Grooming also dries, fluffs, and traps air within layers of sea otter fur. Body heat warms the trapped air, which keeps them four times warmer than the same thickness of **blubber** (fat).



Dense sea otter fur: underfur and guard hairs.



Mink have distinctive dark brown fur. Their fur also keeps them warm in water.



Wolverine fur is well known for shedding frost.



Least weasel  
summer coat



Ermine  
winter coat

### A coat for each season

There are two mustelids in Alaska that turn white in winter to **camouflage**, or blend in, with snow. Least weasels turn all white. Ermine turn white with a black-tipped tail.

### Wolverine wonder-fur

Wolverines have short, dense, durable fur that sheds frost especially well. Wolverine fur is used for clothing and prized among people who spend time outside in extreme cold in the winter. Wolverines also have distinctive markings in the fur around their eyes, which stands out in comparison to other mustelids.

# Chapter 5: What do I eat?

Farther down the stream, Ferocity found a place to cross. A sharp scent filled her nostrils. It smelled of food – of meat! She spied a hint of movement in a spruce tree. Then, another musty scent mixed in. Could that be one of her kind? Peering down from above her on the tree trunk was a dark colored, cat-like creature larger than Ferocity, with a long, fluffy tail.



Ferocity illustrations by Marian Snively

## Feisty feasters

Mustelids are known for being high energy and having high **metabolisms**, which means that they must eat A LOT to survive! Most mustelids are strictly **carnivorous**, eating only meat. But others can be **omnivorous**, taking advantage of seasonally available plant foods, like seeds and berries.

### A specialized predator

Fishers, which live in the forests of Southeast Alaska, are particularly good at hunting porcupine. These agile hunters are able to climb down trees head-first, which gives them an advantage as porcupines often climb up a tree when they feel threatened. Using their speed to avoid being "quilled," fishers will dart in to attack any parts of the porcupine that are not protected by quills.



Fisher



North American porcupine



Sea otters use tools to open shells of marine prey.

### Talented with tools

Sea otters live in the ocean and use tools to help them eat prey. While floating on their back, they use "anvil" stones with their front paws to crack open the shells of marine invertebrates, a main part of their diet. While diving down for more, they store the stone in their armpit so they don't lose it!

### What if you were a least weasel?



The least weasel is the smallest carnivore in North America, but it has a **BIG** appetite. Least weasels have to eat 30 percent of their body weight each day, mostly consuming small rodents such as voles.

Calculate how much you would have to eat if you ate like a least weasel, in pounds, and in voles! →

### Do the math:

Your weight:

x 0.30

Your daily food!

x 16 voles/lb.

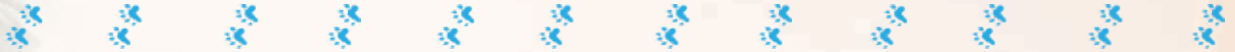
How many voles would that be?



# Chapter 6: Where do I live?

Scampering on through the trees, Ferocity looked around and noted that she had reached a clearing in the forest with a steep cliff that descended to the ocean. A group of furry mammals floated together in the kelp not far off shore. Wrinkling her nose at the smell of salt in the air, she knew immediately that the ocean was not where she belonged. Turning away, she headed back towards the familiarity of snowy trees. A bit later, she heard footsteps just ahead, and peeked around a rock out of curiosity. The largest mustelid face she had ever seen was peering back at her, and there was something unfamiliar around his neck.

2x2 lope



## Habitat is where it's at

**Habitat** is an area where an animal makes its home. A good habitat must have everything an animal needs to survive. Some mustelids need a huge area to meet all of their habitat needs and others only need a small area. Wolverines roam around an area of up to 1,000 square miles. In contrast, the least weasel lives in an average area of just 0.08 square miles. Which means that more than 10,000 least weasel habitats could fit in the habitat of a single wolverine!

### Where do wolverines wander?

Biologists in Alaska want to learn about where wolverines go, and what areas they prefer to spend time in. To do this, researchers place GPS collars on wolverines that use satellites to track their locations over time. Researchers can monitor their movements remotely, without having to physically follow them around in the wild—which would be really hard!

What are the four key components of habitat that an animal needs to survive? (Answer below)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

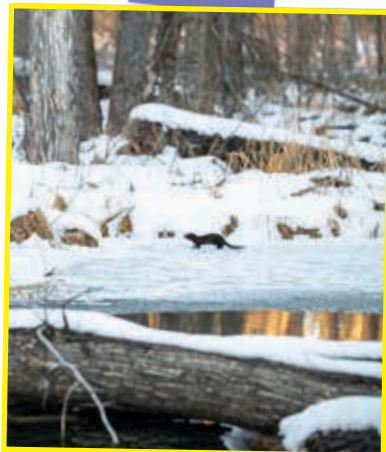


A wolverine wearing a Global Positioning System (GPS) collar and an ear tag, which identifies a wolverine if the collar slips off for any reason.

### Challenge: Mustelid Maps!



On the ADF&G website, find where each mustelid species lives in Alaska. What do you notice? Do their **ranges** (or the total area a species lives within) overlap? How do you think the habitat they need shapes where they are in Alaska?



A mink on the banks of a creek in winter. Mink spend time in water and on land.

### Well adapted to water

There are three species of **aquatic** mustelids - sea otters, river otters, and mink. Sea otters live mostly in the ocean and eat prey from the seafloor. River otters and mink are **semi-aquatic** mustelids, meaning they also spend time on land. River otters spend most of their time in water, both freshwater or the ocean. Mink swim often, but spend more time on land than otters. Mink and river otters forage on a large variety of prey because their habitat is so diverse: fish, frogs, birds, eggs, rodents, insects, aquatic plants, and berries.

# Epilogue: Match the mustelids!



**L**abel the mustelids in the photos below using your knowledge and hints from every page. Next, write the code letter in the box to match each mustelid you identified to the clues Ferocity collected along her journey. **Hint:** the letters for each mustelid are another clue to matching a mustelid with Ferocity! Research her species further on the ADF&G website for more on her diet, habitat, and characteristics.



S.

Ferocity would not fit in the burrow of this weasel. **It is the smallest carnivore in North America**, and changes color in winter.

Match that mustelid:

**It is the largest mustelid**, and prefers to den in fallen trees and boulders. It is not aquatic.

Match that mustelid:



M.



I.

This medium sized mustelid swims well, has **brown fur that keeps it warm in water while swimming**, and does not have webbed feet.

Match that mustelid:

This larger mustelid lives only in the forests of Southeast Alaska, and **hunts porcupines as prey**. Match that mustelid:



T.



U.

This **large aquatic mustelid with webbed feet** often lives under the ice in winter, and lives near freshwater areas like lakes, creeks, and rivers. Match that mustelid:

**This mustelid turns white in winter, but has a black-tipped tail**. Their burrows are too small for Ferocity, and they spend time during winter in the subnivean zone.

Match that mustelid:



E.



D.

**This large mustelid lives almost entirely in the ocean**, has the densest fur of any mammal, and uses tools to crack shells of marine prey.

Match that mustelid:

This medium sized mustelid is a capable climber and often lives in burrows in trees. This mustelid fits in burrows larger than a least weasel or ermine, has a soft coat that is not specialized for water, and smaller tracks than a river otter.

**Match that mustelid to Ferocity!**



L.