

A Look at Nature Footprints in the Snow

In some respects winter is a better time for learning about some of the critters living around us. The animals are not easier to see. But any step taken on a blanket of snow leaves behind a footprint. A good quality print left in the snow can tell us what type of animal was here, while a whole series of prints tells us where the animal has moved through the land.

Even long-distance movements can be tracked with the help of snow. In the early 1980s I participated on a helicopter flight to conduct an aerial elk count. It was early April and we knew that many of the elk were present on Walker Ranch Open Space (just a little west of Boulder) the day before the flight. We took off in early morning and headed southwest over Flagstaff Mountain for Walker Ranch. Upon getting there no elk were visible, but their tracks were present in the new snow which had fallen overnight. It was obvious that the herd had headed west. Following their well beaten path in the snow, the herd was eventually spotted nine miles west near the Peak-to-Peak Highway. The herd had made a major movement toward the Arapaho Ranch in one night!

In the dead of winter most elk and deer have left the Eldora vicinity for milder climates. The tracks we see are from animals that can make it here with snow on the ground: coyote, fox, rabbit, porcupine, raccoon, weasel, squirrel, grouse, shrew, vole and mouse. Throw in some large cats (bobcat, mountain lion and maybe a rare lynx), and add in some of our domestic critters (dogs and house cats), and we have a variety of tracks to challenge the avid naturalist or a casual nature watcher.

Members of the dog family - coyote, fox and domestic dog - create many of the tracks seen around the valley. Their footprint will have four toe prints in front of one large main pad (called the plantar pad). The toe prints will generally include claw marks. The main pad will have one lobe in front and three in back; these details are generally only seen in good quality prints. The total footprint tends to be longer than wide, appearing almost rectangular in shape. The average length of a coyote footprint is 2 1/2" fox average 2 1/4"; domestic dogs vary greatly in size depending on the breed.

Cats - bobcat, mountain lion and domestic cat - have the same basic pattern in their footprints as dogs: four toe pads in front of the main plantar pad. But there are some important differences between cat and dog prints. First, the front of a cat's plantar pad has two lobes, compared to a dog's single lobe. But again, it takes a high quality print in the snow to clearly see these lobes. Second, cat claws are retractile and generally do not show in a print, compared to dog claws which normally show. But this is not an absolute rule. The general shape of a cat footprint is more round than rectangular, with the plantar pad being larger in size relative to the four toe prints. Mountain lion feet average 3 1/2" in length, while bobcats average 2". Domestic cats can approach bobcats in size. Location may have to be used to distinguish between house cat and bobcat; in downtown Eldora, it's probably a house cat while up at Caribou Flats you've probably got a bobcat.

Rabbits and hares are active all winter. Mountain cottontails are most common in town. Snowhoe hares, who turn white in the winter, are present in the denser forests on Spencer Mountain and higher up in the Indian Peaks. The pattern of tracks made by rabbits is the most characteristic feature they leave behind in the snow. They use a diagonal hop where the larger hind feet land in front of the smaller front feet; with the hind feet being perpendicular to the line of travel, and the front feet being at a diagonal. Cottontail hind feet average 3" in length.

Snowshoe hares, as their name implies, are designed to live in areas of deep snow; their hind feet average 5" in length and 3 3/4" wide.

Most members of the squirrel family, including golden-mantled ground squirrels, chipmunks and marmots, hibernate during the winter. The exception is the tree squirrel. Our local tree squirrel is called red squirrel, though locally they are referred to as chickaree or pine squirrel. Though they spend much of their time in trees, they move on the ground and leave footprints in the snow. Squirrels move on the ground by bounding, with the pattern of prints having a 2x pattern that is perpendicular to the line of travel. Because their toes and nails are very long (built for climbing trees), they leave prominent drag marks going both into and out of the tracks. A tail drag may be present. The average length of a chickaree track is 1" for front feet and 2" for hind.

Three members of the weasel family can be locally seen. American (or pine) martens are the rarest in town, being more common in the higher subalpine forests. Short-tailed weasels (also called ermine) and long-tailed weasels are the two common members of this family. Both turn white in winter. Individual footprints have five toes in front of the plantar pad. The toes are in a 1-3-1 pattern, with the middle three toes bunched together and placed forward of the other two. Additionally, one of the two outside toes may not always show. Claws may or may not show. The characteristic track pattern in snow is a 2x diagonal jump. Average foot size is 1/2" for short-tailed weasel, 3/4" for long-tailed weasel, and 1 3/4" for marten.

Racoons are common residents of town. They make their rounds from friendly house to friendly house. They may be active in winter but often go into periods of extensive sleep (torpor) during periods of bad weather. They have five long toes and a plantar pad. Their hind print looks like a human footprint and averages 4" in length. Their front print is hand-like and smaller at 2" long. Claws may show on the print.

There are many other clues which may help you identify animal tracks. Knowing the distance between strides provides important information; the stride of a mountain lions (40" average) is twice that of bobcats and about 30% greater than coyotes. It often helps to look at many tracks when trying to figure out if the claws generally show or not. The habits of animals may help; foxes tend to be more playful than coyotes and their trails tend to be less direct.

A good reference book is *A Field Guide to Mammal Tracking in Western America* by Jim Halfpenny. Jim lived in Boulder County for many years and was director of the Mountain Research Station; many of the examples in the book are from local tracks.

Happy tracking.

Dave Hallock