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Eye on the Environment

CHARASMATIC MINIFAUNA By Adam Lieberg, Northwest Connections

February 14th marked the first day of Northwest Connections Animal Tracking Clinic. It was a gorgeous Saturday and snow conditions were such that even the smallest of the four-legged critters left their tiny rodent-bounding, tail-dragging-down-the-middle tracks in the snow. These zipper-like patterns raced all over the forest floor connecting one downed log to another.

The Seeley-Swan is a unique place to teach a tracking class as we have a rich history of livelihoods directly tied to our ability to snow track animals in the forest. From trapping for fur, to hunting big game, to chasing mountain lions, to conducting research and managing wildlife populations, humans have been interpreting tracks on the snow that has been blanketing these mountains and valleys for thousands of years.

I am unaware of any other place where such a diversity of wildlife occurs within such close proximity with one another. For example, it is highly unusual to live in a place where you can cut tracks from a mountain lion, bobcat, and lynx all in the same day, and yet this is not out of the realm of possibilities here in the Seeley-Swan. For these reason, I was anxious to get our class

out on some rare tracks that would demonstrate the unique wildness of this landscape.

As our group meandered through the forest we continued to observe an abundance of rodent tracks. The smallest zipper-looking tracks belonged mainly to a forest dwelling mouse-like rodent called the red-backed vole.

The second smallest track, though substantially larger, was that of the red tree squirrel, or as the old-timers call it, the pine squirrel. Finally, the largest rodent track in the mix was made by a bunny with an oversized hind foot, appropriately named the snowshoe hare.

With so many prey species present in the forest, I was even more eager to find a carnivore track, or any species that could be characterized as charismatic megafauna (i.e. the type of animal you would pull the car over to the side of the road to get a better look at).

However, as we continued to snowshoe our way through the woods, all we saw was more of the same. While I found it a bit anticlimactic that such good tracking conditions were not yielding the types of tracks from the critters that define our wilderness, the fact was that there was a carnivore of equally impressive stature present, it just happens to occur on a much smaller scale and is therefore often overlooked and underappreciated.

What this small carnivore lacks in physical size, it makes up with in just about every other aspect of its nature. Its track is inconspicuous, about the same size as two pennies slightly offset. This undersized predator bounds through the forest, changing directions on a dime,

curiously checking out every downed log and jackpot of woody debris on the forest floor. The critter I am referring to is the short-tailed weasel, commonly referred to as an ermine, particularly after it's fur turns white in the winter.

An ermine is a member of the weasel family, a group of relatively small, but specialized meat-eaters. In North America, the wolverine is the largest member of the weasel family, while the least weasel is the smallest. The ermine, which is often confused with a least weasel, is the second smallest member of the weasel family, and together these two species make up the smallest carnivores in the world.

But what is such a small carnivore doing in such a cold environment like the Seeley-Swan? In order to fully understand and appreciate the ermine, one must know a little something about snow. We are all well aware that during the winter months snow eventually covers the ground in this part of the country, however, less obvious is the hidden world that is created between the ground and the top of the snow pack. Scientists refer to this area as the subnivean environment. Once the initial snow pack begins to develop, the iconic six-sided snowflakes near the ground are transformed into granular sugar-like crystals called depth hoar.

The interesting thing about depth hoar is that small rodents, like mice and voles, can easily tunnel through it. Add a lot of down woody debris from a healthy forest into the equation and you get a very complex network of tunnels, runways, nests, and access points between the surface of the snow and the ground.

Another interesting fact about snow is that it holds a lot of air, and therefore has good insulating properties. While nighttime low temperatures often bottom out around 10° (F) during our wintertime, the temperature in the protected environment under the snow pack stays consistently around 32° (F), a much friendlier temperature for small mammals to survive. Ironically, when people describe the landscape as being blanketed with snow, this metaphor may be more accurate than folks realize.

So what does this have to do with short-tailed weasels? While the ermine may be one of the smallest carnivores in the world, it has one of the largest natural distributions of any mammal, covering the higher latitudes of North America, Europe, and Asia. While its habitat range may be vast and varied, its niche is just the opposite.

The ermine is highly specialized in hunting small rodents in confined spaces; which is why it prefers to eek out its living under the snow in the far north. While there may be plenty of small rodents in the lower latitudes, there is also more competition for prey, so the ermine has evolved a risky set of adaptations to exploit a prey base that inhabits a cold and harsh environment in the North.

Ermine's bodies are long and skinny with a high surface to mass ratio, not ideal for staying warm in cold environments. However, in exchange for this poor heating system, ermines are able to access the same subnivean environment that their prey relies on for warmth and protection. The widest part of an ermine's body is its skull, which means that as long as it

can squeeze its head into a hole, the rest of its body can follow, a scary revelation if you happen to be a small rodent. But it doesn't end there. Because an ermine relies on accessing confined spaces, it cannot afford a thick layer of fat or fur to stay warm.

As a result, this little weasel has one huge appetite and a super high metabolism. An ermine has to eat somewhere around 1/3 of its body weight each day, while its heart rate averages around 370 beats per minute (King; Powell 2007).

An ermine's vertebra is so flexible; it is almost as if it doesn't even have one. They can literally turn around and walk back over their own hindquarters. Biologists studying short-tailed weasels have witnessed them leaping into a hole and then look out again in a single, fluid action, so fast that the tail was not in before the nose came out again (King; Powell 2007).

Ermings have short legs and long strong necks, perfect for two things; hunting for small rodents in tight places, and carrying prey in their mouth without tripping up their front feet. If you follow the tracks of an ermine long enough, you will eventually see one with a tail and perhaps feet dragging off to the side, indicating that this weasel has prey in its mouth.

Ermings are not only capable of delivering powerful bites, but their upper and lower teeth are arranged so tight, that they are self sharpening. Because their prey are equipped with warmer fur coats, ermines line their nests with the left over pelts from their victims.

So the next time you are in the woods and are getting a little impatient to see some

charismatic megafauna sign, try looking down for that little weasel with a small offset track and a vicious appetite, and be thankful you are not a small rodent.

Citation: King, Carolyn, and Powell, Roger. The Natural History of Weasels and Stoats: Ecology, Behavior, and Management. Oxford University Press, 2007.