



## Below the Snow

### a subnivean wilderness



An ermine emerges from a subnivean tunnel

## A hidden ecosystem...

**WRITTEN BY ROSEANNE VAN EE,  
WILDBC FACILITATOR**

*Roseanne is our long-time facilitator in Vernon. She enthusiastically shares her vast knowledge of the outdoors to help teachers and leaders experience and enjoy nature. Follow her on Facebook for more.*

A whole new ecosystem develops every winter wherever snow piles deeply enough to cover plants. It's the subnivean environment. The word subnivean comes from the Latin "*sub*" (under) and "*nives*" (snow). High hills, subalpine mountain environments and areas of northern BC reestablish subnivean worlds every November to April, and sometimes longer. In some places that's half a year or more.

As snow falls and settles, it bends over grasses, shrubs and even young trees, piling up over the vegetation like little umbrellas, leaving a network of air pockets and tunnels on the surface of the ground. The Earth is always giving off enough warmth to keep the ground air temperature above freezing. Imagine! It could be -20°C or colder and windy outside, but remain a consistent, 0°C on the ground under the blanket of snow.

## Snowy shelter

Spruce grouse and ptarmigan will tuck into subnivean air pockets to keep warm, especially at night. Black bears cozily hibernate under snow-covered logs or against tree trunks with large, limber snow-covered branches.

Mice and other small mammals, such as shrews and voles, live under this downy quilt of snow that shelters them from the cold above. The critters run around through their tunnelled habitat, subsisting on lichens, seeds, roots, fungi, plants, and on food stored in autumn.

## Subnivean hunters

Visual hunters can't see those living below the snow, but owls can listen. They can hear mice under half a metre of snow and dive down talons first to catch their prey. Coyotes can catch the scent of subnivean rodents. With a fierce pounce they dive into the snow, muzzle first. Snow weasels, also known as ermine, enter the subnivean network through holes beside shrubs and tree trunks where they feast on their rodent prey.

By mid-February the carbon dioxide levels get high in these passageways and pockets, and the little critters come up and out occasionally for a breath of fresh air. Wouldn't you know it; that's just when male owls get busy supplying their mates with food and furs.



Owls can hear mice scurrying around under the snow, then dive down talons first to catch them.



Life in the subnivean zone.

Illustration: Kristin Link KristinIllustration.com

## Go to the snow

Snowshoeing is a marvellous way to encounter this wild winter wonderland. Next time you're out snowshoeing, look for signs of wildlife, like tracks, and try to identify which animals were there and where they went. Look for the entrance holes that lead into the subnivean world beside tree trunks or near snow-covered shrubs that look like bumps on the undulating snowy landscape. And realize there's a whole busy community thriving under your trail. If it's warm enough, stay still for a few minutes. You may be lucky enough to catch some subnivean comings and goings!



A Spruce Grouse peaks out from a subnivean air pocket.

photo: Roseanne Van Ee