

Despite the inches (or feet) of snow, blistering winds, the subzero temperatures, there is

LIFE

A close-up photograph of several purple crocus buds emerging from a layer of snow. The buds are in various stages of growth, with some showing more developed petals. The background is a soft, out-of-focus blue sky, suggesting a bright, sunny day. The word 'LIFE' is overlaid in large, white, sans-serif capital letters across the middle of the image.

It is often said Wyoming has three colors: green, brown, and white.

Seeing signs of life near the soil surface is easy during the green and brown phases (spring, summer, and fall). Plants actively growing, insects crawling around, or small mammals scurrying across landscapes are common sights.

Seeing what is happening near the surface is much more challenging once snow falls. It is all too often assumed life completely stops for many plants, microorganisms, vertebrates, and invertebrates.

This is not so.

Snow is an excellent insulator. While the apparent temperature

is well below freezing above the snow surface, the temperature near the confluence of the soil and the bottom of the snowpack is actually right around 32 degrees F. The snow often associated with damaging or shutting down plant and animal life is actually very beneficial to many species.

Plants

Plants do not have the luxury of migrating or moving away from freezing temperatures like some animals. If not adapted to the cold, then they will not survive. Many annual plants rely on seeds for new plants each spring, yet perennial plants must have a hardy root system to survive each winter. It

might not look like plants are active during winter, but many evergreen plants continue conducting plant functions. Most evergreens have developed thick cuticles and waxy coatings to help reduce water loss.

Deciduous plants are also quite active during certain times of the year when snow is present.

For example, deciduous trees move water and nutrients from their leaves to their branches on down to their roots during fall when many snowstorms occur. They also move water and nutrients from their roots to their branches during the early spring and late winter when the ground is still frozen and covered with snow. Think sap collection from maple trees for making syrup. Sap is collected from the tree as it moves from the roots to the branches for nourishing leaf production. The timing of collection occurs while there is still snow cover and the ground is partially frozen.

Many plants such as wildflowers, sedges, and grasses have the ability to start growing before snow has completely melted. Wildflowers found at alpine and subalpine ecosystems are a great example. See picture below.

Animals

Small and large animals are active as well. Voles and deer mice readily use the area between the soil surface and bottom snow layer (subnivean zone) to search for food. Tunnels or trails left behind by small mammals in the spring are common sights for many homeowners. Even though voles or other small mammals were never actually noticed during the winter, they were busy going about their daily lives under the snow. Unfortunately, these daily routines



Moderate temperatures between the bottom of a snow layer and soil surface help small animals survive.

are often not helpful for beautifying lawns. They do, however, provide an important food source to large animals such as coyotes and foxes.

It is also interesting to think there might be some rather large animals that are living and somewhat active under the snow, such as hibernating bears. Bears are active enough they deliver cubs under this insulated snow layer during the middle of winter.



Marsh marigolds bloom as soon as the snow melts.

Microorganisms and Invertebrates

Certain microorganisms and invertebrates are very active during late fall and winter. Activity from microorganisms and invertebrates decomposes various types of plant litter. This decomposition is important for nutrient and chemical cycles for many ecosystems. Without their help, many plant communities can expect decreased nutrient availability during the growing season.

Have you ever noticed leaves that have sat under snow during the winter are gone or missing significant portions of the leaf? Invertebrates and microorganisms are the likely culprits for their disappearance. It is fascinating that this activity can occur during the winter. While small, they play an important role in Wyoming's food chain.

So whether you are out on a clear morning when the ground is bare but branches are covered with frost, during a ferocious snowstorm with gale force winds, or when standing in a drift as the low angle sunlight dazzles your eyes, take a few moments to consider all the activity hidden from our view.

Brian Sebade has a lot on his mind. We mentioned on page 14 he's probably thinking about vegetables and gardening AND now what's going on under the snow. Sebade is the University of Wyoming Extension educator based in Albany County and serving southeast Wyoming. He can be reached at (307) 721-2571 or bsebade@uwyo.edu.