

How Deer Survive Our Northern Winters

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For non-migratory residents of the Clearwater Valley, both human and animal, December primed us for winter with a blast of cold arctic air and some snowy weather. While much of January supported milder conditions, February is beginning with a one-two punch of several feet of snow and a return of an arctic blast. There are various ways to deal with the cold weather and snows that characterize Seeley Lake's winters. Some of our citizens, the snowbirds, imitate our migratory bird species and head south to warmer climates for the winter. Others remain and retreat to their cabins with plenty of wood for heat, similar to our bears which pile on the fat in summer and fall and find a sheltered area to establish a den and hibernate for the winter. While others, like our deer, remain active throughout the winter enduring the elements. How do deer accomplish this in such a challenging environment?

For many years, the assumption for how deer survive in winter was that as temperatures drop, deer increase their activity levels in order to stay warm, and thus need lots of food in the winter. But as researchers set up experiments to test this, they found that deer actually slow down their metabolism or energy use in the winter rather than increasing it, and this changed the way biologists looked at deer winter survival. In essence, deer try to be like the bears in adding fat in summer and fall, and then conserving their energy as much as possible to make it through the winter.

Spring, summer, and fall are typically good times of the year for deer. Being ruminants, like cows, they can eat a diversity of plant material which they digest in the 4 chambers of their complex stomachs. Areas supporting shrubs and herbaceous vegetation provide the foods they need. While drought may reduce food availability and quality in some years, there is generally a good supply in the Clearwater Valley. Deer try to take advantage of this and put on as much fat as possible. In the spring and early summer does use considerable energy in raising their fawns, but as nursing declines in later summer they are able to add fat reserves. Bucks start storing fat reserves in the spring, but then burn off some of these reserves during the fall rut when pursuit of does is a stronger drive than preparation for winter. Fawns have the biggest challenge as their nutritional needs for growth restrict the amount of fat they are able to store up prior to winter, but in most years they usually succeed in storing up some reserves.

By the time winter hits, deer have put on their fat reserves and have grown their winter coat. Fat stored under their skin provides additional insulation to the cold. This means deer can stay comfortable and not use a lot of energy until temperatures really get cold. While many factors determine how much energy they use from day to day such as wind speeds, precipitation, whether the deer is standing or bedded down, etc., it is clear they are well adapted to handling

cold conditions. However, when temperatures drop to 0° and lower, deer are forced to use increasing amounts of energy to keep warm. To counter this, deer select areas that minimize their exposure to cold and windy conditions and thereby lessen the impact on their energy reserves.

For deer, one of the biggest energy drains in winter is movement through snow. The amount of energy used rises dramatically as snow depths increase, with hard or crusty snow requiring the greatest use of energy reserves. As snows get deeper across much of the valley, deer seek out areas where it is less deep- such as at lower elevations, south and west facing slopes, and under dense tree canopies. Dense overhead vegetation also helps insulate deer on cold clear nights by reducing the amount of heat lost to the night sky.

Deer do not eat as much food in winter as other times of the year- this is consistent with their strategy of reducing the amount of energy used to ensure their reserves stretch to spring green-up. However, what food is available serves a dual purpose, not only providing new energy to offset the use of their reserves, but also by producing heat from the digestion of the food in the stomach which helps to keep the deer warm. So in general, deer will seek food resources where easily available or needed to produce body heat during the coldest periods in winter, but their primary goal is to conserve their overall energy reserves.

The more fat a deer can accumulate before winter, the greater its energy reserves and the greater the amount of winter weather it can survive. The presence of foods such as woody browse will slow the use of its reserves, but the deer will still be using up its reserves through the winter. How fast it uses its reserves is influenced by temperatures, snow depths, wind speeds, and all of the other factors that influence its energy use.

The length of a winter is a critical component in deer survival. Winters that stretch into late March and April before vegetation starts to green up and provide new sources of energy, are particularly hard on deer. A really cold spell late in the year is also very hard on deer, as by then they have used up most or all of the fat that provides important insulation. Fawns are the most vulnerable and a severe winter may cause the loss of nearly the entire age class. Hard winters can also impact does as they are entering later stages of pregnancy in the spring and require increasing amounts of nutrients for the growing fetuses. If they enter spring in poor condition it can cause them to lose their fawns, or those that do give birth may produce fawns that are smaller and less competitive throughout their lives.

Thus, winter is a critical season in the lives of deer. However, they have evolved remarkable adaptations to survive its rigors..... although if they had wings they might choose to winter in Baja.