

Get Wild: How do you stay warm in the winter?

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Frank Lilly
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A grizzly bear is looking very hungry just after coming out of hibernation in Yellowstone National Park, Wyoming.

Richard Seeley/Get Wild

We mammals and birds are homeothermic, or “warm-blooded.” We maintain a relatively constant temperature regardless of the temperature outside.

There are a variety of strategies that are used to maintain body temperature. Many birds migrate, which helps with temperature regulation as well as finding food to maintain their metabolism. Most mammals do not, or cannot, migrate. Bats are a notable exception, as some do migrate (being able to fly helps). Some humans migrate, too. We call them snowbirds. Historically, the Indigenous people who lived here for thousands of years also migrated to lower elevations.

Larger mammals, such as moose, deer, elk and mountain lions, have an advantage in staying warm, simply because of their size. Smaller mammals not only lose more heat because of their size, but also have higher metabolic rates. This means they must consume

approximately a toasty 32 degrees! If you have grass in your yard you may be annoyed each spring by the tunnels dug by voles directly under the grass.

Another strategy is hibernation. A couple of small mammals that hibernate are the Colorado chipmunk (*Neotamias quadrivittatus*), and the golden mantle ground squirrel(*Callospermophilus lateralis*). Hibernation resembles sleep, but it is much more significant. It involves an extreme lowering of body temperature and metabolic rate. It may last days, weeks or months, depending on the species, the temperature and other factors. Of course, the animal must store up enough energy to make it through the hibernation period, even though their energy needs are greatly decreased while hibernating. Warmer temperatures and longer days trigger the exit out of hibernation, although not all hibernators end the process at the same time.

Mammals also have a special type of tissue, called brown fat, that helps generate heat through a process called non-shivering thermogenesis. It is found in almost all mammals, but it is especially prevalent in small mammals. Human babies have brown fat, but we tend to lose it as we get older.

While most large mammals don’t hibernate, bears are an exception, although they are not considered true hibernators. Like some humans, they are restless “sleepers” and often wander around when they might otherwise be hibernating. Bears are especially well known for eating massive amounts of food in order to fatten up during the fall. This is a process known as hyperphagia. Female black bears(*Ursus americanus*), go through gestation while hibernating. The young are born while their mother is hibernating, or shortly thereafter. If the mothers don’t get enough calories in the fall, the cubs will not survive.

Bats go through a process at night called torpor. This is effectively hibernation on a 24-hour cycle — their body temperature and metabolic rate drop as if they were hibernating.

Humans evolved about 200,000 years ago in a tropical environment. Therefore, we are naturally much better at getting rid of heat than conserving it. We have lost most of our fur and we sweat a lot. The local Indigenous Ute, or Nuchu, people hunkered down for the winter. They tended to stay in their shelters as much as possible and rely on food stored for the winter.

What is your winter survival strategy? Are you sleeping more, wearing more layers, staying near a fire, eating and drinking warm foods?





Frank Lilly

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