A Long Winter's Nap

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In the winter months many people hunker down inside to avoid the cold and darkness. I've always enjoyed winter, but even I have a hard time getting up on those cold, dark mornings when it's so much cozier under warm blankets. Sometimes I feel like my namesake – Erica "Bearica" – and wish I could just hibernate through parts of winter. But what is hibernation? Why do some animals do it?

Bears are known for, and are often the face of, hibernation. This is fair, considering they are the largest hibernator we have in North America. Most of our hibernators are much smaller critters like the chipmunk, groundhog/woodchuck, and the thirteen-lined ground squirrel. Who would have thought bears and chipmunks would have such a special thing in common?

What is hibernation? Some people may think of it as an extended sleep like a coma, but there's more to it than that. Hibernation is like a superpower; the body's functions shift in response to this adaptive behavior. The four key factors of a hibernation state are lowered heart rate, respiration, metabolism, and temperature.

As humans, our heart rates slow a little while sleeping, but it's not drastic. Even our breathing becomes slow and more even during peaceful slumber. Our core body temperature should not change unless we're sick. Our metabolisms are unchanging; they are what they are.

A black bear in its den (photo from North American Bear Center)

Hibernating animals experience radical drops in these categories while in a hibernation state. Let's look at the woodchuck as an example. A woodchuck's heart rate will go from 80-100 beats per minute to 4-5 beats per minute. Their breathing will go from about 16 breaths per minute to as low as 2. Core body temperature drops from 98 to 38 degrees without causing harm to the body (while a human is at risk of hypothermia when their core body temp drops below 95 degrees). With its lowered metabolism and stored body fat, the woodchuck doesn't have to eat or drink all winter. It will lose about 30-40% of its body weight.

That all sounds pretty extreme, doesn't it? Why go through all that? The driving force is simple: food. Animals that hibernate during the winter do so because there is a lack of food. It's the same reason animals migrate south for the winter; it's just another strategy for surviving the season.

Keep in mind, hibernation doesn't look the same for all species. Some animals might rouse periodically while some could sleep for four months straight. Animals in the south don't hibernate as long as northern animals. How much an animal's heart rate, respiration, temperature, and metabolism drop depends on the species, the availability of food, and the severity of the winter weather.

Hibernation is not just sleep. It's a winter survival superpower.