A Long Winter's Nap

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Winter is a difficult time of year for most living things. Tissues of the body must not freeze. Drinking water and food might be scarce. What are animals to do? Some animals migrate to a warmer climate (ex. monarch butterflies, great blue herons). Some animals stay here and remain active (ex. chickadees, foxes). Some animals become less active and live on stored fat or what little food they can find (ex. squirrels, deer). Some animals settle in for a long winter's nap.

True hibernation means that an animal enters a state of reduced bodily functioning. Little or no food and water are consumed. The heart beat slows to a fraction of its normal rate. Breathing slows and can become shallow or undetectable. It is this slowing that causes hibernating animals' body temperature to drop to near freezing, even in mammals, not the temperature outside. Hibernating animals are slow to respond to external stimuli such as intruders or pain; however, they can have periods of wakefulness.

The only New Hampshire mammals that enter a state of true hibernation are woodchucks (or groundhogs) and two species of jumping mice. Woodchucks go into hibernation in late September and begin to awaken in February. They then remain active until the next winter. Jumping mice hibernate for two to three weeks, awaken briefly, and then return to hibernation. Many people believe that black bears hibernate. These animals do not enter a state of true hibernation, but scientists have not agreed exactly what it is. As winter approaches, the bears find a suitable den and settle in for the winter. They become sleepy and their heart rate and breathing become slower, but their body temperature does not drop significantly. If disturbed, over-wintering black bears can quickly become alert and active.

Other mammals such as bats, skunks, raccoons, and chipmunks enter a deep sleep called "torpor" that is very similar to true hibernation. Their bodily functions slow and their body temperature drops, but they can react quickly if disturbed or to take advantage of opportunities to look for food on mild winter days.

Reptiles, being "cold blooded", are not able to create their own heat. Their bodies tolerate cold easily as long as they do not get so cold that they freeze. Snakes often burrow in the ground below the frost line or find a compost pile that generates a bit of warmth. Turtles overwinter by burying themselves in sediment at the bottom of a pond or at the base of a river bank. The pond or river can ice over, but liquid water usually remains below the surface. The turtles do not

breathe at this time. Some, such as wood turtles, absorb a bit of oxygen through patches of thin skin, but others, such as spotted turtles, simply “hold their breath.”

Many frogs, toads, and salamanders in New Hampshire hibernate in or on the sediments of ponds or wetlands. Some hibernate on land in burrows that lie below the frost line. Three of New Hampshire’s frogs, the wood frog, the gray tree frog, and the spring peeper, actually do freeze during the winter. These frogs have chemical adaptations in the fluids of their bodies that serve as an antifreeze and prevent the formation of ice crystals. Painted turtle hatchlings also have this adaptation to a lesser degree. They hatch from their eggs in the fall, but remain in their sandy nests until spring. The hatchlings are able to withstand some freezing, but unlike the frogs, the baby turtles cannot survive freezing solid. The baby turtles are most vulnerable during a cold winter without a good layer of snow.

Hibernation and torpor are interesting ways that many animals survive winter by yielding to it. When spring arrives, nature will welcome the return of animals that went south as well as those animals that were here all the time and just needed to wake up from a long winter’s nap.