ON THE WILD SIDE

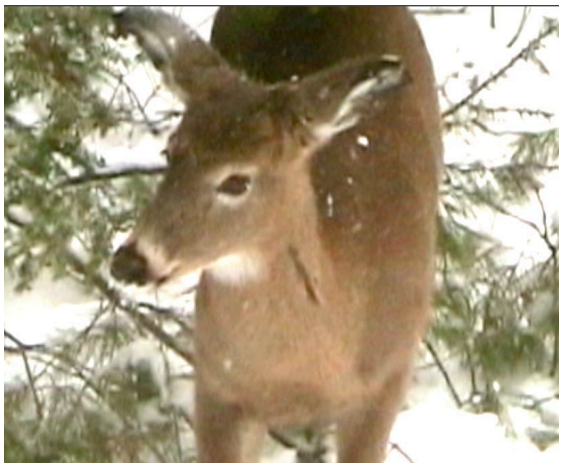
Cold Weather Wonders

Kathleen Ebert-Zawasky

How do they do it? How do they survive out there when the temperature goes below freezing? I am referring to the small birds I see in the bushes and at the feeders and to the squirrels darting around as lively as on a warm summer day.

Small birds are especially impressive because they are so small. Imagine putting something of similar size (like meat or veggies) in your freezer at 0-5ºF and see how long it takes to freeze – just a couple of hours, no doubt. Yet birds and many mammals remain active at temperatures even lower than the temperatures of our freezers.

The secret is that birds and mammals are "warm-blooded" animals as opposed to "cold-blooded" animals like insects and other invertebrates, fish, reptiles and amphibians. These terms aren't the best to describe what is really going on.



A young deer enjoys browsing on hemlock branches after a recent heavy snowfall.

Cold-blooded animals do not always have cold blood. Their internal temperature will be about the same as the environment they live in, cold on cold days and warm on warm days. On warmer days, they are more active and can find food, water and shelter as needed and mate, reproduce and raise young. When the temperature dips, however, their bodies get cold, their hearts and circulation slows down, their metabolism slows and they get sluggish or stop all activities.

In contrast, birds and mammals are able to maintain a pretty constant internal temperature. Their temperature control system works a lot like a thermostat. Keeping a constant temperature (97-104 º F depending on the animal) enables them to remain responsive and active night and day year round.

How do they do it? Well, it is all about metabolism, i.e., the chemical processes in each cell of the animal's body release chemical energy in a form that can fuel the work of life (to grow, to move, to find more food, to reproduce and so on.) At each step in the metabolic pathway, some energy escapes as heat (maybe as much as 60% of the energy) that can really come in handy when the temperature dips. Because they get most of their heat from internal processes, they are now called endotherms while the "cold-blooded" critters that get their heat from the environment and direct sunlight are called ectotherms.

Originally published in the Norton Mirror, January 28, 2011

Birds and mammals also have some adaptations and behaviors that complement their temperature control system, like shivering or huddling together in sheltered places. And, of course, they have good insulation that helps to keep heat loss at a minimum. Winter birds have an inner layer of small insulating feathers (down) which they fluff up to retain heat. Mammals have fur or hair and sometimes layers of fat below the skin. But in order to keep their internal fires stoked, all endotherms need abundant food all year round. That is why we see birds and mammals active in the winter but not insects, salamanders, and lizards that die off or become dormant somewhere waiting until warmer weather returns.

There are variations, of course. For example, many birds migrate to get away from cold winter weather and some mammals hibernate. Chipmunks and groundhogs slow their metabolism and lower their heart rates and internal temperatures all winter long. Others 'partially hibernate' as in the case of the bears and bats. They sleep deeply and slow their metabolic rates for long periods of time, wake up for a while (bears wake to give birth!) and then go back to sleep again. I was surprised to find new research that reveals that many birds (including red-tailed hawks) can actually slow down their metabolism and enter an inactive state called torpor which saves them energy on cold dark nights.

Not all winter birds and mammals will survive a very cold winter, but we can improve their chances. We can supply good quality birdseed (black oil sunflower seed, peanuts, niger seed and white millet seed,) fresh water, and fatty food such as suet or peanut butter. Fats are important because they have nearly twice the energy stored in them per unit than either proteins or carbohydrates.

Mammals, like deer, squirrels, rabbits, and mice, need native plants to provide them the calories and nutrients they need and shelter from winter winds. They eat tender branches, stems, bark, seeds and berries of many different kinds. They are less likely to go for ornamentals if there are plenty of native trees, shrubs and bushes around. Of course, conserving undeveloped land and forests is one of the best thing we can do for our native animals.

You can help to maintain natural habitats for our native plants and animals – without expending too much energy. Consider certifying your own yard as a Certified Wildlife Habitat. For complete information, go to the National Wildlife Federation website: www.nwf.org/In-Your-Backyard.aspx or see the Land Preservation Society (LPS) of Norton website: www.nortonlandpreservation.org

Kathy Ebert-Zawasky is a member of LPS and Team Leader of the Wild Backyards of Norton program. Kathy can be reached by email: zawasky@comcast.net

Originally published in the Norton Mirror, January 28, 2011