Natural Events
January
GSWA Ecological Restoration Site

"Ice Patterns"

"Cooper's Hawk on Kill"

1) One must look deeper and search longer to find signs of life in the heart of winter's chill. Life exists in winter for those who can endure the elements and fight her freeze. But our quick jaunts into wilderness are nothing when compared to those who inhabit the open spaces of our site. Hypothermia, starvation, energy balances and biochemical changes are challenges that all creatures adapted to these environs must endure. Five factors in particular combine to make survival difficult – **snow, cold, radiation, energy, and wind –** this forms the acronym SCREW. Ecologists use this term that encompasses all the influences of the environment on organisms during winter.
2) Different animals deploy different strategies for coping with winter's wrath. Body surface to body volume is critical to heat retention. Our resident white footed mice have more body surface area per body size than does our resident white-tailed deer. The mice loose heat more rapidly from their body surface in respect to this surface-to-volume ratio. They contend with this disadvantage by caching seeds and nuts gathered in their middens. The mice don't have to subject themselves to the elements like deer do. They just feed on stored food found within their nests. White tailed deer on the other hand don't loose heat as rapidly as the mice because their surface-to –volume (body size) ratio is low; hence this animal's ability to retain heat is greater. Deer can expose them selves to the SCREW factors more efficiently than our mice that need the protection of cover and insulating material to survive.
3) Our site is host to an amphibian that has taken winter survival to the extreme. It is the only frog species in North America that can freeze solid and still survive. The wood frog (*Rana sylvatica)* contains biological antifreeze allowing it to burrow just centimeters deep where freezing conditions take hold. It performs this amazing trick by storing a form of sugar called glycogen (the short term storage form of glucose) in their livers until they freeze. This sugar pours into the frogs' cell interior when temperatures fall below freezing – in simple terms this biochemical reaction to the cold inhibits ice crystals from destroying tissue. Glycerol in plants and glycoprotein in fish act in similar ways to protect them from the life-threatening affects of freezing.
4) One of my favorite birds of winter is the goldfinch (*Spinus tritis)*. Solitary for most of the year this songbird will be found in flocks from 5 to 100 birds, feeding on the grass and weed seeds of fields. Look for them in our small meadow as you enter the site on the dried flower heads of mullein, evening primrose, goldenrod, thistle and ragweed.
5) Between the canopy of leaves formed by tall hardwood trees and the shrub layer that is close to the forest floor is the understory. My favorite understory tree can be found on the blue trail near the bridge that crosses the Silver Brook. This is the hornbeam (*Carpinus caroliniana)* with its spreading leafy crown used to catch any available dappled sunlight sneaking through the canopy. In winter it can be identified easily by its unmistakable bark, smooth and sinuous which gives it another name – muscle or iron wood. This tree is a great winter source of food for mammals and birds who relish in its seeds. I think this tree belongs more to the forests of Middle-Earth than our own.
6) Winter is a great time to hone your skills as a tracker. A fresh fallen snow is a good time to hike around our site with the "Stokes Field Guide to Animal Tracks". See how many species you can identify. With a little training you will be able to figure out the behavior of an animal by the tracks it has left behind. Take a good look in the ditches and stream bank for signs of mink, raccoon, opossum, great blue herons and muskrats.

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