Hogback Mountain
Conservation Association

P. O. Box 20
Marlboro, Vermont
05344
Phone 802 254 9192
Email: Hogback1@sover.net

News and Events at Hogback Mountain - Newsletter #9 - February 2010

On sundry hikes around Hogback, we've discovered a least two different sugarhouse foundations (one with the rusty remnants of an old arch (firebox), that sustained maple sugaring operations on the Mountain in years past. In fact a hike up to the northwest corner of the property also reveals a magnificent stand of sugar maples cradled in a natural bowl facing southwest.

We thought with sugaring season soon upon us, it would be interesting to examine a tradition that goes back centuries here in New England; one that is sustainable and is fascinating to watch. We asked Barbara Cole, who sugars with her husband Bruce Cole at their Maple Ridge Farm just off the west side of Hogback, to share a little beyond what many of us may already know about sugaring.

Acrylic painting on an old wooden sap bucket cover. The hooks seen here were used to suspend the cover from the tree bark and remain attached to the cover (not part of the painting itself). Photo and Painting by Barbara Cole

Maple Syrup – the Elixir of Spring

Our beautiful sugar maples provide us with a healthy alternative to cane sugar. Red squirrels know of this sweetness and make shallow bites in the bark and lick the sweet sap.

The sweetening power and delicate flavor of maple syrup was discovered by early settlers when they observed Native Americans boiling the sap to a thick syrup.

We boil sap until it reaches a temperature of 7 degrees above the boiling point of water. The boiling point should be calculated daily due to barometric pressure fluctuations that slightly alter the point at which water boils. Boil water, read the thermometer, and add the 7 degrees. An hydrometer can also be used to measure the specific gravity or density of the syrup. A maple tap typically yields approximately 10 gallons of sap and in turn yields one quart of syrup. Over half of the sap flow for a day typically occurs by noon. Sap has a very faint sweetness to the taste but little or no maple flavor. Along with water and the 2 to 3% of sugar that we find in maple sap, there are trace amounts of organic compounds, organic acids, and minerals, including potassium, calcium, manganese, magnesium and sodium. During the boiling process, minerals and other insoluble materials form a sediment

---

FUTURE NOTICES AND EVENTS. Our email address is hogback1@sover.net. To keep costs down, we use email whenever possible. If you prefer not to receive future email Newsletters please let us know. Suggestions for improvement are always welcome. We welcome and encourage articles and pictures for future publication as well as ideas for future events.

called the sugar sand which is primarily calcium malate. This must be filtered and removed from the final syrup.

The wonderful maple flavor is created during the boiling process as heat changes certain nitrogenous chemicals in the sap. The longer the sap is boiled the more color and flavor develop, thus the Dark Amber, "B" and "C" syrups are more likely to be produced later in the season when the sugar content in the sap is lower and requires more boiling for extraction.

What causes the sap to flow in the spring? This is not easily explained and probably there is more to be learned. Most tree species have gas-filled vessels (phloem) and water-filled fibers (xylem). Conversely, maple trees have water-filled vessels and gas-filled fiber cells. This is the critical factor for sugar maple spring sap flow.

During the process of photosynthesis, chloroplasts in the leaves use the sun's energy to combine carbon dioxide from the air and water brought up from the roots to form sugar. As trees stop growing during the late summer and fall, the sugars in the sap are converted to starch and stored throughout the sapwood where they remain until warmer spring days bring temperatures above 40 degrees. At this temperature, enzymes in the ray cells are activated and change the starch back to sugar that then moves into the xylem tissues.

As the temperature drops, water freezes along the inside walls of hollow, gas-filled xylem cells. Additional ice forms as water vaporizes from surrounding cells and the remaining gases in the stem are compressed and locked in ice. As the temperature warms, the ice melts and the ice-compressed gases expand forcing the sap out of the stem. Negative pressure is created within the sapwood of maples and this draws water from adjacent cells which, in turn, are refilled by water absorbed from adjacent cells and ultimately from the root, most of which lie below the frost line and can still transport fluid.

Warm days and below-freezing nights are necessary and this occurs generally late February into early April, and/or up to the time when buds start to swell and sugaring season is over. Stems must experience a freeze-thaw cycle for sap to flow. Above 45 degrees the enzymes stop working and sugar is no longer being produced from the starches. During the six week sugaring season it's important to keep equipment clean as the tap holes can be contaminated by yeasts, bacteria and fungi resulting in the formation of a gummy substance which cause the physical blockage of sap-conducting vessels within the tap hole.

We all enjoy maple syrup on pancakes and for cooking, but is it also used to make alcoholic drinks. A carbonated maple sap called Vermont Sweetwater was created by the Munch brothers from Poultney.

(Art. by Barbara Cole)

More information on maple sugaring can be found on the internet searching "maple sap" and at http://www.massmaple.org/flow.html

---

Fundraising - Hogback fundraising is officially over as of January 31, 2010. We have raised the amount that is needed for the town to acquire the land and to permanently protect it. We also came in very close to our goal for the town stewardship fund. Any new contributions should be directed to the Vermont Land Trust.

We expect to have all the paperwork completed over the next two months or so that will put Hogback into permanent conservation and pass title of the property to the Town of Marlboro. There will be more information on this process in an upcoming Newsletter. There will also be written acknowledgement of gratitude to those who have contributed to this worthy effort.

Animals at Hogback - Hiking Hogback recently, I came across a bucket-sized creature that reminded me of my early years in Marlboro. Growing up here in the 1950s this creature was commonplace and most often considered a pest, particularly if you had a dog. In more recent years, sightings have been quite uncommon. I've encountered perhaps four or five in the last 25 years. I've seen more fisher in that time and therein lies a connection.

It wasn't always this way. Many years ago porcupines seemed to be everywhere, waddling along a roadside ditch or ensconced among the tree branches in search of something succulent, looking like a sea urchin on a stick.

The North American porcupine, *(Erethizon dorsatum)*, the species the U.S. shares with Canada, is one of about 24 species worldwide and is also the largest of the group at a hefty 30 pounds or more.

Porcupines, great climbers that they are, can often be found sitting in trees of nearly any species, a rotund rodent niftily nipping off branch ends to get at the leaves, buds, and nuts. In the winter they can be spotted in hemlock trees, the bright green branch tips lying on top of the snow an obvious giveaway that a porcupine has been munching high above. (As deciduous trees lose their foliage, porcupines may feel that the thick, brushy foliage of the hemlock provides more visual security.)

Nonetheless, it has always seemed a creature less than endearing; a, lumbering lump that elicits all the excitement of a brick chimney. I mean when was the last time somebody exclaimed breathlessly, "I just saw a porcupine"! I've always found them fascinating, nonetheless, living a solitary and unhurried life and easy for a young boy to find and observe.

Hemlock tips scattered on the snow signal a porcupine at work overhead.
Photo by Bob Anderson

It was the hemlock detritus on the trail that first signaled this porcupine's presence last summer on the trail at Hogback. Subsequent hikes revealed a curious gastronomic fondness for this particular hemlock tree despite many others available in the area. Earlier I hadn't actually seen the porcupine because this tree was a large one with a dense crown. Hiking again recently along this favored hemlock, and noticing the fresh litter on the snow, I looked up and saw nothing at first. But then a couple of branches shivered briefly as a dark lump appeared to reposition itself, high up, perhaps to better shield himself from us. He then sat absolutely motionless until we left.

Porcupines are primarily nocturnal and I do remember our own family pets, in the fifties, that occasionally returned in the evening hours with a mugfull of quills, howling in pain and panic. These losing encounters with one of these thorny denizens usually resulted in a visit to the vet, as the quills are barbed and difficult to remove from a very agitated canine. A mature porcupine may have as many as 30,000 individual quills, which are bound into and controlled by a sub-cutaneous sheath of muscle. The quills do not shoot out spear-like (a long held myth), but are very easily released. The porcupine is not aggressive

by nature, but confronted with an approaching threat, a tail filled with quills will lash about perilously as the porcupine turns and backs defensively toward a closely approaching hazard.

Beyond the old saw about porcupines mating, carefully, I was intrigued to find that breeding results in the spring birth of a lone offspring after a protracted gestation period. At birth the quills, which are actually modified hairs coated with keratin, (the same materials that develops into fingernails and claws etc.) are soft and hair like. But they quickly harden in an hour or so, since they will very soon be needed for protection. This newborn will be out foraging for itself in as little as two days, though it will stay with its mother for up to six months.

There was a well-used trail in the snow extending a considerable distance from this hemlock tree to our porcupine's probable den. While always a solitary creature, porcupines occasionally share a den with others in winter for temporary protection from harsh weather. They do not hibernate and can be seen foraging throughout the winter. The distance this porcupine traveled to his hemlock aerie and the heights he climbed made me think about how much wood a large creature like this consumes to sustain himself through a Vermont

Yum - yum

Photo by Bob Anderson

As strict herbivores, they eat a lot of wood fiber and they also share a preference with humans for salt with their meals; a sweat-stained tool handle or sodium-laced plywood is a treat. When porcupines were commonplace they often damaged isolated camps and outbuildings and other things touched by humans, even footwear and clothing. The damage to the forest stand itself was significant in the middle of the last century as the porcupine population grew out of control for lack of natural predation.

The porcupine is well armored against most predators except for the fisher, but the fisher was trapped to near extinction for its fur by the early century. The fisher (which despite its name does not eat fish) is the one predator whose consistent diet is porcupines and rabbits. Given the increasing porcupine damage in many places, the fisher was seen as a way to control the porcupine population. It was reintroduced in the latter part of the 20th century to do this. The fisher is so completely quick and nimble, it can harry a porcupine at its unprotected nose and mouth until it has succumbed and exposes its quill-free underbelly.

The greatly diminished porcupine population is a testament to the obvious effectiveness of the program. There appear to have been concomitant declines in the rabbit and marmot (woodchuck) populations as a result of this same predation. Gardeners, farmers and others are happy, I'm sure, but I miss the regular sightings of these little creatures and I'm happy we have a least one at Hogback. (Art. by Bob Anderson)

Humane Society: file:///Users/robert/Desktop/Newsletter%20%239/Porcupine%20Article/Porcupines%20%7C%20The%20Humane%20Society%20of%20the%20United%20States.webarchive

NationalGeographic: file:///Users/robert/Desktop/Newsletter%20%239/Porcupine%20Article/Porcupines,%20Porcupine%20Pictures,%20Porcupine%20Facts%20-%20National%20Geographic.webarchive

NatureWorks: file:///Users/robert/Desktop/Newsletter%20%239/Porcupine%20Article/North%20American%20Porcupine%20-%20Erethizon%20dorsatum%20-%20NatureWorks.webarchive

Wikipedia: file:///Users/robert/Desktop/Newsletter%20%239/Porcupine%20Article/Porcupine%20-%20Wikipedia,%20the%20free%20encyclopedia.webarchive

---

Trail Development - We plan to be back out on the mountain this spring to extend our trail network a little further. A number of you have signaled your interest in helping with this work. We'll keep you posted for dates and times.

It's fun, convivial and only as much exertion as you care to exercise. The pace is measured, you leave when you want and you don't need any special tools at all. In any event, it doesn't extend more than half a day.

Upcoming Events:

Saturday, February 27, MOONLIGHT SNOWSHOE WALK, about 6:00 PM – This is a non-strenuous snowshoe trek of about an hour's duration on fairly level terrain. We'll be on a trail and not bushwhacking, so you won't be late for supper if you haven't eaten.

The walk is aimed at enjoying the outdoor experience in winter under a full moon, at a time when we're usually home thinking about dinner. It is also about community fellowship with a little exercise thrown in.

In addition to snowshoes, bring a flashlight or headlamp if you have one just as a precaution. You'll be amazed at how well you can see at night once your night vision is acclimated.

Weather will determine this event. We will be looking for a calm, relatively cloudless night and some decent snow cover. We'll meet in the large, north side parking area at Hogback, west of the Skyline Restaurant. If in doubt about conditions, call 254-9192 or 254-9615 that day and find out for sure.

Saturday March 6, 2010 , 9:30 AM - TWIG WALK. Barbara Cole will lead a two-hour walk on Hogback exploring trees in winter. How do we identify a tree without its leaves? Are all twigs alike? What might be living in the bark, or on the twigs? What else can we discover on our not too strenuous walk?

Weather will determine our footwear and a hand lens might come in handy. Park at the yellow Alpenglo building along the south side of Route 9.

April, 2010 – VERNAL POOL VISIT. Jason Saltman, (who has been studying vernal pools intensively, see Newsletter #4, Vernal Pools – *ed*.) will lead an outing to experience the wildlife of a vernal pool. "We will try to time the event so that participants have a chance to see wood frogs in the early spring. We will also look at some of the other associated wildlife, including insects that inhabit vernal pools. Due to the variable timing, we will send out a notice a couple days before the walk happens so that we can maximize the chance of seeing an abundance of wood frogs. If time permits, we will go to the Natural History Museum to look at some of the pool life under a microscope." This walk will be limited to 15 participants.

Our continuing thanks to the Southern Vermont Natural History Museum and Hogback Gift Shop for gracious use of their facilities in support of many of our events.

Bob Anderson - Ed.