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WOODLOT TIPS

FEBRUARY 2006

HABITAT FRAGMENTATION AND THE FUTURE OF WILDLIFE IN VERMONT

On **Feb. 23 at 7 p.m.** at the Brattleboro Savings and Loan Community Room, Vermont Fish and Wildlife Biologist Kim Royar will talk about how land use decisions affect and impact wildlife of all kinds, and how landscape level conservation efforts can enhance and support wildlife survival. She'll identify ways that individuals, towns, and other groups can collaborate to protect lands that are critical for our native species. Everyone who has an interest in wildlife is invited.

This program is third in a special series called "Conservation Across the Landscape," collaboratively offered by the Bonnyvale Environmental Education Center, Vermont Land Trust, and Windham Regional Commission.

PROGRAMS IN THE WORKS FOR 2006

WOA's Program Committee has more programs than ever in the works for 2006, and they run the gamut in type and variety. When all arrangements are final, the full schedule will be mailed to the membership.

March features the annual Sugarhouse Tour. One stop is Dan Crocker's sugarhouse in Westminster West. The story about his winter sugaring experiment is on page four of this newsletter. The April meeting will be about turkeys, and in May a field trip is planned to view the six natural communities on Dummerston's Black Mountain.

Eric Sorenson, co-author of the book, *Wetland, Woodland, Wildlan: A Guide to the Natural Communities of Vermont,* will lead the walk to the summit where pitch pine and scrub oak grow; said to be the only place in Vermont where scrub oak is found.

In June Josh Ellsworth will conduct a workshop on invasives for natural resource professionals. It'll be followed up in September with an invasives workshop for woodland owners.

Over the summer months, from June through August, there will be a wide range of walks and tours. Some of the topics covered are: understanding the forested landscape; silviculture and regeneration; harvesting systems; woodlot road construction and trail development; wetlands forestry and development; and heating your home off your woodlot. Tours also are planned to Cersosimo Lumber, and to the workshops of a boat builder, a violinmaker, a banjo maker, a cabinetmaker, and a bowl maker. Twilight or Saturday morning walks will take place in an old growth forest, the Brattleboro watershed and the Wilmington forest.

Game of Logging sessions will be held in June, July, and August. In September, Bill Guenther will lead the Black Gum Swamp walk, and in October, the famous Big Trees Day.

Logging with Horses

By Jody Rowland, Assistant County Forester, Windham and Windsor Counties

What are the advantages of horse logging? I came up with a few answers after the first workshop I attended as the new assistant county forester. It was a "hands-on" horse-logging workshop offered last October by the Green Mountain Draft Horse Association at Earthwise Farm and Forest, owned by the Russell Family in Bethel-Gilead

The purpose of the workshop was to promote the safe and dignified use of workhorses, to provide guidance and advice to beginners, and to demonstrate the effectiveness of skidding timber using draft animals. About 60 people from four states, six teams of draft horses and a pair of oxen participated in the weekend workshop.

The morning was cold and clear as the participants gathered. We received a warm welcome from Carl Russell along with a brief history of his family farm. The 150-acre farmstead has been under long-term forest management since the 1940's. Since 1986, Carl has been implementing his low-impact forest management activities with horses, mules and oxen.

The morning presentations focused on four aspects of horse logging: Basic expectations for safe handling and hitching horses; design, function and adjustment of the D-ring harness; skid trail and log landing layout; and bucking logs to maximize grade and scale. The four sessions were separated by a well-deserved coffee break at the horse barn.

The breeds most suitable for logging are Belgians and Percherons. An average team can pull a load of 150 to 200 board feet weighing about 1,500 pounds. The maximum practical skidding distance is around one-quarter mile up or down slopes. Longer skids are too taxing on the animal, so laying out the skid trails must take this limitation into consideration

Equipment is another factor to consider. A collar and set of harnesses can run from $700 to $1,500, depending upon size, accessories and material. Leather is the preferred material because it will last a long time with normal maintenance, and the cheaper nylon harness can rub sore spots on the horse. Then there is the singletree or doubletree -- the pivoting swinging bar, which attaches to the harness by which the load is drawn. A singletree is used for one horse, while a doubletree balances the load between two horses. Most teamsters use a cart to raise the

logs off the ground, which is easier on the horse than ground skidding and also keep the logs clean. The cost for a cart can be up to $2,000. You also need a truck and trailer to transport the animals to the job site.

After a delicious lunch at Carl and Lisa's house the afternoon demonstrations began in two adjacent forest stands. Both sessions were held where active timber harvesting was taking place. One was in a white pine stand and the other in a red pine stand. The design, function and application of several different types of harvesting equipment were demonstrated. Experienced teamsters led demonstrations on the use of oxen and draft horses for ground skidding and the use of two different kinds of logging carts. Experienced loggers led the discussion on the art of tree felling and ecological forest management.

The second day reinforced the lessons learned the previous day with additional focus on terrain selection, equipment choices, harvesting techniques and forest management objectives.

The demonstrations were the highlight of this workshop. I was amazed at how the well-behaved teams of horses worked with their owners. The teamster gave simple verbal commands coupled with controlling the team with the reins. When workshop participants attempted to skid the logs to the landing, you could tell the horses were confused by the not-so-subtle commands. One of the most physical human tasks was the decking of the logs at the landing after the horses had dropped their load of logs. It took two or three people to roll the logs up into the pile with a peavey.

I asked about one pair of horses and was told the female was around 23-years old. She was paired up with a larger, four-year old male. The team worked well together, but you could tell which was more experienced. During a demonstration of single horse logging, the older female was used to skid the logs, while the younger male was tied to a tree. The male did not appear to be very happy. He danced around the tree and neighed. I asked about his behavior and was told that he missed his partner, was new on the job and not used to being alone. I believe it was his first time off his home turf and he was excited by all the people and activity.

One thing I noticed about the oxen was the simple harness composed of a wooden yoke and a chain between the oxen. Bob Farnham, the teamster, of Chatham, New Hampshire, did not have reins. He had a twitch and gave verbal commands. He had been working his pair of Holstein oxen, which are twins, for ten years.

I learned an interesting fact from Bob about oxen. I thought oxen were a unique species, not just a cow. Bob's black and white oxen looked like cows to me. He told me the difference, and I will try to keep it straight. If a calf is born male, he is called a bull. After the bull is castrated, he is called a steer. When the steer begins his training, he is called a working steer. After four years of working in the woods, he is considered an ox. A cow is always called a cow, not an ox, even if she works in the woods. How unfair is that!

My last session was in the red pine plantation. On this site the landing was small and adjacent to a woods road. The skid roads were narrow but the horses with carts worked well in the confined space. I was surprised at the agility and maneuverability of the large animal and the cart. One team of horses, cart and operator pulled up to a red pine log, backed up into a tight space, sidestepped to face the opposite direction and backed up to the log to be

skidded. Then they pranced off to the landing to unhitch the log and have it rolled onto the pile. Two different teams of horses with different cart configurations were operating in this stand.

The primary advantages to skidding timber using draft animals (don't forget the oxen, and perhaps mules) are primarily environmental. Horses don't pollute and the impact on the forest floor is minimized. Soil compaction, erosion and sedimentation are significantly less, and because the horses are more maneuverable, the unintentional damage to trees is reduced. Many small property owners want their forest to generate income, but they are reluctant to sacrifice the aesthetics of undisturbed woods.

I also believe that it is a personal preference to skid with animals or to hire a teamster with his pair of horses to harvest your woodlot. The jingle of harnesses is easier on the senses than the rumble and exhaust of heavy equipment. Horse loggers tend to be a breed apart, driven more by principle than by fast or easy profit.

At the end of the workshop Carl noted, “I was overwhelmed by the large turnout and significant interest in the use of draft animals for forestry, and I'm grateful for the wonderful weather both days.” In a follow-up letter to all participants, he mentioned how “impressed he was by the comfortable, professional, and safe way that everyone interacted with each other, and around the animals.” Carl closed by saying, “Oh yeah! How about the weather? Three fine days, floating in the middle of the bleak, gray sea of October, created a surreal memory of an event that can best be described as ‘you should have been there.’ We are so glad you all were.”

Reference: “Four-Legged Logging,” by Karen Kirsch. *Sawmill and Woodlot Management.* December 2002.

SYRUP MAKING IN THE WINTER?

By Dan Crocker

Intellectual curiosity got the best of me and I decided to experiment with tapping trees in November. I set 7,000 spouts, got all the vacuum pump and reverse osmosis equipment up and ready, and waited. The maple tree sap ran, as I suspected it would, and I have been collecting and boiling it regularly as of this writing in late January.

I decided to make this a three-year experiment and I wanted to do several things simultaneously. One obvious thing was to test the sugar content of the sap and to see how much syrup I could make. The sap started out quite weak at 0.8 of one percent but has risen steadily and is now at 1.3 percent. I have made the equivalent of 25 percent of a regular crop, given the 7,000 spouts, and most of the syrup has been of medium amber grade. This has been a nice result.

I use both stainless steel spouts and the plastic health spouts, and I want to compare how long each kind allows sap to run before the holes close up due to bacterial growth. This will take some time, and obviously I have nothing to report on yet.

I plan to re-bore the November holes with a slightly larger bit when the more formal season starts this spring. This will allow me to compare those holes with the 14-15,000 new holes I will drill to see which ones of stay open longest. In addition, I have built some devices to measure the sap flow from trees in various parts of my sugarbush. These will help me compare the sap volume from the holes I have re-bored and the new holes, as well as to compare the steel spouts with the plastic spouts during the season.

NOTES FROM ELYSIAN HILLS

By Bill Schmidt, President, WOA

Thinning and Firewood Time

With Christmas tree time behind me it's time to get to a task I try to complete – at least as much as possible – in the fall of each year, the cutting of firewood for winter a year hence. This fall I got behind with Christmas tree shearing and didn't even begin cutting trees for firewood let alone bucking them. It's catch-up as a result, given my penchant to have firewood dry at least a year before it's used.

What we're talking about for Elysian Hills is seven cords of hardwood for our wood furnace, three wood stoves and a fireplace. The big consumer is the furnace. The wood stoves and fireplace receive part time use.

January turned out to be a very good month for putting down firewood trees. While too wet and warm overall for logging, most unfortunately, it was fine for the thinning I did in parts of three stands. Limited snow and pleasant temperatures on more than a few sunny and clear days provided ideal working conditions for me. Getting out for three to four hours at a time was a real pleasure (the older I get the shorter my work time, I'm 70 now). I marked trees, cut them, and then hauled them either roadside or to landing sites with my tractor and winch. My goal this month was to harvest all of the trees I need and then use the rest of the winter to buck them, stack and cover the cordwood, and take at least two to three cords to the woodshed to ensure that I have some totally dry wood to begin the winter.

When flagging trees to be cut for firewood I look first for the trees I want to save and grow for timber, sugaring, wildlife, aesthetic or other specific purposes. These trees are the so-called crop trees. Then I look around them for cull trees and other trees that are inhibiting their growth, particularly those that lack any timber or wildlife value. These are the trees I thin out and use for firewood. I always end up with a mix of species, some red and sugar maple, black and white birch, beech, even occasionally some red oak, aspen and hop hornbeam. I even sometimes include some white pine for starter wood; this gets split and dries at least two years before it's used.

When I'm ready to fell trees I make sure I'm geared up properly in both clothing and equipment. I wear chaps or Kevlar pants, steel toed shoes, gloves, and a belt with pockets for wedges, tongs, a pulp hook, and cell phone, and a safety helmet with face mask and ear bobs. I also carry a sledgehammer and sometimes a felling bar in addition to the chain saw. I also make sure the chain on the saw is always sharp.

Felling and limbing trees is always challenging. While I've had some Game of Logging training, I need to keep reminding myself to work slowly, deliberately and safely. This means carefully assessing each tree to be cut, determining where I want it to fall and what I need to do to make that happen, looking up to see if there are any loose limbs or branches, and identifying my "exit" place for when the tree begins to fall.

Trees don’t always go where I want them to go. Some also get hung up in other trees. My worst hang up ever occurred this month when a tall maple got hung up in the tops of three neighboring trees all bunched together. I ended up using the winch on the tractor to pull it down. This for me is actually the safest way to deal with hung up trees if their location allows it and I’ve got the winch to use.

Before I burn any of this wood I’ll handle each piece of cordwood four to six times. It’s clearly a lot of work, more than many care to do. For me however it’s part of my recreation and relaxation. It gets me into the woods, which I enjoy, and provides some exercise. And there’s always a tangible result to one’s work, and lessons to learn.

A FIREWOOD PRIMER – PART 1

By Bill Guenther, Windham County Forester

In the last year we have seen a meteoric rise in fossil fuel costs. Since many of our homes are heated with fuel oil, this has had an especially negative impact on the New Englander. With this rise in costs, we have seen a huge resurgence of folks going back to burning wood. There sure is a ready supply as the three upper New England states are the most heavily forested in the country!

Heating with wood from your own woodlot provides a cheap source of heat and a feeling of self-reliance. There are, however, some pitfalls, as it can be dirty, dangerous and time consuming. When I moved down here in 1987 I made a personal commitment to supply my winter heat from my own woodlot. In the coming issues, I'll try to offer some thoughts and tips on heating with firewood, including a tour later this year of my home woodlot to try to show one way to do it.

When deciding what wood to burn we usually think of just hardwoods. While hardwoods in general have more heat per unit volume, my old high school buddy in Alaska keeps quite warm at 50 below with his Vermont Castings stove fueled with white spruce.

Conifer or softwood trees can be used for firewood, but their pitch has the potential to gum things up a bit in your heating system. If you burn softwoods hot enough, you can minimize the creosote buildup. I am currently burning quite a bit of hemlock, which I use when I first get home and run the furnace full open. The hazard with hemlock is that moisture is held in the cells and it can pop sparks quite a distance. So it’s better used in the basement furnace than the living room fireplace, with nice wood floors.

Most of us want to burn quality hardwood. There are, I believe, some myths and outright discrimination surrounding certain species of wood. Many folks shun paper (also called white) birch as firewood. But in the chart I use, the BTU yield of a cord of paper birch exceeds the BTU's from a cord of black cherry. An important point about using paper birch is that it can't sit out on the ground for any length of time. It needs to be cut and stacked off the ground promptly, so rot does not set in.

Now for the trick question: Which has more heat, a pound of popple or a pound of rock maple? Answer: They're both about the same! The trick is in the unit of measure, which is weight and not volume. For deciduous trees, pound for pound they are about the same. If I asked which has more total heat, a CORD of popple or a cord of rock maple, the maple would come out with about 75 percent more heat.

The heat value of the different species is usually compared on a basis of how many millions of BTU's there are per cord. A standard cord contains 128 cubic feet of stacked wood, including the air space, or 80 cubic feet of

solid wood. When you are looking at how much heat value there is in wood, you also must consider the moisture content. Most charts assume air-dried wood at a 20 percent moisture rate. Drying wood is a real obsession of mine, and I'll cover that in a later article. A sneak preview on this topic is that most folks I know aren't burning dry wood. Below is a listing of what the BTU value is of many of our local woods. There are some real surprises. The non-native black locust is the top dog for heat value, but if you are using balsam fir, you'll feed your stove much more often. The values listed below do assume a number of factors such as stack temperatures and stove efficiency, and you may see different BTU values listed in other charts for the same species of wood. The important point is to use them comparatively within the same chart.

Heat Equivalence: Wood and No. 2 Fuel Oil

Wood	Available heat of one cord (Btu's)	No. 2 Fuel Oil (gals.)
Apple	23,877,000	244
Beech	21,800,000	222
Hickory	23,477,000	240
Ironwood	24,100,000	246
Locust	24,600,000	251
White oak	22,700,000	232
White ash	20,000,000	204
White birch	18,900,000	193
Yellow birch	21,300,000	217
Black cherry	18,770,000	191
Sugar maple	21,300,000	217
Red oak	21,300,000	217
Elm	17,200,000	177
Soft maple	18,600,000	190
Tamarack	18,650,000	190
Popple (aspen)	12,500,000	128
Basswood	11,700,000	119
Butternut	12,800,000	131
Balsam fir	11,282,000	115
Hemlock	13,500,000	138
White pine	12,002,000	123
Red spruce	13,632,000	139

Logging is #1 on the list of "10 Most Dangerous Jobs" according to a report of the U.S. Department of Labor's Bureau of Labor Statistics. Fatalities of logging workers are 92.4 per 100,000 employed. Logging and timber workers' duties include cutting down trees and cutting and moving logs and providing raw material for countless products. The nature of their work puts them at constant risk of being killed by heavy, falling objects.