VERMONT FORESTRY LETTER SERIES

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Non-Timber Forest Products & Forest Enhancement

SEEING THE FOREST FOR MORE THAN THE TREES

Vermont's woodlands are defined by their trees – "Northern Hardwoods", "Spruce-Fir", "Oak-Pine", but these forests also offer many other, non-timber benefits to the attentive and resourceful observer. For thousands of years prior to Euro-American settlement, the Western Abenaki people who inhabited Vermont based much of their hunting and gathering subsistence upon these diverse resources. Today, plant-based forest materials gathered for uses other than lumber or wood fiber are commonly known collectively as Non-Timber Forest Products (NTFPs).

In Vermont, NTFPs contribute over $20 million each year to the economy and include maple syrup, birch bark, fiddlehead ferns, medicinal and edible wild herbs, wild mushrooms, berries, and evergreen boughs for holiday decorations. In some cases woodland owners build a NTFP income around a hobby, such as the woodworker who produces bowls from cherry burls. More often, NTFP artisans purchase raw materials from multiple woodlots to meet their needs. The resulting products often supply other local businesses, or are marketed out of state where they command higher prices. In addition to adding value to local resources and diversifying Vermont's economy, the NTFP industry helps to keep forest-based knowledge and skills alive and reinforces the connection of our communities to the forest.

As is true of poor logging practices, unsustainable harvest of NTFPs can result in a degraded and less productive forest ecosystem. Currently few guidelines exist for sustainable NTFP harvest, with the exception of well-researched products such as maple syrup. Instead, sustainable harvest often depends upon the diligence and experience of the landowner or collector, including an awareness of the harvest frequency and intensity in a given area, a thorough understanding of a plant species' life history and tolerance to harvest, and above all, a priority to maintaining a healthy population of the plant (even when market prices are high). Overharvesting by collectors has caused some plants in the state to become rare, most notably American ginseng.

PROTECTED PLANTS

wild lupine

Vermont's Endangered Species Law (10 V.S.A. Chapter 123) provides protection for plants listed by the state as Threatened or Endangered, with fines of up to $1,000 if these species are damaged or removed. There are currently 63 state endangered and 91 state threatened plants in Vermont. Endangered plants are considered to be in immediate danger of being extirpated (eliminated) from the state and include wild lupine, small whorled pogonia, lesser pyrola, golden-seal, marsh valerian, and (yes, it's true) bashful bulrush. Among the threatened species in Vermont - those deemed highly possible of becoming endangered in the near future- are wild senna, flowering dogwood, wild garlic, red mulberry, and ram's head lady's-slipper.

Golden seal

Dendrology clue #1: The fruit of this tree is cone like, cylindrical 1 to 1 1/2 inches long, deciduous at maturity, releasing elliptical 2-winged nutlets, it matures in the autumn and disperses nutlets over the winter.

Your second quiz: ↓☺

Dendrology Challenge #2: Dendrology is the botanical study of trees. Each forestry letter will highlight an important Vermont tree by displaying its leaves, seeds, nuts or silhouette within the issue. Can you guess what tree it is? Why is it important? What benefits does it provide to people, wildlife or the environment? See the clues throughout this letter and the answer on page 8 (no peeking!).

Over one hundred other plant species are recognized as very rare or rare in the state and are tracked by the Vermont Dept. of Fish and Wildlife Nongame and Natural Heritage Program (VTNNHP), but these do not receive special protection. For a complete list of rare, uncommon, threatened and endangered plants in Vermont, visit the VTNNHP website at www.vtfishandwildlife.com/wildlife_nongame.cfm


Lesser pyrola

While Vermont statutes do not forbid collectors from harvesting on private unposted land, landowners do have the right to request that a person leave their property or to stipulate that certain activities, such as the collection of plants, not be permitted there. As is true with timber harvests and loggers, it is always advisable for landowners to draw up clear contracts with NTFP collectors who are gathering on their property.

Frequently Asked Questions about Threatened and Endangered (T & E) species:

- How likely is it that I have a T&E species on my property?

Because of their rarity, these species are unlikely to be found on any given property. Nevertheless, with the majority of land in the northeast in private ownership, over 75% of T& E species are found on private lands. Also some rare species can occur in common habitats (the small whorled pogonia is one of the rarest wild orchids in eastern North America, yet it is found mainly in former pastures or areas with past timber harvests).

- I couldn't tell a rare plant from a radish, how can I find out if any exist on my property?

Vermont's Nongame and Natural Heritage Program keeps records of the locations and trends of many rare species and can help landowners or managers gauge the likelihood of these species occurring in a certain area. Contact information for this resource is provided below.

- Is there help available for protecting T&E species?

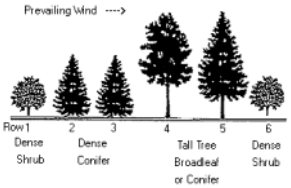
Yes. The Landowner Incentive Program (LIP) provides funding and technical assistance to landowners for actions that benefit at-risk species (including T&E plant species) and natural communities. Currently, land located in the Champlain Valley is given higher priority, particularly if it impacts Valley Clayplain Forest or Sandplain Forest natural communities, **but assistance is provided statewide.** The program is administered by Vermont Dept of Fish & Wildlife and staff biologists custom design each project based upon landowner needs, the property, and the species found there. Funds can be allocated to the purchase of conservation easements or reimbursement for land management **plans**. For more information, contact the programs coordinator and botanist, Jane Lazorchak, at 802-479-4405 or Jane.Lazorchak@state.vt.us.

SPECIAL MANAGEMENT APPLICATIONS

Several types of management involve trees, but have goals other than sawlogs or pulp. At one extreme, these uses mimic traditional agriculture by focusing on a single crop (Christmas trees or maple syrup). Others blend the lines between farming and forestry – such as agroforestry or permaculture. Finally, there are forest applications with a specific non-timber goal such as riparian management or biomass production.

WINDBREAKS –

Also known as shelterbelts, windbreaks are row plantings of trees or shrubs that are established in field environments as protection from the wind, and to provide other benefits including aesthetics, noise reduction, control of blowing snow, and enhancement of wildlife habitat.



For Human Comfort: Our bodies lose heat quickly when exposed to wind and the stronger the wind, the greater the cooling effect. For example, at 10° F a 30 mph wind causes the same heat loss from exposed skin as temperature of minus 33° F with no wind. A dense windbreak can reduce a 30-mph wind to less than 10 mph, in turn cutting the wind chill by more than two-thirds. Well-placed windbreaks can also protect homes from winter wind, potentially reducing energy costs by over 30%.

Dendrology clue #2: The form of this tree is a medium sized tree to 70 feet tall with a pyramidal or irregular crown, often with several trunks.

To Protect Crops: Strong winds reduce yields and level crops before maturity, ruining them or making them difficult to harvest. Studies have shown that plants begin to be affected when wind speeds exceed 7 mph. Windbreaks help to retain exposed soil and modify the microclimate on the lee side of the barrier, reducing desiccation, helping crops mature earlier, improving crop quality, and increasing yields by as much as 20% in the leeward field area.

For Wildlife Habitat: From insects to songbirds to mammals, windbreaks improve habitat for wildlife by providing travel cover, safe areas for raising young, and a diversified source of food in an otherwise simplified environment. In the summer, these areas provide homes for insect-eating birds close to cropland. In winter, when many other food sources are inaccessible, windbreak vegetation provides seeds and fruits for non-migratory bird species like the cedar waxwing and northern cardinal, as well as lookout perches for predatory northern shrikes and great horned owls.

As Living Snow Fences: Properly located living fences of trees and shrubs parallel to a driveway or highway help to hold the snow on the fields and off the roads. Leaving at least 125-150 feet of space between the windbreak and the road prevents shading from causing icy conditions.

An ideal windbreak will have a diversity of full-sized and deep-rooted conifers, fruiting shrubs, and a few deciduous trees. These should be planted in 3 to 10 rows, roughly 10- 20 feet apart, with shorter shrubs on the outside rows and the taller conifers and hardwoods on the inside. A staggered placement will allow for the plants to develop fully, while limiting gaps where wind or snow could pass through. Windbreaks should also be designed perpendicular to the prevailing winds and located at a distance 4-6 times the height of the mature trees west or northwest of the area needing protection.

As with all plantings, windbreaks should utilize species native to Vermont, such as northern white cedar, white and red spruce, balsam fir, black cherry, serviceberry (multiple species), staghorn sumac, highbush cranberry, and red osier dogwood. For a list of other native plants appropriate for windbreaks, along with their growth and habitat information, visit plantnative.org

Dendrology clue 3: The bark from this tree is the subject of current medicinal research on finding a cure for skin cancer.

RIPARIAN BUFFER MANAGEMENT

Riparian buffers - bands of trees and shrubs bordering streams, lakes, ponds, and wetlands- **provide the single most effective safeguard for water resources in Vermont.** Whether in a forested or open setting, riparian buffers facilitate multiple critical ecosystem functions and warrant special management considerations and effort.

Vegetation along a water body buffers the aquatic environment first by filtering sediments carried by surface runoff. If allowed to enter the stream, sediment blocks sunlight, increases water temperature (lowering oxygen-holding capacity), buries stream habitat features, and interferes with the life processes of fish and aquatic insects. Sediments also transport phosphorus, which can be very damaging to an aquatic system in high concentrations. By filtering sediments, riparian buffers capture 80-85% of transported phosphorus, preventing it from entering the water.

Similarly as much as 80% of nitrogen, another potentially damaging nutrient in aquatic systems, is converted by chemical and biological processes in riparian forests into gaseous forms or is assimilated by plant growth and stored in woody tissue. Even toxic chemicals like pesticides can be broken down through microbial decomposition, chemical processes, or other biodegrading forces at work in the soil and litter of the streamside forest.

While diverting potentially harmful nutrients, the riparian buffer also *introduces* to the aquatic ecosystem a metabolic fuel source in the form of carbon. In small, well shaded upland streams, as much as 75% of the organic food base may be supplied by dissolved organic compounds or detritus such as fruit, limbs, leaves and insects that fall from the forest canopy. Benthic detritivores, the stream bottom bacteria, fungi and invertebrates that feed on the detritus, form the basis of the aquatic food chain. They pass on this energy when they are consumed in turn by larger benthic fauna and eventually by fish. Thus the streamside forest functions as an important energy source for the entire aquatic food chain from headwaters to estuary.

As an interface between aquatic and upland habitats, riparian buffers host an unusual diversity of plant species, in turn providing critical habitat for many types of wildlife. Over 90% of the wildlife in the northeast use riparian ecosystems and over 40% of these species prefer these habitats. The effectiveness of a buffer is determined largely by its width, though the width needed can vary widely depending upon such factors as slope, soil type, size of stream, and specific site goals. Commonly recommended buffer widths are 50 feet for small streams and 100- 330 feet for larger rivers or lakes.

Plant establishment is an important part of most riparian buffer restoration initiatives. Appropriate buffer design, planting techniques, and species mix can vary from site to site and are best identified with the help of a local expert. Vegetation can be established by seeding; planting vegetative cuttings; or using nursery-grown bare-root, potted, or burlap-wrapped specimens. Native species should be used whenever possible.

Many non-profit, state, and federal programs provide technical assistance and/or financial incentives for landowners wishing to create or improve riparian buffers. These include the Conservation Reserve Enhancement Program (CREP), Environmental Quality Incentive Program (EQIP) or the Wildlife Habitat Incentives Program (WHIP). For more information about these programs, contact your local Farm Service Agency or Natural Resources Conservation Service

TREE PLANTING 101

Whether the ultimate goal is a riparian buffer, windbreak, wildlife habitat improvement, Christmas tree or timber/nut/fruit production, successful planting of trees and shrubs requires thoughtful planning and preparation. Plantings are often done in areas dominated by grasses, where competition for soil water and nutrients is intense and natural community types are unclear. Correct site and species selection is important and must take into account many factors, including moisture conditions, soil types, herbivory, slope and exposure. Again, local experts are often helpful in designing the appropriate planting strategy for a given location.

Site Preparation: Depending upon the goals, species involved, resources available and acreage to be planted, site preparation may be minimal or extensive. With some plants, such as willow, green ash, dogwood, and poplar, cuttings can be gathered during the dormant season and then planted in moist areas early in the spring, before the leaves begin to emerge. Cuttings can be inserted directly into soft ground or a planting bar can be used. These methods require little site preparation and can often utilize local planting stock, though the mortality rate may be quite high.
In cases where a high survival rate is important, more intensive site preparation and more developed plant stock are recommended. If grass or brush occupies the site, then the area should be mowed and each row should be plowed or disked back to expose the soil and to remove competing vegetation. Transplants, seedlings that were grown an additional year in a transplant bed, generally have larger root systems and stems and are recommended for harsh growing sites or for slow-growing conifer species such as balsam fir or the various spruces.

Planting: If more than 5,000 seedlings are to be planted, it may be preferable to rent a planting machine. The machine digs furrows at the desired depth and automatically fills the furrow behind the seedlings. Hand planting can be done using the following process:

(1) Carry seedlings in a bucket of water; taking only enough to last the length of a row. The remaining seedlings should be left in a cool, shady location. *Always protect seedlings and their roots from direct sunlight, heat, and wind- storing them no longer than 3 days (in temperatures 35-45 degrees F) before planting.*
(2) Prepare a hole large enough to contain the root system using a grub hoe, shovel, flat spade, or planting bar.
(3) Place the seedling in the hole; if need be, prune the longer roots to about six (6) inches. Make sure all the roots are buried and the seedling is standing straight. Plant the seedling at the same depth as it grew at the nursery. Make sure all of the roots are pointed downward (i.e. not "J" rooted).
(4) Firmly pack the soil around the roots using the heel of your shoe. This will eliminate any air pockets that may cause the roots to dry out and kill the seedling.
(5) If you plan to mow around the seedlings, mark your plantings with flagging or stake the rows. Mulching plantings with straw, wood chips, bark mulch, or even cardboard can help to inhibit competition from other plants while the seedlings are establishing.

Dendrology clue #4: Thieves in the Greater Adirondack Park in 2007 stripped the bark from several of these trees to sell as wallpaper, essentially killing them because the trees were not scheduled to be harvested and they had been cut into the cambium (living) layer of the tree.

CHRISTMAS TREE PRODUCTION

Vermont is one of 47 states where Christmas trees are grown, and the state produces about 150,000 trees each year from over 350 growers. While Christmas tree production can yield a net profit of $2-$6 per tree (with roughly 1,000 trees possible per acre) the aspiring grower should be prepared for a large measure of labor and risk to achieve this gain. To be successful in today's market, a grower must produce high quality trees of the preferred species, and must be willing and able to make the up-front investment required.

Many species are sold as Christmas trees, including white pine, Scots pine, blue spruce, and fraser fir. One of the most popular varieties, and a native to Vermont, is balsam fir. This species prefers fine textured loamy and well-drained soils and requires 8-10 years to reach a marketable height.

Christmas tree farms can range in size from under twenty to several hundred acres, and in either case the crop must be managed carefully to ensure a balanced workload and sustained production. Roughly one tenth of the total acreage should be planted each year, while annual tending of earlier plantings will also be required. Some of the responsibilities of a Christmas tree operation include:

* Identifying an appropriate source of land (well drained soils of suitable texture, minimal slopes, minimal surface rock, good access, and sufficient acreage to sustain an annual profit)
* Planting seedlings every April
* Controlling competing weeds or grass through mowing or other means (many growers use chemical herbicides such as Roundup to control weeds)
* Shearing each tree over 3-4 years old after August 1st (for balsam fir- dates vary with other species)
* Marketing trees to wholesale buyers or in local communities between October and December, including harvesting and possibly baling/ trucking trees
* Constantly monitoring tree growth and health, and preventing or responding to insect or disease outbreaks or damage from voles, rabbits, deer, livestock or other causes

If you are undaunted (or inspired) by this list, then you may have a promising future as a Christmas tree grower!

MAPLE SYRUP

When late winter temperatures rise above freezing during the day, and fall below freezing at night - it's time for maple production to begin. In the past, sugaring seasons arrived on average in Vermont about mid March, but with climate change this date has crept up to late February (or earlier) in many locations. The season ends when buds begin to swell, usually by early April.

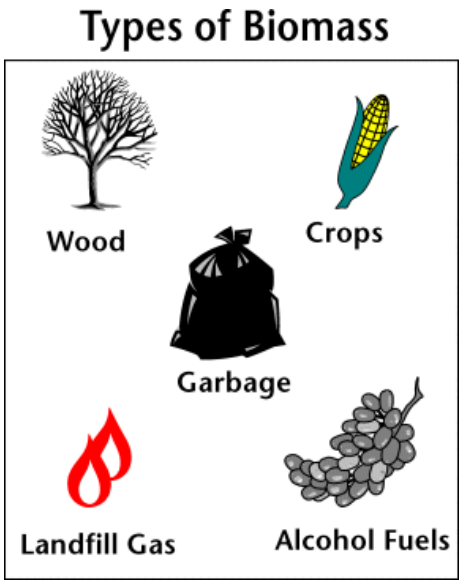
Although many tree species, including red maple, the birches, butternut and basswood produce a sweet sap, sugar maple is the sweetest, with an average sugar content of 2.2%. As a result, roughly 30-40 gallons of sugar maple sap will yield one gallon of maple syrup when boiled down to the proper density (much more sap would be needed from the other species).

To maintain their long term health, maple trees should not be tapped until at least 12 inches in diameter (about 50 years old) and no more than two taps should be used on very large trees. The depth of the hole recommended is between 1.5 and 2 inches. In recent years smaller diameter taps (5/16" health spouts) have been introduced, which greatly reduce damage to the tree while having little or no impact on sap flow. Wounds that are 5/16 inch by 1/12 inch heal very quickly, especially on younger vigorous growing maples. Each tap will yield roughly 10 gallons of sap per season, or 1 quart of syrup. The highest yields result if a sugarbush is carefully and gradually thinned, selecting the "sweetest" and healthiest trees with the fullest canopies (a forester can help to ensure that the proper tree density and species diversity is maintained during this process). Many small-scale hobbyists collect sap each year from a handful of trees using metal or plastic spouts and buckets, then boil the sap down to syrup using simple homemade outdoor pans. At the other extreme are the multi-thousand-tap commercial operations, which maximize efficiency using tubing, vacuum systems, reverse osmosis filtration, and large oil- fueled evaporators. With syrup at over $50/gallon retail value, sugaring is not only an interesting and fun time-honored tradition, but also a pretty sweet deal!

Dendrology clue #5: Native Americans used this tree for containers of every kind, large and small – from wigwams and canoes to fishing creels.

Many large sugarmakers in Northern Vermont report the need for additional maple syrup to meet the current and projected worldwide demand of this Vermont made hallmark.

Remember, although you may want to minimize production costs, maple syrup is a food product and should be produced with equipment and materials that are approved for food applications.



BIOMASS

The general term biomass, when used in relation to energy, refers to any living or recently dead biological material that can be used to produce heat, electricity, or fuels. Trees cut into firewood and burned in woodstoves are a familiar example of biomass energy. Based on our last Residential Wood Heating Survey (2007-2008 heating season) and 2009 consumption figures for all other wood fuel users, residential firewood is the largest single use of woody biomass for energy in Vermont… just over 50% of all the wood used for fuel!

Today there is a mounting interest in the use of forest biomass in other forms to provide a renewable energy alternative to fossil fuels. Currently whole trees or the boles (main stems) of trees are chipped and these chips are burned in boilers to produce heat, to produce steam that is converted into electricity, or processed into wood pellets. Wood biomass can also be processed to create liquid fuels that can be used in combustion engines or fuel cells.

As the cost of electricity and fossil fuels rise, use of biomass energy has been expanding in the state. In addition to large-scale power generation plants in Ryegate and Burlington, over 40 schools, two State office complexes, a hospital and several college campuses around Vermont are now heated by wood chip biomass boilers. Currently wood provides about 6% of electricity and heating needs in Vermont, and this number is rising steadily.

For the woodland owner, the going stumpage rate for wood chips ($1-2/ton – one cord is roughly 2.5 green tons) still gives a value considerably less than the value of sawlogs, and slightly less than the value of hardwood pulp. Biomass energy can provide a viable market for low grade wood, including tree tops; allowing landowners to complete timber stand improvement and thinning treatments that might otherwise only be accomplished at an out-of-pocket cost. However, it is also important to remember that wood is never wasted in a forest ecosystem. Tree tops, standing snags and fallen tree trunks supply vital habitat for a host of forest wildlife, help retain moisture, and ultimately provide valuable organic matter and nutrients to forest soils. Although wood biomass offers a valuable contribution to Vermont's energy future and the potential for a consistent market for low grade wood, care must also be taken to recognize the importance of leaving some wood in the woods. For link to VT Wood Fuel Supply Study: 2010 Update see: biomasscenter.org/images/stories/VTWFSSUpdate2010_.pdf

MATCHING GAME

For many landowners expansion into the Non-Timber Forest Products (NTFP) sector is a way to provide extra income for the family farm and scratch that creative hobby itch. Match the product ideas below with the tree or plant it would come from. Tip: Each plant may have multiple uses for its roots, bark, sap, pitch, gum, stems, needles, seeds or cones!

A Edibles
B. Medicinals
C. Home Scents & Furnishings
D. Floral Industry
E. Basket Industry
F. Smoking Woods

1. Birch
2. Mushrooms
3. Sugar Maple
4. Balsam Fir
5. Fiddleheads
6. Red Osier Dogwood & Willow
7. Red Spruce
8. Brown or Black Ash
9. Witch Hazel, Goldthread, Ginseng
10. Apple & Alder

Don't forget you can sell maple sap - not just make syrup!
In fact many operations are wanting to expand and looking for sap to buy!

Answers:
1. A,B,C,D,E 2. A,B,C 3. A,C 4. B,C,D 5. A,D 6. C,D,E

Resources:

The Intervale Center- Conservation Nursery with native tree and shrub species, located in Burlington, VT; 802-660-0440

USDA Service Center Natural Resources Conservation Service -NRCS offices for Lamoille (Corey Brink- (802) 527-1296 x118)) & Orleans Counties (Dave Blodgett- (802) 334-6090 x25))

Vermont State Farm Service Agency (FSA) office- Colchester, VT- (802) 658-2803
Vermont Nongame & Natural Heritage Program- VT Fish & Wildlife Department, (802) 241-3717

North American Sugar Producers Manual (2nd Edition)- Editor Kurt Knebusch, Ohio State University Extension. 2006. (614) 292-1607, or pubs@ag.osu.edu.

Nontimber Forest Products Management on National Forests in the United States. McLain, Rebecca J. and Eric T. Jones . Portland, OR: U.S. Department of Agriculture. 2005.

Forest Landowner's Guide to Evaluating and Choosing a Natural Resource Based Enterprise, Kays, Jonathan S. and Joy Dohan **NRAES-15**. Ithaca, NY: Natural Resource, Agriculture and Engineering Service. 2004.

Non-Timber Forest Products in the Unites States. Edited by Eric T. Jones, Rebecca J. McLain, and James Weigand. University Press of Kansas. 2002.

Proceedings of the North American Conference on Enterprise Development Through Agroforestry: Farming the Forest for Specialty Products. Josiah, Scott J., ed. St. Paul, MN: Center for Integrated Natural Resources and Agricultural Management. 1999.

Income Opportunities in Special Products—Self Help Suggestions for Rural Entrepreneurs, USDA, Forest Service, Agriculture Information Bulletin #666. 1993. Go to nal.usda.gov/ref/USDApubs/aib.htm

Christmas Trees: Growing and Selling Trees, Wreaths, and Greens- Author Lewis Hill. Storey Publishing LLC. 1989.

Goldthread Consulting- Allaire Diamond, local resource on non timber forest products goldthreadconsulting.com

WEBSITE REFERENCES –

arborday.org (Arbor Day Foundation). "How to Plant Trees"

biomasscenter.org (Biomass Energy Resource Center)

crjc.org/riparianbuffers.htm#forest (Connecticut River Joint Commissions)
Riparian Buffers for the Connecticut River Valley. Many resources about riparian buffers appropriate for Vermont and New Hampshire.

extension.iastate.edu/publications/pm1716.pdf (Iowa State Extension)
An overview of windbreaks, their benefits and implementation.

extension.umn.edu/specializations/environment/ntfp.html (University of Minnesota extension)
Non-Timber Forest Products and Implications for Forest Managers

www.fs.fed.us (US Forest Service)
"Publications" - "A Soil Bioengineering Guide for Streambank & Lakeshore Stabilization"; "Research & Development" - "Search for all Research Publications" - Northeastern Research Station" (see pubs. #15, #144, #271, #404, etc.); "State & Private Forestry" - "Forest Health Protection" - "Forest Health Management" or "Tech Assistance" - "How to Publications"

fsa.usda.gov/FSA (Farm Service Agency). Click on State Offices link to access local resources

ifcae.org/ntfp (Institute for Culture and Ecology)
Non-Timber Forest Products of the Unites States- species database and internet links

na.fs.fed.us/spfo/pubs/wildlife/endangered/endangered.htm (USDA Forest Service)
Provides an overview of Threatened and Endangered species and the private landowner

nal.usda.gov/afsic (Alternative Farming Information Center)
Publications – "Agroforestry"; Hot Topics - "List of Alternative Crops & Enterprises"

WEBSITE REFERENCES Continued –

plants.usda.gov (USDA Plants Database). Plant Topics - "Alternative Crops"

privateforest.org (Nature Conservancy/US Forest Service). "Forest Management 101"

unl.edu/nac (USDA National Agroforestry Center)
"Riparian forest buffer"; "Forest farming" (ginseng, mushrooms, etc.)

uvm.edu/~pmrc/ (Proctor Maple Research Center- University of Vermont)

vermontmaple.org (Vermont Maple Sugar Makers Association)

vtfpr.org/urban/for_urbcomm_library.cfm (Vermont Division of Forestry)
An excellent resource for tree planting, tree care, and other related topics

vt.nrcs.usda.gov (Natural Resources Conservation Service)
Information about CREP, WHIP, EQIP and other conservation cost-share programs and resources for land owners

hwwff.cce.cornell.edu/learning.html How, When and Why of Forest Farming. (Cornell Extension)

fao.org/forestry/nwfp/nonwood.htm (Food and Agriculture Organization of the United Nations). Non-Wood Forest Products Information Bulletin

www.fs.fed.us/ne/burlington/research/ne4454/nontimb/ This site contains information on gathering skills, livelihoods, products, uses and more.

www.sfp.forprod.vt.edu/pubs/pubs.htm Serves as a national clearinghouse for NTFP harvesters and growers, marketers, processors and end-users.

agroforestry.net/overstory/overstory.html The Overstory is a free email agroforestry journal for practitioners, researchers, professionals and enthusiasts.

herbalgram.org Contains research reviews, grants, conference reports, book reviews, and legal and regulatory information.

cle.royalroads.ca Supports the sustainable utilization of NTFPs in the temperate and boreal regions of the world.

Agroforesters Library: agroforestry.net/aflibr.html

The Northern Vermont RC&D- Resource Conservation & Development Council would like to thank the following folks for making this issue happen:
Jane Lazorchak–VT Dept of Fish & Wildlife 802-479-4405
Paul Frederick–VT Dept of Forests, Parks and Recreation 802-241-3698
Dan Kilborn -Vermont Land Trust 802-748-6089 or dan@vlt.org
Jayson Benoit-NorthWoods Stewardship Center 802-723-6551 x113
Check out the center's full listing of great workshops @ www.northwoodscenter.org

Coming up next.... Issue #3,
Enhancing Forests for Wildlife hosted by Vermont Department of Forests, Parks & Recreation

To contact RC&D about this letter or the Forestry Letter Series call 802-828-4595 or beth_ann.finlay@vt.usda.gov

Dendrology Challenge Answer #2:
Paper Birch, Betula papyrifera
Sources: U.S. Forest Service, University Extension System, Nearctica, the Pennsylvania Dept of Conservation and Natural Resources and the Energy Information Administration.