Afoot in the Field:
A Resource for Conservation Landowners in the Finger Lakes Region

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One of the biggest reasons I have for owning a pick-up truck is that I need it for hauling firewood. By heating my house with local hardwood that I find for free or low cost, I save a lot of money that would be spent on fueling my propane furnace. Much better that my furnace sits there quietly as a back-up heat source.

But money isn't the only reason that I choose to use a woodstove as a primary winter heating source. The whole process of finding, cutting, splitting, stacking, hauling, and then burning the firewood is something that I enjoy. I'd rather get my exercise and fresh air that way than go for a jog. I love to be in the woods and use the machinery involved. I love to see the pile come together as summer progresses into fall. And I enjoy the type of heat it provides in the house. I feel good about relying on a renewable, local fuel source rather than a non-renewable fossil fuel that may come from far away and contributes far more to climate impacts. And I love to sit on the couch by the stove and stare at the orange coals and beautiful flames flickering behind the glass window.

Anyone choosing to heat their home this way needs to be prepared for the tradeoffs, however. I like to say that firewood heats you at least two or three times, especially if you hand-split your wood with a maul like I do. There are several considerations when you do it by yourself: chainsaws, tractors, trucks, and wood splitters need to be used safely; there needs to be room for the woodpile; chimneys need to be cleaned and maintained; there should be a back-up heat source for when you are away; and it is hard work. In addition, some urban and suburban municipalities have restrictions on wood burning systems. Having firewood delivered to your home raises its cost but alleviates some of the tradeoffs and can still be more affordable than fossil fuel.

All in all, using firewood is part of a rural lifestyle choice. It's part of what makes me happy about living in the country. If you are not accustomed to dealing with wood as a home heating fuel but are thinking about it, hopefully you'll find some value in the information we provide in this issue of Afoot in the Field.

Chris Olney
Director of Stewardship

Heating with Wood

By Ben Tolles, student intern, and Chris Olney, Director of Stewardship

Despite the National Oceanic and Atmospheric Administration's forecast of a mild winter in the northeastern U.S. this year due to the El Nino climate pattern, the onset of winter is an opportune time to consider using firewood as an alternate fuel source.

Across the U.S. this winter, about 2.5 million households are expected to use wood as their primary fuel source, according to the Energy Information Administration's Short-Term Energy Outlook; this represents only 2% of all households but is a 39% increase since 2004. Nearly 9 million additional households use wood as a secondary heating source. Saving money is typically the motivating factor for using wood heat. The trade-off is that dealing with firewood can be a lot of work.

With an abundance of rural lands covered in forests of oak-hickory and northern hardwood tree species, the Finger Lakes region is an ideal location to choose wood heat. For landowners that have their own equipment and are able to harvest wood from their own properties, the heating bill savings can be dramatic – virtually zero, except for the equipment, time, and labor involved. For land owners who don't have the ability to harvest their own wood, buying firewood can still provide savings. When compared to other fuel types, wood is usually the least expensive fuel choice, as shown below:

Fuel	Cost
Wood	$11-30
Coal	$13
Natural Gas	$13-21
Wood Pellets	$19
Heating Oil	$21
Electricity	$16-53
Propane	$28-33

(Based on market pricing as of Nov. 2015;
cost represents dollars per one million BTU)

Shagbark hickory

Wood can become more expensive than some traditional fossil fuels when the energy content of the wood is low. The price of buying wood also varies depending on whether it is already split or not, green or dry, and if it is delivered to your property. The differential heating cost range of some other fuel sources such as natural gas and electricity results from different system efficiencies. For example, heating with electricity will cost $53/MBTU when you heat with a typical baseboard/room heater, but will only cost $16/MBTU when you heat with a geothermal heat pump.

When comparing heating costs it's important to take into account the current and fluctuating cost of fossil fuels. Currently, natural gas and oil are relatively inexpensive, however, the prices of these fossil fuels are notoriously unpredictable. Wood, on the other hand, traditionally has a more stable price.

White oak
Photo by Adamantios via Wikimedia Commons

Typically wood is sold by the cord, which is defined as a stack of wood that is 4 ft x 4 ft x 8 ft (or 128 cubic feet). Each cord of wood, however, is not created equal.

Different tree species can provide very different amounts of energy to heat your house. For example, a cord of shagbark hickory will provide 25.3 million British Thermal Units (MBTU) per cord, while a cord of white walnut will provide only 13 MBTU. (BTU is a measurement of energy released by a fuel source, in this case wood, when burned; one MBTU is roughly equivalent to 1 therm, a measurement typically used by natural gas companies). It's important to note, that while shagbark hickory will supply 90% more energy than walnut, a cord of hickory would also weigh almost double that of a cord of walnut.

Energy Content of Tree Species that are Common to the Finger Lakes Region

Tree Species	Pounds per Cord	MBTU/cord
Hickory, Shagbark	4,080	25.3
Oak, White	3,910	24.2
Hickory, Bitternut	3,825	23.7
Locust, Honey	3,825	23.7

Tree Species	Pounds per Cord	MBTU/cord
Locust, Black	3,740	23.2
Maple, Sugar	3,740	23.2
Beech, American	3,655	22.7
Oak, Red	3,570	22.1
Birch, Yellow	3,570	22.1
Ash, White	3,485	21.6
Apple	3,485	21.6
Walnut, Black	3,230	20.0
Maple, Red	3,230	20.0
Birch, White (Paper)	3,230	20.0
Tamarack (Larch)	3,145	19.5
Birch, Gray	3,145	19.5
Hackberry	3,145	19.5
Cherry, Black	3,145	19.5
Elm, American	2,975	18.4
Sycamore, American	2,890	17.9
Boxelder (Maple Ash)	2,890	17.9
Maple, Silver	2,805	17.4
Catalpa (Catawba)	2,380	14.8
Compressed Sawdust Logs *	2,000	16.5
Willow	2,295	14.2
Basswood (Linden)	2,210	13.7
Aspen, American (Poplar)	2,210	13.7
Butternut (White Walnut)	2,125	13.2
Pine, Eastern White	2,125	13.2
Cedar, Eastern Red	1,955	12.1

Measurements at 20% moisture content.
MBTU = Million British Thermal Units
* Compressed sawdust logs sell by weight, not volume; BTU content given is for one ton (2,000 lbs)
Source: https://chimneysweeponline.com/howood.htm

The price of buying and installing a new wood burning system varies based on the type, size, and efficiency. For a typical wood stove that most people are familiar

with, prices range from around $1,200 to $3,500. For homeowners who want a larger and more fuel efficient system such as an outdoor wood boiler, or a wood pellet burner that works more like a traditional furnace, the price is much higher. The New York State Energy Research and Development Authority (NYSERDA) provides some financial incentives.

With a warm winter predicted, now may be the time to use those savings on fuel costs to switch to a new or used wood burning system. If you can find an inexpensive source of wood, or harvest it yourself, then the cost of a new system can be recouped in a few years. Wood is considered renewable, so not only would you be saving money, but also helping the environment.

Sources: *http://www.cnbc.com/2013/12/11/to-burn-less-money-consider-heating-with-wood.html*
http://www.aol.com/article/2015/10/06/lower-heating-bills-winter/21245525/
https://chimneysweeponline.com/

NY State Incentives for Wood Heating Systems:

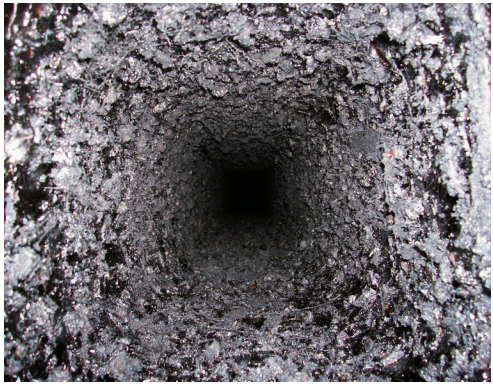
http://www.nyserda.ny.gov/All-Programs/Programs/Renewable-Heat-NY

http://www.nyserda.ny.gov/All-Programs/Programs/Renewable-Heat-NY/Residential-Wood-Pellet-Stove

Don't Burn Unseasoned Firewood!

Wet fuelwood provides much less heat, and causes much more creosote to form in the chimney, regardless of the draft control setting.

Here's why:



Creosote lining an interior chimney wall

Airtight woodstoves extract heat from wood in two ways. The primary source of heat from a woodstove is the combustion of the wood itself; the secondary source is the combustion of the gasified resins and unburned wood particles that result from the primary fire. Most modern woodstoves create up to half the heat output from the secondary burn (the amount of secondary combustion that occurs varies widely from model to model largely due to advances in heat extraction technology over the years). When you add an unseasoned or wet piece of wood to your fire, the water contained in the wood heats up and turns to steam which mixes with the exhaust gases and extinguishes the secondary burn.

Regardless of how sophisticated your baffle system is, this cuts your heat output by up to 50% and results in cool, water-laden exhaust filled with unburned particles and exhaust gases. This wet, heavy, high-density smoke travels very slowly up the chimney where it cools even further, condensing onto the walls of the flue and causing excessive creosote formation. So, when you burn unseasoned or wet wood, you dramatically decrease your heat output, while dramatically increasing the likelihood of chimney fires. Another drawback to burning wet or unseasoned wood is creosote formation on the viewing window.

Source: *https://chimneysweeponline.com/howetwd.htm*

Chimney fire resulting from creosote build-up

Build-up on woodstove window

Selecting a Heating System

When choosing a wood or pellet-burning appliance, it's important to select one that's properly sized for the space to be heated. When an appliance is too big, residents tend to burn fires at a low smolder to avoid overheating; this wastes fuel and is one of the biggest causes of air pollution. An under-sized unit will not provide sufficient heat. You should discuss your heating needs with a reputable dealer. A good rule-of-thumb is that a stove rated at 60,000 British Thermal Units (BTU) can heat a 2,000-square-foot home, while a stove rated at 42,000 BTU can heat a 1,300-square-foot space.

If you have an older wood-burning appliance, consider upgrading to one of the newer appliances certified by the U.S. Environmental Protection Agency (EPA). Some include a catalytic combustor that allows combustion gases to burn at lower temperatures thereby cleaning the exhaust gas while generating more heat. All woodstoves sold today should bear an EPA certification sticker. Higher-efficiency appliances usually have lower emissions and are also often safer because complete combustion helps to prevent a buildup of creosote. Local ordinances relating to air quality may limit homeowners' ability to install or use wood-burning stoves and fireplaces. Before installing a wood-burning system, be sure to contact your local building codes department about wood-burning regulations that may apply in your area.

Source: *http://energy.gov/energysaver/wood-and-pellet-heating*

Unattributed photos provided by Wikimedia Commons

New York State Department of Environmental Conservation (DEC) Seeks Landowners to Assist with Wild Turkey Research

New York State DEC's acting Commissioner Basil Seggos recently announced the fourth year of an ongoing research project on wild turkey survival rates.

"DEC and its partners have worked hard over the past three years to better understand why wild turkey populations have changed dramatically in New York," Seggos said. "This project will provide valuable information on turkey survival and harvest and will help evaluate the changes to fall hunting seasons implemented in 2016. I encourage landowners that have wild turkey on their property this winter to consider participating in this study."

Photo by Marie Read

Studies have shown that wild turkey populations over the past 15 years have declined in many parts of New York State. In an effort to better understand the factors influencing population changes and how these changes affect turkey management, DEC is beginning the final year of a four-year study.

Beginning in January 2016, DEC will embark on a statewide effort to capture wild turkey hens and fit them with leg bands to obtain accurate data on survival and harvest. A small number of these birds will also be tagged with satellite radio-transmitters. All of the work will be done by DEC personnel on both public and private lands from January through March.

DEC is looking for NYS landowners outside of New York City and Long Island interested in allowing birds to be trapped on their land, and willing to alert project coordinators when they see turkeys on their property on a regular basis. Once turkeys are trapped and banded, they will immediately be released at the same location. Not all locations are suitable for deploying capture equipment, so landowners should contact their regional project coordinator to discuss the suitability of their property. Observations of turkey flocks during January through March can be reported to the project coordinator for that region or can be reported using the Winter Flock Survey form found on DEC's website at: http://www.dec.ny.gov/animals/48756.html.

For more information on this project, contact the regional project coordinator or DEC by e-mail at wildlife@dec.ny.gov. "Turkey Study" should be listed as the subject line in any emails.

Roy H. Park Preserve *Photo: Bill Hecht*

The Finger Lakes Land Trust is a member supported, non-profit conservation organization that works cooperatively with landowners and local communities to conserve forever the lands and waters of the Finger Lakes region, ensuring scenic vistas, local foods, clean water, and wild places for everyone.

***Afoot in the Field** is a newsletter provided by the Land Trust for landowners in the Finger Lakes who own properties that are permanently protected with a conservation easement, or who are otherwise committed to, or interested in, land conservation and wildlife habitat protection and improvement. For more information about the Finger Lakes Land Trust and its conservation programs, visit www.fllt.org or call 607-275-9487.*

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