

The Boreal Forest eNewsletter

Interior Alaska Forest Science, Management Practices and News of Interest from the University of Alaska Fairbanks Cooperative Extension Service

From the editor:

Hi, I'm Glen Holt. I started working for the University of Alaska Fairbanks Cooperative Extension Service in December 2011 as the Eastern Alaska forester.



Previously, I worked for the State of Alaska Division of Forestry (22 years), the Alaska Department of Fish and Game (two years) and the U.S. Forest Service (four seasons) and as a private consulting forester and biologist.

This is the first issue of an e-newsletter that will initially be biannual; as interest grows, it should become a quarterly newsletter.

It is the intent of this newsletter to provide useful information and links to people interested in eastern Alaska's northern forests. The electronic format allows prompt outreach to people interested in forestry, forest management, forest stewardship, timber harvesting, forest products, forest regeneration, education opportunities, nontimber forest products and forest health topics.

Please call me at 907-474-5271 or email your questions, comments and information to Glen Holt, Eastern Alaska forester, ggholt@alaska.edu.

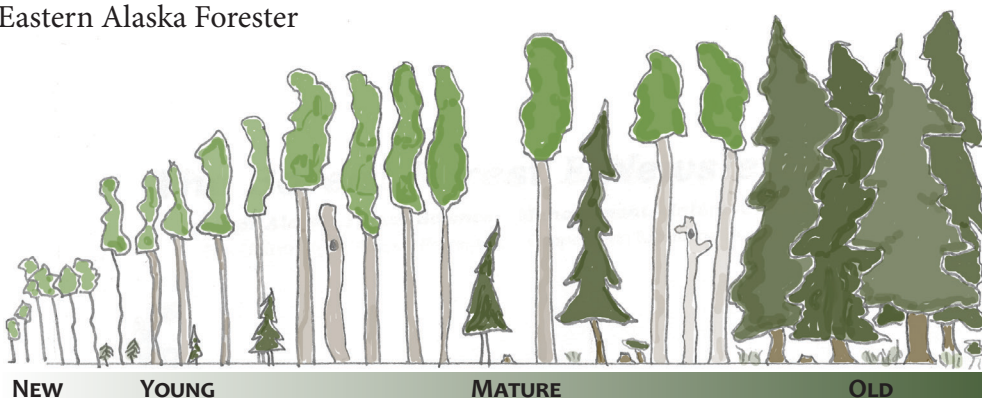


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Dealing with Wind-damaged Spruce

Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

A severe windstorm blew through the upper Tanana Valley this year on September 16 and 17. More than 30,000 acres of forest was flattened or heavily damaged near the communities of Dry Creek and Tanacross. Nearly one million additional acres suffered damage, including “root jacking” and bending and trunk and top damage.

The State Division of Forestry is working to determine what may be salvaged and how to provide access to it. Principles of sustained yield forest management and application of the state forest practices regulations are being taken into account.

Foresters are concerned about beetle infestations and the increased risk of wildfire that could arise from thousands of acres of dead and damaged timber.

One challenge includes locating markets for that much timber before it becomes useless. Another will be to determine appropriate access to enable harvesting and utilization.

Tipped over spruce have little chance of fighting off beetles, and trees can't overcome tipping or bending.

Root and stem damage will likely shorten the life of the tree. The best treatment may be to cut and salvage



Wind thrown spruce from the September 17, 2013 storm near Dry Creek/Delta, Alaska.

downed and damaged trees, using them as quickly as possible.

Spruce cut into firewood will dry faster than logs. Cut logs should be removed from the area and processed into lumber or cabin logs as soon as possible to prevent beetle infestation in the rest of the healthy stand.

Wind-thrown spruce can cause infestations in an otherwise healthy forest. Downed spruce are more beetle-prone than adjacent healthy spruce. Cut up and remove each year's wind throw. You'll have better firewood next winter, too.

Firewood: Cutting, Splitting and Stacking

Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

Cutting firewood for heating can save money. Determine what level of investment is appropriate for you when using firewood. Many people choose to purchase firewood from a vendor. Ads for firewood are common, and firewood is sold in a variety of forms.

A cord of firewood is a tightly stacked pile that is 4 feet high, 4 feet wide and 8 feet long. An honest cord of green cut firewood weighs from 4,000 to 5,000 pounds or more. “Seasoned” wood is 20 percent lighter and has 20 percent moisture content or less. Green firewood has up to 40 percent moisture content. This moisture needs to be burned off before any heat value is realized. The rule of thumb is that seasoned firewood that has 20 percent moisture content or less will be the best deal. You would have to burn 10 cords of green wood compared to 8 cords of seasoned wood to get the same heat value.

Using green wood means burning more wood and results in smokier wood. It is also harder on the stove pipe, causing more creosote, which is dangerous because it poses possible higher risks for chimney/ smoke stack fires.

Many people go to the woods and cut, haul, split, stack and season their own wood. Tools for cutting your own might include a truck or trailer, a chainsaw, files for sharpening the saw chain, extra spark plugs,



an extra pull cord, a screw driver and wrench for adjusting chain tension, felling wedges, an ax, oil and gas, a tough plastic sled to haul the wood, and warm, tough winter clothing. And maybe more!

Every woodcutter should use personal protective equipment (PPE) designed specifically for chainsaw use. Protective equipment includes steel-toed boots, protective chainsaw-chaps, a helmet, a face shield or safety glasses, ear protection and tough gloves. These tools help prevent serious injury.

You can buy wood cut wood in several forms: split, in rounds, etc. Log-length wood should be cheaper, but it will need sawing to stove length, splitting, stacking and drying. Whether you dry it yourself or buy it, seasoned firewood is the way to go.

Firewood from Alaska's northern forests that is cut in late winter or early spring and is split, stacked and top-covered will season or dry enough in six months to be wood stove ready for the next home heating season beginning that September.

For information specific to cutting personal use firewood in Interior Alaska on State land, contact your local State Division of Forestry office:

Fairbanks: 907-451-2600

Delta area: 907-895-4225

Tok area: 907-883-1400

Valdez-Copper River area: 907-822-5534

Mat-Su District: 907-761-6301



The Case for Defensible Space

Scientists claim the climate is changing in the far North. But then comes a cool, drizzly summer. It seems “climate change” is masked by screwy weather. Last summer, parts of the Lower 48 reported the warmest weather on record. It doesn't take much warm, dry weather to get to high fire danger.

Millions of acres of Alaskan forest burned in the past 15 years. Fire managers understand the best way to control wildfire is at the onset, with aggressive initial attack when the fire is small enough to extinguish. It is possible to have several hundred lightning strikes and by noon the next day have several dozen wildfires. Fire suppression becomes complicated during hot, dry summers — and those conditions are likely to occur again.

What can we do to survive the next dry, high-fire danger season? Each of us must work to improve and maintain defensible space around our own homes and escape routes. We know that fire will take place at some point because it is so much a part of the forest we live in. Managing your home and property now could save your life later.

Tree Felling: Safe Tree Cutting for Firewood

Glen Holt, Eastern Alaska Field Forester, UAF Cooperative Extension Service

The most important aspect of tree cutting or timber felling is safety. Tree felling is extremely dangerous. If you are new to cutting down a tree and operating a chain saw, don't start with a big tree. Practice on smaller-sized trees while you build experience as a timber faller or woodcutter.

Use of personal protective equipment (PPE) such as chaps, goggles, hardhat and gloves for safety is extremely important and highly recommended.

Here are some other helpful hints for tree cutting:

Select and assess the trees you intend to cut. Stay within your personal limits of safety and experience.

Determine which way the tree is leaning. Can you cut it into a safe "drop zone"? Might it hang up? Is the drop zone clear of people, power lines or anything else that could be damaged? Is the ground too steep? Are there more branches on one side than the other? Are there broken limbs or "widow makers" in the treetop or in surrounding trees that could fall out and hit someone as the tree falls over?

Determine which way the wind is blowing. Is the tree rotten, hollow or cracked on the trunk or at the stump?

Clear around the tree so that you can make a safe, quick exit away from it if necessary. Clear brush, sticks, logs and other little trees from around the tree you intend to cut. Never turn your back on a falling tree. Look up for branches that may fly back as the tree



falls. Fell the tree into as open, level area as possible.

Shut off the saw and move away from the falling tree at a 45-degree angle. Watch out for "kickback," which happens directly opposite the direction your cut tree is falling. Fell the tree in the direction of lean, if possible.



Wood or plastic felling wedges can help maintain the tree's direction of travel into the drop zone, but don't expect to overcome a tree's lean using a wedge when you are first starting out.

Basic Cuts

There are three basic cuts to felling a tree that has no lean or topographic challenges. **First, make a "face cut"** on the side of the tree that faces the direction you want it to fall. Make sure to hold the saw and saw bar perpendicular to the tree. Make the first cut of the "face cut" perfectly flat and horizontal and only about 20 to 30 percent of the way through the stump. **Start the second cut of the face cut above the first cut and angle down 45 to 70 degrees to meet the first cut.**

It is important that the ends of each cut meet at the same location. Knock out the wedge-shaped piece of wood, leaving a 45-degree notch that extends no more than 20 to 30 percent into the tree.

After you have notched the face of the tree with the first two cuts, **make the final cut, or "back cut"** (also called the "felling cut"). The felling cut comes in horizontally from the opposite side of the notch. Start the back cut at least one inch but no more than two inches higher than the corner of the notch. Keep this last cut flat, an inch or two above the bottom of the wedge-shaped face cut. Cut evenly toward the face cut but not all the way through. Leave a "hinge" of wood about one-tenth the diameter of the tree between the face cut and the back cut and not less than 1 inch. This uncut hinge is what steers the tree in the direction of the drop zone. As you get better at tree felling

you'll notice that you can steer the tree in a direction by leaving more "hinge" wood on one side than on the other side of the hinge.

Using a felling wedge

As the chain saw proceeds into the back cut (your third cut), tap a plastic or wooden wedge into the felling cut behind the chain saw blade to make sure the tree won't lean back on and pinch the chainsaw bar. This works best on trees large enough to accommodate placing a felling wedge. Finish the back cut, maintaining the hinge. Tap the wedge in a little more if needed and when the tree begins to fall, immediately turn the saw off, pull it out of the cut, step away from the falling tree along the cleared safety pathway and watch the tree and tree top as it goes over. Watch out for the tree kicking back at you and for branches that could fly back during its descent. Call out "timber" as the tree goes over so others in the area know the tree is coming down.

Tree felling requires knowledge, practice and experience. Google "tree cutting" on your computer to learn of other appropriate ways to cut trees down effectively and safely.

The Forest Growth and Yield Program

Tom Malone, forest researcher, tmalone@alaska.edu

The Forest Growth and Yield program (FG&Y), run by the University of Alaska Fairbanks School of Natural Resources and Agricultural Sciences, Department of Forest Sciences, has done research for many years studying the boreal forest in Alaska and what might be expected in terms of yield of forest products given the many different forest locations throughout the state.

This program was developed to provide land managers and forest owners quantitative information about the growth of forests. The studies undertaken by the FG&Y program quantify forest productivity by providing data, equations and models. This information is essential for basic state-of-the-art timber management decisions, stand prescriptions and monitoring long-term forest change. These studies also provide an excellent base for forest management decisions, including the use of forest biomass.

The major projects are a system of permanent sample plots, Levels of Growing Stock plantations, development of site index curves; bark thickness models; and cubic foot volume models. Minor studies include moose browse damage to hardwood stands; effects of tapping birch trees; specific gravity/density of wood; and forest thinning studies.

Since its inception in 1983, the FG&Y program has had 126 field and laboratory assistants, including 79 paid students or technicians, 34 European international forestry interns and nine volunteers. Twelve UAF students have earned master's degrees through the Forest Growth and Yield program.

Forest Growth and Yield Program Publications:

- Site Index of Balsam Poplar/Western Black Cottonwood in Interior and Southcentral Alaska. 1998. Shaw and Packee. Northern Journal of Applied Forestry, Vol. 15, No. 4. p. 8.
- Bolewood specific gravity of Alaskan Northern Forest trees. 1992. Packee, Quang, Ressa-Smith. Forest Products Journal, Vol. 42, No 1. p. 6.
- Assessment of paper birch trees tapped for sap harvesting near Fairbanks, AK. 2008. Trummer and Malone. USDA, Forest Service, USFS, R10-S&PF-FHP-2008-1. p. 14.
- Some Impacts to paper birch trees tapped for sap harvesting in AK. 2009. Trummer and Malone. USDA Forest Service, R10-S&PF-FHP-2009-3. p. 11.
- Cooperative Alaska Forest Inventory: CAFI. 2009. Malone, Liang, and Packee. USDA, Forest Service, PNW Research Station. PNW-GTR-785. p. 42.
- A Bark Thickness Model for White Spruce in Alaska Northern Forests. 2009. Malone and Liang. International Journal of Forestry Research, Vol. 2009, Article # 876965. p5.
- Dynamics and management of Alaska boreal forest: An all-aged multi-species matrix growth model. 2010. Liang. Forest Ecology and Management, 260(2010). p11.
- Mapping forest dynamics under climate change: A matrix model. 2011. Liang, Zhou, Verbyla, Zhang, Springsteen, and Malone. Forest Ecology and Management 262(2011). p. 13.
- List of Plant Species Present on Forest Permanent Sample Plots in Interior and Southcentral Alaska. 2012. Malone, Packee, and Liang. University of Alaska, Agricultural and Forestry Experiment Station. MS-2012-01. p. 11.
- Total and Merchantable Volume of White Spruce in Alaska. 2013. Malone, Liang, and Packee. Northern Journal of Applied Forestry (in press).

Seasoning Firewood Saves Money

Burning firewood can save money compared to using fuel oil for heat. If you burn firewood, would you like to save 20 percent or more on your wood?

A wood stove using seasoned firewood will save at least 20 to 40 percent on the wood budget. Many in Interior Alaska are turning back to locally abundant renewable forests to get less expensive heat. Seasoning firewood is about saving money, improving efficiency, saving wear and tear on your saws, gear and on your body. It's also about improving air quality and conserving forest resources.

Getting the most value for your money means burning the wood only after it has been cured or "seasoned," whether you cut your own, have it delivered log length and saw it up and split it yourself, or purchase wood cut and split. Live winter-cut trees contain about 40 percent moisture content. Timber cut in the summer or fall may have higher moisture content due to the sap being up in the tree. Seasoned firewood is 20 percent or less moisture content. Moisture content can be measured using a moisture meter, which may be purchased at local hardware stores.

Research by the Cold Climate Housing Research Center in Fairbanks determined that firewood cut in spring, immediately split, stacked off the ground and covered will become seasoned firewood within six weeks to three months. It's best to build stacks a couple of inches apart to allow for airflow. Seasoned wood remains cured if protected from rain on top and has plenty of airflow circulating through the stacks. Fall-cut and split firewood did not completely season over winter and had to finish during the warm summer to be seasoned by the following winter.

Burning unseasoned firewood means burning extra to cook off moisture still trapped in the wood in order to get the same heat value obtained from burning less wood that is seasoned. The same effective heat value is obtained from fewer cords of seasoned wood. You save at least 20 percent or more of your woodpile by burning it seasoned at 20 percent rather than unseasoned at 40 percent moisture content.



The following are just examples for comparison and only hypothetical.

If seasoned wood can be purchased delivered cut and split for \$375/cord, it would cost \$3,000 for eight cords. This wood should have been split to cure to 20 percent moisture content or less. If the difference between seasoned and unseasoned wood is 20 percent and 40 percent moisture content, 10 cords of unseasoned or wood is needed to have the same heat equivalent as eight cords of seasoned wood if burned immediately.

From our example: If unseasoned or "green" wood can be purchased delivered cut and split for \$275/cord, it would cost \$2,750 for 10 cords. In actual fact, less than a cord's value in green wood is saved by burning 10 cords of green wood compared to eight cords of seasoned.

The Cold Climate and Housing Research Center also found that drying to get seasoned wood only really begins when the wood is also split. Stacking the wood off the ground and covering the top of the pile is recommended to help it dry and keep its cure.

Forest resources are conserved and our timber stands will last at least 20 percent longer by the conservation that comes from burning seasoned firewood. Our air quality will be enhanced, less wood is being burned to keep our homes warm and burning seasoned wood is not laden with moisture burned off by using it unseasoned. Using well-seasoned firewood is a personal decision that allows your household budget to go a lot further.

Tree Feature: Quaking Aspen

(*Populus tremuloides*)

Quaking aspen is found in the Interior Alaska boreal forest. It is also known as the trembling aspen or popple. Little of this white wood tree species is used for commercial purposes in the Alaska, although it is widely used and managed sustainably in Canada, the lake states of Minnesota, Wisconsin and Michigan, and places in the western U.S. for pulp, biomass, logs, pallets, furniture core stock, wall paneling and novelty wood products.

Aspen is an important tree species for early serial stages of boreal forest succession. Many species of wildlife depend upon aspen in various size classes and densities for important components of their habitat. Some species, including the ruffed grouse, which are also found in Interior Alaska, thrive best in areas with diverse stands of aspen, willow and young birch. Quaking aspen is very dependent on fire and logging, which exposes the forest floor to full sunlight, for successful regeneration. Aspen is classed as a very shade-intolerant tree species.

Partially cutting aspen stands will ensure that it gets shaded out and becomes excluded from the forest stand entirely. Regeneration after aspen dies out of the stand will then be only by seed, if seed is nearby. Quaking aspen regenerates best after fire or harvesting by root sprouting. Aspen is a clonal tree species, meaning that many acres of aspen grow

from the same individual tree. They are often referred to as some of the largest organisms on the planet. An aspen clone may be several thousand acres and all interconnected by their root systems.

Wildlife depend on the buds,

shoots and bark for browse for nutritious winter food and the leaves in summer for grazers. Young, thickly growing aspen stands provide essential components of structural habitat cover for many species that raise their young where predator avoidance is critical.



Quaking Aspen

- Leaves are nearly round, with slender, flattened petioles 1 to 2½ inches. They are hairless, shiny green above, pale beneath and tremble in the slightest breeze.
- Bark is smooth almost from the stump up, thin, whitish or greenish gray with black knots and often scarred by old moose browsing or human marking.
- Twigs are slender, becoming gray with raised leaf scars showing three dots.
- Quaking aspen is very shade-intolerant and relatively short-lived.
- Aspen regenerates best after wildfire or harvesting that opens the forest floor to full sunlight. It declines and dies in shade but comes back from root sprouts. Logging is best done best with minimum site disturbance in winter.
- A stand with only 10 percent aspen may be expected to approach 100 percent stocking after winter harvest. Often grows in pure stands, but also with birch and white spruce in the understory, which will eventually overtop aspen as it declines.
- Aspen is limited by shaded small cutting units and moose browse. It could be an important tree species for biomass. It is used for pulp and paper worldwide.



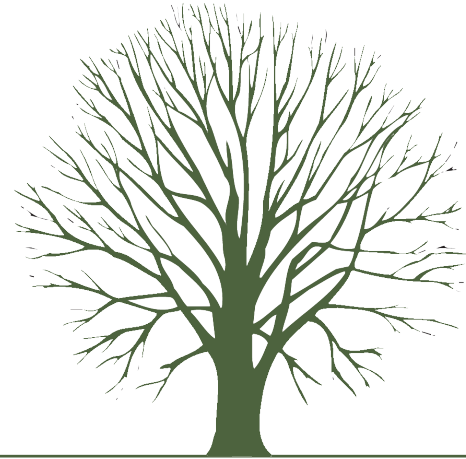
Industry Corner

In each issue, *The Boreal Forest eNewsletter* will spotlight a northern forest industry, timber producer, private, state or federal organization etc. to showcase what is happening in the Interior forest.

Northern forest industries are encouraged to send in a 200-word introduction with their company name, logo, if any, what they do, make or produce, and how they may be reached by those viewing the e-newsletter.

Announcements & Classifieds

In the future, this section will list important forestry presentations, workshops, seminars and meetings we know about ahead of time. Readers are encouraged to participate. All announcements will be subject to UAF Cooperative Extension Service editorial protocols.



The University of Alaska Fairbanks Cooperative Extension Service Field Forestry Program partners and cooperates with other agencies, organizations and the private sector to address forest-related needs and questions posed by the public. Extension forestry is currently working with the State Division of Forestry, the USDA Forest Service, the Bureau of Land Management, the Alaska Department of Fish and Game, the USDA Natural Resource Conservation Service, various Soil and Water Conservation districts, a number of private non-government organizations, the Fairbanks North Star Borough, UAF affiliates, rural development organizations, community groups and others to provide information about the management, biology and social interests relating to Alaska boreal forest through workshops, newspaper articles, radio and television interviews and more.