Fall 2020

The Boreal Forest *Newsletter*

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From the Editor:

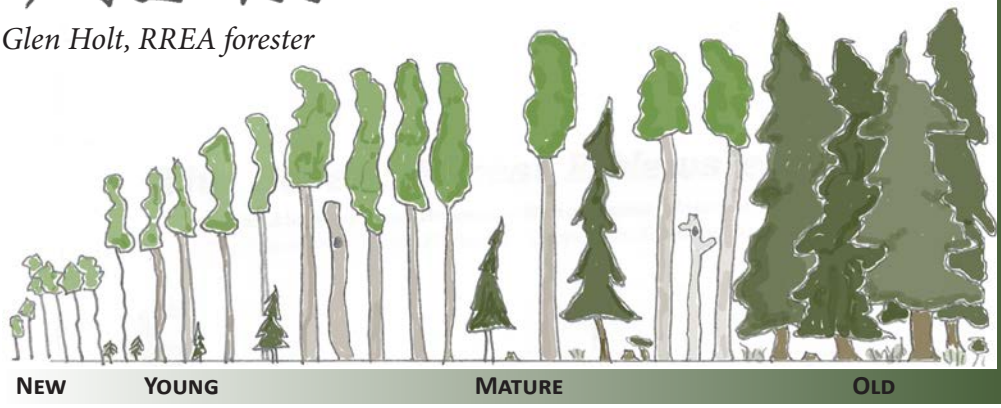
Autumn is with us, and most of our leafy deciduous trees such as birch have turned fall colors and their leaves lay scattered on the ground. Our forests are going dormant in preparation for winter's deep freeze. All is not lost, however. Cold winters are hard on spruce beetles and other forest pests. This is a good thing!

This year Alaska escaped a serious wildfire season. Not so in many parts of the Lower 48. It will be a record fire season or close to it for California, Oregon and Washington. Alaska has certainly seen those kind of wildfire seasons.

In this edition, our featured tree is the Western and Mountain hemlock, which is found from the hills around Anchorage to southern Southeast. We will also look at a tool to help us remember what we need to have a successful day cutting wood: the Wood Cutters Checklist. Cut this out of a printed copy and tape it on your wood truck dashboard. We revisit the topic of forest thinning — which trees to cut and why to leave some of those you could take.

We introduce you to professional forester Pat Tierney and what he has been doing in a full and ongoing forestry career. We read about a Fairbanks Arbor Day and take a look at how forest managers are restoring yellow-cedar to the landscape of Southeast Alaska. Finally, we look at active forest management helping to provide some if not all of our important winter's heat from our woodlots. Autumn is a favorite time of year for many. Enjoy!

Glen Holt, RREA forester



What's Inside

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Forest Management: Thinning in the Private Woodlot (Part 2)

Glen Holt, RREA forester

We wrote about thinning as a forest management technique in the Spring 2020 issue and looked at it as an improvement practice managing young, commercially viable stands of timber for increased economic value at final harvest, even after the cost of thinning(s).

Now let's look at additional reasons woodlot owners might thin their forested yard or woodlot to improve, manage or maintain a healthy, more aesthetically appealing and safer forest environment.

Thinning for economic reasons means there is enough timber value projected at final harvest to offset the cost of thinning. Much of Interior, South-central and Western Alaska is too far from most markets for timber to be manageable from an economic standpoint and little of it was managed previously. The volume per acre that can be grown there is not high enough to compete with regions that grow more timber, have closer markets and have a wider array of more valuable tree species.

It should be feasible to use your cut trees for personal use firewood or for sale, even in small quantities, to others. Your material might also be used for biomass boiler heating fuel or for making biochar or compost, both being beneficial to agriculture, the environment, and local food and energy security.

Tree species most prevalent in mainland or Interior Alaska include (listed in order) white spruce, black

Thinning and pruning provide defensible space and can be important, helping to preserve homes and communities when wildfire occurs.

spruce, Alaska birch, cottonwood, balsam poplar, aspen and tamarack.

The per acre volumes of these species in Interior Alaska is generally low, their growth is slow and they are a long way from markets. None of these tree species is of high enough value or volume or close enough to markets to elicit much additional usage (at this time) other than current levels of personal use and local mill-run logs and lumber for local construction.

Here are some additional reasons woodlot owners might thin their woodlot:

- **Create defensible space and reduce forest fuels.** Thinning the forest around home and structures creates defensible space from wildfires, allows more effective wildfire suppression and, coupled with pruning evergreens like white spruce, reduces ladder fuels and fuel loads. Creating and maintaining wildfire defensible space can save your life and your valuables in the event of a wildfire. This is an excellent reason to thin out your small sapling or pole-sized forested tract around your house and other buildings.
- **Hazard tree removal:** Thinning your forest by removing trees that threaten powerlines, buildings, driveways, access by emergency medical and fire resources, your vehicles and so forth helps the woodlot owner maintain important infrastructure from damage caused by wind or heavy snow events.
- **Scenic views and sunlight:** Many of us enjoy the close proximity of our trees. They provide wind protection, conserve soil and water, create wildlife habitat and protect us from snowdrifts. Trees grow, they fill in space and in time crowd one another.

  Carefully thinning your forest slowly over time can improve or maintain your view, improve aesthetics, and add sunlight and warmth for plants and soil. Thinning and tree cutting might be done slowly and gradually, helping to maintain the health of the residual forest and trees that remain "wind firm" and unstressed by allowing the presence of too much sun into the stand all at once.
- **Firewood and biomass fuel security:** Woodlot owners can utilize their windthrown, snow-bent, diseased and insect-killed trees. Fuelwood security during a time when other sources may not be immediately available could be a huge asset during times of immediate need or scarcity.

A split, stacked and stored pile of wood that is adequately covered to protect it from moisture is a form of fuel security.

A healthy young forest of sapling to pole-sized trees (1- to 9-inch diameter) often grows so thickly they inhibit one another. Keeping the overstory canopy nearly "closed" (treetops touching each other) creates shade on the forest floor. Too much shade can inhibit plant, shrub and seedling growth. Trees not within the overstory canopy get suppressed, shaded out and die. Thinning some out helps better trees left in the stand receive more moisture and nutrients. Not every cull, weak, short or damaged

tree needs to be removed. Some of those will provide habitat for nesting birds and those that nest closer to the forest floor.

Thinning to space trees evenly throughout the stand may not be as important as keeping the forest canopy above just barely closed. Over time the forest canopy can become too dense and a landowner may then again wish to thin some trees out of the stand.

Excessive thinning may cause trees to bend under a snow load, decline due to shock by sunlight, tip over due to wind and allow excessive grass and brush growth on the forest floor that competes with the trees for moisture and nutrients.

Thin slowly over time. Maintain some snags for wildlife. Enjoy tending your forest. Even a small ownership can provide you a wood resource over the years. Trees take many years to become what they are. It's easier to keep a tree (not cut it) than to put it back. Some stands were previously cut taking the best trees for lumber, firewood, etc. Consider your forest and trees. How old are they? What is their condition? Will those improve or decline? What kind of trees could you plant? Do some trees inhibit others? Which trees are valuable to wildlife? Sometimes a tree is of little value, but fills a space that would cause others to decline if it were removed.

A closed overstory canopy shades the forest floor and can inhibit browse and succulent vegetation for wildlife.

Excessive thinning can cause trees left in the stand to decline and become more susceptible to wind damage. It also allows grass to outcompete trees for nutrients and moisture.

Managing Your Woodlot for Firewood

Glenn Holt, RREA forester

Many Alaskans need firewood. We can't get it all from our city lot or even a larger woodlot of several acres. Cutting all you'd need every year could decimate your woods and overcutting can lead to degradation of your remaining trees and the natural progression of your forest succession. Being careful not to overcut your woodlot is best for its overall health and resilience.

Take your time thinning out and cutting trees in your forest. Let it regrow, benefiting your healthy trees, filling in the holes created in the forest canopy. Additional trees can slowly be removed over time when the forest again becomes crowded, but it's hard to put trees back on the stump once cut.

Even a small woodlot can periodically provide firewood when occasionally cut removing recently damaged, suppressed, windthrown, snow-damaged, insect-killed and diseased trees. This kind of harvesting makes room for healthier trees to grow faster and with less damage to them, due to abrasion or cull trees falling into them.

Cull trees can also provide you with your own emergency wood supply in the event you can't get fuelwood elsewhere. So, knowing you have a cull tree in your stand doesn't mean you have to cut it. Store it on the stump if practical, until you really need it. When you cut it, take care when removing to keep from damaging your good trees left in the woodlot.

A forested tract can be improved over time with planning, appropriate tending and implementing

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A forest landowner seeks professional forestry advice to ensure his goals and objectives are feasible and can be accomplished over the long term.

Managing Your Woodlot for Firewood, continued from page 5

local forest stewardship principles that help you improve your forest, taking into account your personal objectives for your forest resources.

Forests are dynamic. They grow, become damaged, decline, die and regenerate. A forest requires active management to maintain or improve its health and provide sustainable wood, clean water, wildlife habitat, recreation and economic benefit. Land management has also occurred by native indigenous people throughout North America to maintain habitat for wildlife, grazing for buffalo, berry resources and so forth. Successful forest stewardship requires an active and ongoing forest stewardship plan written with you by your state stewardship forester and is a great way to begin looking at how to improve your woodlot and have what you want, meeting your objectives for the future.

Split cut wood as soon as possible. Unsplit rounds and wood left as logs will lose little moisture and not season at all.

Cutting and removing poor quality or overcrowded trees can help clean up your acreage, improve aesthetics, reduce risks from hazardous trees, help create defensible space around your home and valuables and reduce fire fuel loads, diminishing the intensity of wildfire. Additional benefits include increased variety of understory regeneration that provides improved wildlife habitat. Removing poor quality trees increases available sunlight, water and soil nutrients required by the healthier trees left standing in your woodlot.

Process cut wood into firewood lengths suitable to your wood burning device as soon as possible, splitting it and stacking it in a protected location so your wood can dry and season quickly.

In climates like Interior Alaska, cover your split and stacked woodpile on top to protect it from snow and precipitation. Stack it just off the ground (on poles or old lumber or old pallets) to keep it from picking up moisture. Adequate wood care helps ensure your firewood resource and provides the most value to you.

Forestry Tools: A Woodcutter's Checklist

Many of us enjoy getting some of our firewood in fall with our family or friends. Sometimes we combine woodcutting with other activities like grouse or moose hunting or just walking in the beautiful autumn woods.

Being out this time of year is a joy! The bugs are gone. The roads are snow-free. A weekend afternoon cutting a load of wood can be a lot of fun, but not so much if you forget a critical tool to make the event as successful as possible.

Here is a forestry tool that will help us all remember what to bring on that next woodcutting outing. Have a great autumn! Remember to split, stack and protect your wood as soon as possible so it will season quickly and properly and you get the best benefit from your hard-earned fuelwood.

Cut this out and tape it to the dashboard of your trusty wood hauling truck so you don't forget a vital woodcutting tool.

These tools can help you cut a full day's wood and make the most of your wood cutting day.

Woodcutter's Checklist

- ☐ Chainsaw
- ☐ Mixed saw gas
- ☐ Bar oil
- ☐ Hard hat
- ☐ Eye and hearing protection
- ☐ Sawyer's protective leg chaps
- ☐ Protected toed boots
- ☐ Gloves
- ☐ First aid kit for minor cuts
- ☐ Eye wash
- ☐ Scrench (it's a screwdriver/wrench tool combo to work on your saw)
- ☐ Extra sharpened saw chain (easier than sharpening in the field)
- ☐ Extra saw bar: if the saw gets pinched and stuck in the cut
- ☐ Extra spark plug
- ☐ Bar tip greaser
- ☐ Chain files (for quick saw sharpening in the field)
- ☐ Tape measure or measuring stick
- ☐ Felling wedges (wood or plastic) to prevent saw bar pinch
- ☐ Hand axe to drive felling wedges into the felling cut
- ☐ Plastic sled (to help drag cut wood to your truck)
- ☐ Snow shovel, snowshoes, etc.

Cut your firewood with a friend for safety's sake. Always tell someone where you are going and when you will be return. Safety first!

Alaska Forestry Professionals and Organizations: Pat Tierney

Glen Holt, RREA forester

Patrick Tierney is a forester, longtime Society of American Foresters professional member and retired U.S. Forest Service silviculturist in southern Southeast Alaska. He has been observing Alaska yellow-cedar for over 30 years. After retiring from the Forest Service, he began working as a private contractor in silviculture for the Sealaska Corp.

In the fall of 2012, Pat conducted a successful yellow-cedar cone collection for the Forest Service. Sealaska was interested in collecting cone for planting and he began monitoring cone production on Prince of Wales and surrounding islands for Sealaska. Yellow-cedar cone production is sporadic, with good cone crops occurring only once every seven years. Cone collecting is difficult and expensive even in a heavy cone-producing year.

Yellow-cedar is now only 1% of the forest in Southeast. This figure is down from 5% due to "yellow-cedar decline," a condition some scientists think is due to climate change.

Forester Pat Tierney stands in a research plot of yellow-cedar stecklings, or planting stock grown from cuttings. The stecklings are grown for research and reforestation purposes in the wake of the yellow-cedar decline.

Reviewing published literature, Pat found the Canadian Ministry of Forests worked with rooted cuttings from yellow-cedar. He began investigating that potential and found that Canada obtains most of its yellow-cedar planting stock from cuttings rather than seed. Pat created his own rooting trials in the fall of 2015 and had sufficient success to begin propagating yellow-cedar using that method.

Sealaska Corp. has embraced an outreach program with local schools to increase awareness and interest in natural resources. With Sealaska, Pat took the concept to local schools where the process continues to be refined and improved.

Together with retired silviculturist Gary Lawton and Sealaska liaison Bob Girt, they developed and funded both a natural resource curriculum and the production of yellow-cedar cuttings or "stecklings" in the local schools to introduce students to future employment opportunities in natural resource management in their local area.

Regenerating Yellow-Cedar in Southern Southeast Alaska

By Pat Tierney

Alaska yellow-cedar, or yellow cypress, historically comprised about 5% of the total forest cover on the 17-million-acre Tongass National Forest in Southeast Alaska. Today, yellow-cedar comprises less than 1% according to recent U.S. Forest Service inventories. This valuable tree species produces wood that is strong, easy to work with and is highly resistant to decay. It is significant for Native cultures and used for totems, canoes, paddles, carvings and even halibut hooks.

A slow-growing tree, yellow-cedar is most often found on poor, wet soils where it can outcompete western red cedar, hemlock and Sitka spruce that do not tolerate wet soils as well. With warming temperatures, winter snowpack has been reduced, and yellow-cedar trees are dying from freeze-thaw cycles occurring in late winter and early spring. Without an insulating snowpack, roots begin to grow and then are freezing, eventually killing the trees.

Guidance from a recent publication, *A Climate Adaptation Strategy for Conservation and Management of Yellow-Cedar in Alaska*, PNW-GTR-917, January 2016, indicates a need for planting yellow-cedar to maintain its presence across the landscape. Planting for reforestation normally uses young trees grown from locally collected seed. Cone collecting for seed occurs years in advance; seedlings are produced at a commercial nursery and shipped to the site for planting.

Elementary school students on Prince of Wales Island learn about science with professional forester Pat Tierney and how to grow yellow-cedar seedlings to plant within the Southeast Alaska ecosystem.

Most tree species in southern Southeast Alaska produce abundant cone crops every few years. Yellow-cedar, however, produces infrequent, scattered cone crops that are difficult and expensive to collect. A good cone crop occurs only once every seven years, on average, and the last abundant cone crop produced on Prince of Wales Island occurred in 2012.

Due to the nationwide scarcity of yellow-cedar seed and seedlings, the idea of rooted cuttings called "stecklings" was explored. The Canadian Ministry of Forests developed this method of producing yellow-cedar planting stock and it is used quite successfully by Canadian nurseries.

The process was examined and adapted for use at a small scale in southern Southeast Alaska. The concept was taken to local schools on Prince of Wales Island in 2016, and students learn the importance of yellow-cedar, its challenges relating to climate change and the process of creating rooted cuttings. To date, students across the island have created a donor orchard consisting of about 100 rooted cuttings from which they obtain cutting material to produce more stecklings.

This effort is funded by Sealaska Corporation under their workforce development program. The intent of the program is to increase environmental awareness and interest in the hopes that some students will choose a career in natural resource management where there is currently a worldwide shortage of workers and professionals. It is also a long-range hope that an entrepreneur will construct or convert existing facilities for such purposes, as there are currently no nursery facilities in southern Southeast Alaska that produce forest tree seedlings.

Pat Tierney is a retired U.S. Forest Service certified silviculturist, professional member of the Society of American Foresters and has worked on Prince of Wales Island since 1985.

The Saga of Fairbanks Arbor Day 2020

By Ritchie Musick, Fairbanks Arbor Day Committee

On Arbor Day, May 18, 2020, Fairbanks Arbor Day Committee members planted three trees in three locations. Schools were closed for the pandemic so there were no school plantings. Committee members Mike and Ritchie Musick, DeeDee Dahlen, and June Champlin planted an Amur maple at the Golden Heart Plaza, receiving TV coverage for that event.

Mike, Ritchie, June, DeeDee and Jim Smith also planted a larch donated by Smith, the state stewardship forester and Arbor Day Committee member, at the Fairbanks North Star Borough's Tanana Lakes Recreation Area.

And again that same evening, members of the Ester Community Association, aided by the Ritchies and Carolne Wolff, planted a donated Amur maple in the Ester Community Park to commemorate Milt Behr, a longtime member of the community who had recently passed away. Thus began the saga of Arbor Day 2020.

A permanent plaque commemorates work by health care workers and essential personnel during the Covid-19 pandemic, at the Golden Heart Park in Fairbanks.

Fairbanks Arbor Day Committee members had agreed to purchase a tree and were pleased to plant it in the Golden Heart Park, commemorating work by health care workers and essential personnel during the Covid-19 pandemic. A permanent plaque was made by Alaska Bronze in Girdwood that was similar to others in the park. Fairbanks Arbor Day committee members donated $450 from their own pockets for the plaque, and months later they received it and presented it to the Festival Fairbanks committee on Aug. 26.

Alas, on Aug. 30 we found our little Amur maple had been broken off at its base! Disappointed, we called Holmtown Nursery and found they had several more similar maples available. The owner offered to donate a replacement since the original had been purchased there. The new little maple was planted Sept. 2 in the same spot, where it continued turning beautiful fall colors.

On Sept. 11, we were notified that the "new" tree had been uprooted and was just laying there on the ground, and that the police had arrested the culprit who admitted doing it! At the end of that day Julie Jones, from Festival Fairbanks, took the uprooted little maple home with its roots wrapped in burlap as best she could.

The next day, on September 12, Arbor Day members Mike and Ritchie Musick again planted it at the Golden Heart Park. Will our tough little maple be thriving by next Arbor Day?

The conclusion to this saga is yet to be written! Tune in next year!

DeeDee Dahlen and Mike Musick plant an Amur maple in downtown Fairbanks. Photo by Ritchie Musick.

Featured Trees: Western Hemlock and Mountain Hemlock

Western hemlock (*Tsuga heterophylla*) is a large evergreen tree that can grow up to 150 feet tall and 5 feet or more in diameter. It has a long slender trunk that can become fluted at the base of larger trees and a short, narrow crown of horizontal or slightly drooping branches. Its very slender leading twig curves down or is "nodding."

The leaves are needles that are short-stalked, spreading in two rows, and their length is from ¼ to inches long. They are flat, rounded at the tip, flexible, shiny dark green above, and have two white bands (stomata) on the lower surface of the needle.

Western hemlock twigs are slender, dark reddish-brown and have fine hairs. If the needles fall off, twigs show peg-like bases of the fallen needle. The bark is a reddish to gray brown, becoming thick and furrowed into scaly plates. A pocketknife will disclose the red inner bark not found in spruce. Western hemlock cones are stalkless and hang down at the end of the twig. They are small and elliptical from ⅝ to 1 inch long with many thin, papery scales.

The wood is moderately lightweight and hard and fine-grained. The heartwood is a pale reddish-brown and the sapwood is similar or whitish.

Western hemlock is the most abundant and one of the most important tree species in Southeast Alaska. Its range extends south but not west from the hills around Anchorage, south through parts of the Kenai Peninsula, into all of Southeast Alaska but not Afognak or Kodiak islands or western Cook Inlet. It forms more than 70 percent of the dense hemlock

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Western hemlock needles have two white stripes on the underside of the needle.

Featured Trees, continued from page 11

spruce coastal forests. This species attains its largest size on moist flats and lower slopes, but with abundant moisture, both atmospheric and soil, it grows well on shallow soils and is very shade-tolerant (it will grow beneath the shade of other trees).

This species is excellent for paper and paperboard products and other wood products, including rayon, lumber for construction, rail road ties, mine timbers, marine piling, plywood veneer, flooring, cabinets, boxes and more.

Mountain hemlock (*Tsuga martensiana*) is a small to large evergreen from 50 to 100 feet tall and 10 to 30 inches in diameter. It tapers quite a bit when open grown.

Mountain hemlock needles are arranged on all sides of the twig and curve upward. They are short-stalked, ¼ to 1 inch long, flattened above and rounded, keeled, or angled beneath (half-round in section). They are stout and blunt, blue-green and with whitish lines (stomata) on both surfaces of the needle. Twigs are generally short, slender, light reddish-brown, finely hairy and roughened by peg-like bases after the needles fall. The cones are stalkless, usually hang down, cylindric 1 to 1 ½ inches long and ¾ inches wide and colored purplish but turning brown with many thin papery scales. The bark is gray to brown, thick and deeply furrowed into scaly plates.

The wood is moderately lightweight and hard and fine-grained. It is marketed with Western hemlock. Nearly pure stands of Mountain hemlock on Prince of Wales Island have been logged for pulp. The wood has also been used for ties. In the higher altitudes where commonly found it is largely inaccessible and infeasible commercially.

Western hemlock bark can be reddish to gray-brown and furrowed.

Mountain hemlock is found from sea level to 3,000–3,500 feet, growing at an altitude higher than other trees. On upland sites, it is well formed and resembles Western hemlock. Toward timberline it replaces Western hemlock and becomes a prostrate shrub. It grows with shore pine in muskegs of deep peat as well as on subalpine slopes on the ocean side of the Coast Range in Southeast Alaska.

Adapted from Alaska Trees and Shrubs: Second Edition*, by Leslie A. Viereck and Elbert L. Little, Jr. University of Alaska Press, 2007.*

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