**From the Editor:**

In this edition of the *Boreal Forest Newsletter*, we continue with some previous forestry topics and add some new ones. See articles on yellow cedar forest management and science, forestry tools, non-timber forest products, books and publications, and more.

We continue to try to make this newsletter relevant to Alaskans interested in managing and understanding their small, nonindustrial private forestlands (called NIPF). Let us know what you think, how we can improve and what you’d like to hear about.

This edition introduces some Southeast Alaska topics, including a feature on the yellow-cedar tree, research concerning yellow cedar, a glimpse of the largest sawmill still operating in the Tongass National Forest, and a look at a renewable product it produces with local timber that helps keep local Alaskans warm.

We’ve added a new section about non-timber forest products to give additional insight on forest values and use. Future editions will highlight seasonal topics such as wildfire prevention or the spruce beetle, etc.

We’re in early spring now but as days get longer and weather improves, what better time to get in the woods with saws, sleds and snowmachines and “manage” some wood in our woodlots!

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**Glen Holt, RREA forester**
Non-Timber Forest Products

Glen Holt, RREA forester

Non-timber forest products (NTFPs) are plants, animals, minerals and other biological organisms that people have gathered and used to maintain life and livelihood in the boreal and cold temperate forest regions since the first people inhabited this region. Every culture in that region gathered and used them. They are valued for both consumptive and nonconsumptive purposes and are found in various forms within forested landscapes worldwide.

Much of the emphasis on non-timber forest products previously focused on tropical forest regions and their indigenous peoples. To this day, many still living in those forests use them as a significant part of their living and culture.

NTFPs do not include manufactured forest products such as lumber, cabin logs, pulp, chipboard, chemicals or biomass fuels.

Excluding timber, those biological organisms — valued by humans for both consumptive and nonconsumptive purposes — are found in various forms within the forested landscape.

A list of non-timber forest products that could provide revenue in our present day in parts of Alaska and North America might include floral greens for floral arrangements and florist components, including princess pine, moss, lichens, cattail tops, grasses, fern fronds, autumn leaves, evergreen cones and the like.

It would also include Christmas products, such as small wood ornaments, evergreen boughs, winter-cut birch branches, wreaths, cones, Christmas trees, holly and mistletoe.

Non-timber forest products encompass wild edibles, including various forest tree nuts, fruits, blue or huckleberries, blueberry leaves, rose hips for jams and jellies, spruce tip tea, mushrooms, including commercially picked morels, birch sap and syrup, fiddleheads, spices (sage), spruce gum, cattail root, wild rice, highbush and lowbush cranberries, and dandelion greens.

Medicinal NTFPs include chaga conk on birch for teas and tinctures, devil’s club root, yarrow, ginseng, Labrador tea, rose hips, tea, extracts and tinctures.

The list includes wild shrubs, ground cover plants, ferns, forest flowers, landscaping plant materials like dwarf dogwood (*cornus* sp.), etc., craft supplies and products like birch bark, birch sticks, birch sections, tree cookies, hiking sticks, twig wreaths, buttons, rings, basket materials, cones, bird houses and feeders, grasses, willow roots and twigs, artists’ conk, wintergreen berry and leaf, spruce roots, cattail tops and down, alder cones, spruce cones and red cedar bark.

Other NTFPs are tools and utensils both practical and artsy: wooden spoons, forks, spatulas, bowls, burl products, containers, cutting boards, birch bark and red cedar baskets, pine needle baskets, branch door pulls, burl log porch supports and fireplace mantles.

Miscellaneous products also include fur, bone, claw, quill and antler products: fur hats, gloves, ruffs, muffs, antler and bone buttons, hair ties, jewelry like quill earrings, tools and game boards.

Non-timber forest products might also include recreational access fees for hunting, fishing, bird watching, berry picking, hiking, cross-country skiing, camp sites, group or club camps and recreational cabin rentals.

NTFPs can be a significant long-term part of a forest landowner’s goals and objectives to provide revenue from the forest. It need not require harvest and liquidation of all merchantable timber from the stand. NTFPs are often periodic crops that can help diversify income from forested land over a longer period of time than a one-time commercial timber harvest that takes 60 to 120 years to regrow.

Commercial timber production is subject to an array of long-term risks, including wildfire, windthrow, insect mortality, rot or decline. Some of it is due to an unpredictable climate.

Harvesting NTFPs a few years prior to logging to convert land to other uses such as agriculture or commercial development can add significantly to final revenue from the commercial timber cut. Whether any revenue is received from managing a forest is directly dependent upon how the landowner/forest manager plans, manages and times those resources for harvest that provides revenue.

Rush-job land management with minimal prior planning can lead to zero resource revenue and much
By considering NTFPs in your forest management objectives, total forest income revenues can be increased significantly above those earned from logging alone. Total forest product output benefits local economies from the array of product revenues produced. In the Willow example, sap, bark and forest floor landscape products were valuable and the profits from them were added to the timber sale revenues. Many more value-added products were made available, including locally utilized firewood and small birch saw logs, landscape plant materials, birch syrup products and birch bark baskets.

Planning Non-Timber Forest Product Utilization

Research everything you can on your proposed NTFP. Identify your resources to harvest, and the timing and seasonality needed to collect, prepare and render that resource to salable products. Find out who else is doing it, how they are harvesting it and how long it takes to make the product.

If you are a hay farmer, chances are you won't time to produce a non-timber forest product if harvest for it occurs during hay season. Historically, Alaskans have operated on seasonal employment. Commercial fishing season, construction season, berry picking season, salmon fishing season, hunting seasons, etc. We all make the best of our opportunities in Alaska to pursue our chosen lifestyle.

Important Questions

Do you have time for an additional activity like collecting and processing a non-timber forest
product? Can you add more to your current schedule? When would you have time? Timing is a huge issue. Do you have a seasonal slow period? Some seasonal activities have a “shoulder season” where the producer is not actually involved with the pursuit of say, growing and marketing vegetables, or growing and putting up hay, etc.

If there is time to add an activity, do you have the capacity to pursue an additional activity? In other words, “Where’s the loot?” Do you have to buy additional equipment to collect and process this new NTFP idea? After you’ve determined that you have the time and money to undertake an additional activity, make a plan of action.

Identify tools needed and be economical. Start small and determine and stick to a budget. Rent, lease and then buy higher dollar equipment if needed and in that order, to add an activity to your already successful moneymaking endeavors.

Consider time to gather and produce — stockpile the raw material as appropriate.

Start marketing wholesale to regional buyers, to centralized processors and to exporters.

Wholesale market research can lead to your own retail opportunities. After adding wholesale markets to your own personal use to determine time and timing, consider that part of your product be made available for retail. Keep the wholesale market for revenue stream unless full-time concentration is intended. Don’t sign exclusive agreements with a retailer stating you won’t provide product for other retailers or you won’t retail part of your product yourself. That is a trap.

The boreal forest is noted for its cyclic nature. Don’t go broke putting all your eggs in one basket. Some years are bumper crops of berries and others not a berry may be found. Consider the old sourdough way of seasonal diversification. Harvest, process and store some of your product for seasons when your product is, for whatever reason, hard to find.

Product selection must fit with other farm or homestead products and seasonality. Harvest timing, seasonality and methods are important factors to consider.

Marketing and Advertising

Can you meet demand? Be reasonable. Marketing is critical. Here are some marketing tools, means and methods to consider:

You can use the internet to investigate international opportunities and advertise your products. Online companies such as WIX.com will help you design and
manage your website. When coming up with a name for your business, be sure to start with Alaska. For example, “Alaska Kindling King” and “Alaska Chaga Choice.”

Marketing sale locations can include farmers markets, state fairs, winter holiday bazaar, craft fairs, weekend markets, home shows, sportsman’s shows, etc. They can also include gift shops, consignment shops, magazines and newspapers, and regional travel guides.

Advertising is part of marketing and a means of finding people that will buy your product, whether they are staying at your recreational cabin or buying something you make from raw materials collected from your forest land.

Obtaining, processing and marketing may become limiting factors as demand for your products exceed the supply you can produce. For example, you may decide you can’t gather enough birch sap to produce the amount of birch syrup products you know you can sell. You might consider buying sap from reputable birch sap tappers and paying them by the gallon to deliver it each day collected.

If the sap doesn’t flow or the mushrooms or berries don’t show, NTFP producers marketing those products can be in a pickle trying to provide them to wholesalers intent on selling them to retail outlets. It’s possible to lose your market to a wholesaler that drops you and then works with someone else, who, for whatever reason, has the product.

NTFP producers should consider being mobile, being able to move to areas of abundance or purchase from a large supply that others can provide. Be diverse, able to switch harvest effort from one product to another, depending on the year. Maybe be ready to gather, process and market blueberry jam during a good berry year.

Successful regional NTFP development will likely come from small family businesses supported by an array of NTFPs and a network of harvesting those products that can be harvested from year to year with some form of product continuity.

For instance, the year after an accessible area is burned by wildfire is a good time to focus on commercially harvesting morel mushrooms. Morels come in a year, sometimes two after wildfire. A producer may have to go to distant locations and areas that burned the previous year in order to have a supply of morel mushrooms to market. Other NTFPs may work this way occasionally, too. It’s important to choose your product with care.

Consider a means and method of production that can help keep you able to continue buying, processing and marketing to capacity and allow you to be able to transform raw product material into a stable product with enhanced storage capabilities and to smooth out the effect of cyclical seasonal NTFP yields.

Keep in mind throughout the entire process to harvest sustainably, process promptly and store effectively. Any other way is a waste of your time and effort.

A good source of insight and information concerning NTFP is the U.S. Forest Service’s Report NC: 217: “Forest Communities in the Third Millennium: Linking Research, Business, and Policy Toward a Sustainable Non-Timber Forest Product Sector.”

As you scan the internet for NTFP research and information, you’ll come in contact with other excellent sources. Some ethnic publications would be great if they were translated and we could read them. Northern Europe has an age-old tradition of wildcrafting and gathering many of those wild plants and mushrooms we here consider non-timber forest products.

In the future we will present single non-timber forest products that have been successfully gathered, produced and turned into profitable ventures in some parts of Alaska.
Chaga Conk: a Non-Timber Forest Product

Glen Holt, RREA forester

This is the first in a series briefly describing individual non-timber forest products (NTFPs). In future issues, we will look at additional non-timber forest products, their history, current uses and potential to augment income from Alaska forests — other than or in addition to traditional timber products.

Collecting non-timber forest products can be a hobby or a serious income if an individual uses sound business principles. These products can be added to farm or forest incomes during seasons when agriculture or timber harvests are not feasible.

The chaga mushroom (Inonotus obliquus) grows on birch trees in the northern circumpolar regions, including Alaska, Canada, Norway, Ukraine and Siberia. Chaga is a parasitic fungi that grows on declining or injured birch. It is not known whether harvest is sustainable on the same tree over a period of time. Birch that have chaga are generally older growth and in decline. Sustainability throughout the boreal forest landscape is not a problem because birch forests continue to age and be regenerated by wildfires.

Chaga forms an irregularly shaped conk on the trunk at a site previously damaged. This includes trunk damage from one tree falling into another, a rotted branch, frost cracks and trunk splits caused from freezing and thawing. The chaga conk has the appearance of burnt charcoal with rusty yellowish streaks. Processed chaga is a rusty-brownish hue.

Chaga was used for centuries to make a healthy tea with a mild, pleasant earthy flavor. It should not taste like mold or dirt. Teas are often mixed with other ingredients, including devil’s club root, rose hips, blueberry leaves, nettle leaves, etc.

Chaga can be collected through the fall and winter until the sap begins to flow in spring. Collectors travel through the woods in winter on foot using snowshoes, skis or snowmobiles. Early spring prior to leaf out and before lots of bugs, hot weather and heavy accumulations of brush and grass is another time when chaga hunting is prevalent.

Some harvesters use ladders to access conks farther up the tree. Others use a pole saw to reach up and saw conk off the trunk. At ground level people use a hand saw, hatchet or claw hammer and chisel to cut, pry or chop off conks. Many harvesters leave some of the conk on the tree to grow back. Avoid using a chainsaw, which can taint the chaga with petroleum bar oil.

No bark, moss, lichens, leaves, branches or anything else should be included in the final product. Harvested chaga is piled and dried in an open container like a milk crate or burlap sack hung off the ground, sheltered from rain and snow and well away from gasoline, diesel and other solvent vapors. After drying, the conk is crushed into thumbnail-sized chunks or ground like coffee for tea bags.
After the conk is dry, process it immediately. I put my chaga in an old pillowcase and hammer it carefully to keep from splitting the pillowcase. Break the conk into various-sized pieces for further processing. A coffee grinder can be used to turn chaga into coffee-sized particles. Put the dried chunks and ground chaga in mason jars and store it out of the sunlight.

Chaga can also be made into a tincture, and people add drops of chaga tincture to drinks, food or taken directly under the tongue. Teas can be made from thumb-sized chunks or ground chaga in a tea bag or tea ball. Additional hot water can be added to chunks several times and steeped in a large pot and later poured off into a jar to use hot or cold to drink straight or mixed with other liquids.

Chaga can be marketed and sold on the internet in finished form as teas or tinctures and wholesale in bags or containers of chunks or grind to people wishing to use it or remarket it themselves. It can sometimes be found for sale on Craigslist and in other forums, including at craft shows, farmers markets, food shows, etc.

Recently, I found chaga for sale on Craigslist for $15 to $40 per pound. One producer markets it internationally in small bags as various tea mixes, and his product is found in local health or whole food stores, gift shops and in the whole food sections of several big box store chains in Anchorage and Fairbanks.

Some producers purchase some or all of the chaga conk they need for products from chaga hunters. Chaga can be found any year and is not contingent on seasonality like good berry years or forest mushrooms. Chaga hunters are constantly looking for birch stands that have not been cleared of conk. Those locations are farther and farther off the road system.

Northern Europeans have used chaga as a traditional tonic and tea for hundreds of years. It contains inotodiol, betulin and active polysaccharides that have various implied medicinal benefits. Certain medical practitioners in Russia have used particular chaga extracts for cancer treatment since the 1960s.

### Thinning for Forest Stand Management (Part 1)

**Glen Holt, RREA forester**

The spring/summer 2015 edition of the *Boreal Forest Newsletter* looked at “Which Tree to Cut,” considering the why and when of tree cutting on an individual basis. We briefly discussed personal use for lumber, poles or firewood. Cutting was predicated on removing trees damaged or declining compared to retaining healthy trees around it. This selective removal of trees is called “selective cutting,” which is a forestry method of timber harvest.

On a larger scale, let’s look at a forestry management method of improving an immature forest stand, called “thinning.” Its purpose is to improve the growth rate, form and future value of trees remaining in that stand. Thinning removes trees from the stand without creating big holes in the overstory forest canopy. Too much sunlight let into the stand and onto the forest floor will encourage brush and grass that also competes with trees for those same nutrients.

Thinning works best in an even-aged stand of vigorously growing immature trees. Timing (when to thin) takes into account forest age class (usually a stand 10 to 20 years of age), size class (sapling to pole-sized timber), canopy closure, tree species composition, geographic location, soil fertility, moisture, slope, aspect, sun/wind exposure, disease and insect pests, stand access, etc.

Small stands can be difficult to manage commercially and may be more suited to individual tree management. Stand size for thinning or other economically feasible forms of forest management depends on final product revenue from the thinning and, more importantly, the revenue predicted from the final cutting. Tree species’ value, size, growth rate, access, market location and other economic and environmental factors are all important in determining whether a thinning is economically feasible. Other local factors may apply.
Timber management in Alaska is constrained by significant geographic differences. As an example, a five-acre timber stand with good access on Prince of Wales Island in Southeast Alaska might average 18,000 board feet of timber per acre (have 90,000 board feet of logs and pulp wood). Whereas an average timber stand near Talkeetna might average 6,000 to 8,000 board feet of timber per acre (have 40,000 board feet of logs and commercial firewood).

Each location has markedly different tree species, timber values, volumes, harvesting and forwarding techniques, soils, weather, moisture regimen, merchantability factors and access road building constraints, etc.

Thinning removes some or all of the poorly formed trees, allowing remaining trees more room to grow at a faster rate with less competition for sunlight, moisture and nutrients. Thinning can be used to improve the future economic value of the rest of the stand by increasing the size of trees at the time of the final harvest.

A commercial thinning is where revenue is generated from the value of trees thinned and removed from the stand. Or a stand may be precommercially thinned, where no commercial value can be obtained from cut trees.

Whether trees cut from a thinning are commercial or not is determined by many factors, including size of cut material, total cut volume, species value, distance to market, cost of the operation, etc.

The value of a timber stand improvement activity must be weighed against the final expected income after final harvest. Managing for future commercial timber revenue may be quite different than managing your woodlot for future forest attributes while providing small amounts of present-day personal use.

Pine plantations of loblolly pine in South Carolina, for example, are even-aged and may have a commercial thinning or two before final harvest at approximately 30-years of age. The first thinning of this plantation may occur at years 15 to 17. The second thinning may occur at years 22 to 24. Both thinnings are generally commercial thinnings that not only cover the costs of planting and the thinning activity but also provide some form of positive revenue.

Final harvest takes place at approximately year 30 in the life of that stand in southern South Carolina. After 30 years of growth and following two commercial thinnings, the plantation is completely harvested, the site is prepared as needed, and it is mechanically planted back to loblolly pine for the process to begin again. Risk can be incurred due to loss from wildfire, insect infestation or disease.

In South Carolina, timber volume and value is much greater for a plantation that has been thinned than if it hasn’t. Not only was some value obtained at the end of both thinnings, but more revenue was received after the final harvest of the entire stand in 30 years due to those thinnings.

On Prince of Wales Island, precommercial thinning is used to improve timber value at final harvest in 80 or more years. Stands are thinned there after 20 years of age. Upwards of 70% of the stand is cut. The remaining Sitka spruce, cedars and hemlock grow faster, larger and with less between-tree competition. Spacing of trees left in the stand are determined by the current size of the trees, by the current age of the stand, by the predicted harvest age, and by slope, aspect, species

Thinning considers “canopy closure” and removing poorly formed and suppressed trees that will never mature. Be careful not to open the forest canopy too much.
managed and the end product projected at the time of final harvest.

Naturally regenerating seedlings in good sites on Prince of Wales Island generally grow back profusely after logging. Within 20 years, saplings are so overstocked they inhibit each other. Competition for light and soil nutrients between individual trees is fierce. This stage of stand development is termed the “stem exclusion phase.” Herbaceous vegetation valuable to wildlife is all but excluded after this time period due to excessive shading. It is very difficult for a person to walk through this stand of closely growing 20+ year-old trees because they are often only inches apart with thousands of stems per acre.

Thinning intensity is determined by this overstocking. Spacings of 10 to 20 feet apart are determined by the forester to arrive at best growth, yield and value predictions at the final harvest.

Birch forests in Southcentral and Interior Alaska grow back after wildfire, which may burn off huge acreages of the landscape. Birch grow back from the stump if fire intensity is not so hot as to kill the root system. Birch also produce seedlings from seed blown in over the snow from adjacent live birch. Birch seed needs mineral soil to germinate and grow. The varied nature of wildfire intensity may provide both forms of birch forest regeneration. Birch regenerate in an even-aged stand due to this disturbance by wildfire. They are a sun-loving, shade-intolerant species and regenerate hundreds or thousands of stems per acre at the onset. Natural unmanaged stands of birch thin themselves out by natural selection.

A private nonindustrial forest (NIPF) landowner can harvest birch stands precommercially to provide personal use firewood, poles or rails, etc. In many areas, white spruce often grows back more slowly beneath the shaded overstory of faster growing birch. In areas where birch is not available (Tok, Alaska), white spruce may regenerate from seed left over in the soil or blown in over the snow from adjacent spruce stands. Spruce also prefers mineral soil for germination. White spruce are shade tolerant. A regenerating stand may not be solely even-aged due its ability to regenerate in less sunlit locations over a greater period of time.

Thinning concentrates growth on better quality trees. Trees left in the stand must be able to grow faster, larger and become more valuable after thinning. Thinning seeks to reduce between-tree competition but also refrains from creating large holes in the overstory forest canopy, which can cause residual trees to decline in value or become damaged. Care when logging is required to prevent excessive damage to the residual stand that would significantly reduce stand value at final harvest.

NIPF landowners with small equipment such as small log skidders, small dozers, farm tractors, ATVs with trailers, etc., can create access trails with less impact on the residual stand than larger commercial logging equipment. While operations may take longer to accomplish, the NIPF landowner can take more time to utilize the poorly formed, damaged, wind-blown, snow-bent or broken-top trees in their stand for personal use.

Thinning out those trees that will never be able to grow into the overstory canopy captures the personal use value of that wood before it totally dies. Birch rots fast after mortality due to its waterproof bark. Cutting a declining birch rather than a dead one is preferred due to differences in wood quality between live and dead trees.

In the next edition of the Boreal Forest Newsletter, we will expand on thinning theory and techniques for arriving at desired results and list some examples of what to do and what to expect.
Featured Tree: Yellow Cedar

The yellow cedar (*Chamaecyparis nootkatensis*), also called the Alaska yellow-cedar, is prevalent in the temperate rainforest of Southeast Alaska.

This conifer is part of the Cypress family (*Cupressaceae*), and may be distinguished by the following:

- A medium-to-large evergreen tree from 30 to 70 feet tall or taller and 40 inches in diameter or more. It is described as having a narrow crown, with few and drooping branches.
- Leaves are tiny and yellow-green, slightly spreading, scale-like needles $\frac{1}{16}$- to $\frac{1}{8}$-inch long with pointed tips.
- Twigs are leafy, four-angled and slightly flattened. Branches appear flat and slightly drooping with a reddish-brown color.
- Bark looks shredded on the trunk with long narrow bark shreds and fissures. They are ash gray or purplish-brown colored.
- Cones are scattered on the branch. They are short-stalked, nearly round, less than $\frac{1}{4}$ inch in diameter, about the size of an average thumbnail and often covered with a whitish bloom. They have four or six paired, rounded, hard cone scales with a central, pointed projection. The cones mature in two years. Two to four tiny seeds (less than $\frac{1}{16}$ inch) may be found under cone scales and these seeds have two broad wings.
- Wood has a distinctive “moldy” odor. It is fine textured, straight-grained, and moderately heavy and hard for a softwood. The heartwood is a bright dull yellow with a narrow band of lighter sapwood. Overall the wood is a dull yellowish color. It can be scratch/dented with a thumbnail. This wood is even grained and easily worked with tools. It is not a structural wood but is used for carving, trim, window cases, etc.
- Uses for this very durable, rot-resistant wood that takes finish and paint well also include for boat building, doors, poles, piles, furniture, cabinetry, etc. Native Americans of Southeast Alaska and coastal Canada used (use) it to make canoe paddles, masks and totem poles.

Yellow cedar is found in wet habitats of the temperate rainforest from sea level to approximately 1,200 feet. Research indicates that yellow cedar growing above 400 feet elevation, may be less prone to yellow-cedar decline, where snow tends to remain longer and thus is better able to help protect the tree’s frost-sensitive root system. Yellow cedar grows in small, pure stands and also in mixed stands with western red cedar, Sitka spruce, western hemlock,
Yellow-Cedar Decline

Yellow-cedar (Chamaecyparis nootkatensis) decline is prevalent in the North Pacific coastal temperate rainforest of Southeast Alaska and British Columbia and is an accelerated condition leading to early mortality of yellow cedar. It is believed that reduced winter snowpack has led to less protection from freezing temperatures that severely damage the yellow cedar’s root system.

Conclusive data to prove this theory has yet to be completely revealed. Research continues to determine all reasons for the premature loss of this economically valuable and culturally important timber tree.

Elevation may play a role in the decline. One study found that yellow cedar growing above 400 feet in elevation were more cold hardy than those growing below that elevation.

Yellow-cedar decline was first noticed soon after 1880 at the end of the so-called Little Ice Age climatic period. This apparent warming trend hypothetically limited the retention of snowpack that protected yellow cedar roots systems from excessive cold damage when temperatures dropped quite a bit below freezing. As regional temperatures warmed, precipitation occurred more often as rain than as snow. Snow functioned as some insulation from rapidly declining temperatures during colder periods of a normal winter. This periodic freezing without a snowpack for protection eventually damaged yellow cedar roots. It is hypothesized that damage to yellow cedar root systems accumulated, leading to earlier mortality than in the cooler period during the Little Ice Age.

Dead yellow cedar can maintain economic merchantability as timber for up to 80 years after death. Harvest of yellow cedar dead zones can offer, as economically feasible, significant opportunity for locally valuable wood products. Timber harvest that focuses more on stands of dead yellow cedar may shift harvest away from remaining live stands and act as a form of yellow cedar conservation.

Ongoing research is being conducted to address the loss of yellow cedar in certain areas. Healthy persistent stands are being compared to dead stands to determine limiting factors. Planting yellow cedar seedlings at increased latitude and higher elevation is being done to determine if assisting migration of this species to the north may help it thrive as the landscape seems to be slowly warming and changing in other ways.

Red cedar seems to provide economic and ecological values similar to yellow cedar and it appears to be growing in to those areas vacated by yellow cedar due to mortality.

Within its range, areas with well-drained soils appear to be most likely to grow yellow cedar into the future. The more productive industrial timber-growing areas in the Pacific Northwest temperate rainforest may become focal point locations for active future management and may be the most successful locations in the conservation of this species.

Additionally, forest managers are attempting the introduction of yellow cedar where the species has not been found but still within its range. A trial planting near Yakutat, in northern Southeast Alaska, has shown 90% first-year survival rates. If successful in the future, this may indicate that targeted, assisted migration could be used as an effective management strategy.

This information has been adapted from the Rain Forest Council, USFS in Southeast Alaska, Wikipedia and their resources.
Yellow Cedar Salvage Research

Glen Holt, RREA forester

Research in Southeast Alaska is investigating the ecological and economic effects of yellow-cedar decline. Partners at the University of Alaska Southeast in Juneau, the USDA Forest Service, the U.S. Fish and Wildlife Service and five small local sawmills on Prince of Wales Island within the Tongass National Forest are collaborating.

The U.S. Forest Service’s Allison Bidlack, with the Alaska Coastal Rainforest Center (ACRC) in Juneau, is the principal investigator on this project. From the center’s website one can determine some of the following.

The North Pacific coastal temperate rainforest is the largest remaining temperate rainforest in the world and is an economically and culturally important lumber source. ACRC is investigating the ecological effects of yellow-cedar decline within the rainforest and the market potential of dead stands of yellow cedar to provide needed economic opportunities to local sawmills in the Tongass.

Yellow Cedar Economic Considerations

Yellow cedar is a valuable, decay-resistant wood used for carving, trim, door and window frames and specialty wood products. It may remain standing dead for decades, and it retains much of its original strength and wood properties for many years after death. As feasible, salvage logging could help supply part of the timber required by small-scale rural sawmills in Southeast Alaska, helping them remain in business and provide much-needed local employment.

This species is being studied to determine how and to what extent it helps support the local timber industry and whether its utilization might help reduce harvesting of live yellow-cedar stands, conserving them for the future. Researchers are also working to better understand community benefits and the feasibility of harvesting and handling dead yellow cedar.

Yellow-Cedar Ecology

The center’s researchers are also investigating the ecological impacts of salvage logging on the landscape to see if it is meaningfully affecting successional plant growth communities that support the ecosystem and its wildlife. Yellow-cedar decline appears to be expanding, and researchers are looking ahead to predict how vegetation communities of the forest may shift and what the regeneration dynamics of yellow cedar in the future might look like. The ACRC is interested in the population genetics of this species, how it may have been shaped by the regional glaciation, and future opportunities for management and conservation.

The Alaska Coastal Rainforest Center is investigating the market potential of dead stands of yellow cedar.

One of the mills involved in the yellow-cedar salvage research. Photo by Allison Bidlack, Alaska Coastal Rainforest Center.
Forestry Tools: Determining Diameter for Tree Volume

Glen Holt, RREA forester

Foresters measure tree diameters at 4.5 feet. This is called the DBH, or diameter at breast height, above the ground. Along with some form of tree height, they use these measurements to determine a tree’s volume. The DBH is best taken on the upslope side of the tree.

Make sure your tape measure has no sags in it as you put it around the tree and pull it tightly to get the best measurement.

If a tree forks above 4.5 feet, measure it at the 4.5-foot mark and tally it as one tree. If the tree being measured forks below 4.5 feet above the ground, measure each individual fork and write down those diameters and count it as two trees.

I use species-specific volume tables made in Southcentral Alaska. They depict gross tree volume by comparing the measured DBH with the tree’s total height. On those local tree volume tables, I am able to determine tree volumes when calculating the volume of trees by species in Southcentral timber stands.

Landowners can use a simple cloth or thin metal tape like those used for sewing and measure in inches. They are light to carry, inexpensive to obtain and work great.

Measure the tree at DBH and write down what you read on the tape. Later, easily convert that circumference to a diameter using this simple formula:

\[ D \text{ (diameter)} = \frac{C \text{ (circumference)}}{3.14} \]

Let’s say you measure a spruce 46 inches in circumference. The determined diameter of this tree after applying this easy formula is 14.6 inches in diameter.

\[ 46 \text{ inches in circumference divided by 3.14} = 14.6 \text{ inches in diameter} \]

For later calculating volumes from a volume table, I round measurements up or down depending on whether they are 0.6 inch above or below the shown inch measurement.

If the diameter is 0.6 or larger, I round up to the next nearest full inch. For our 14.6-inch tree, I round it to 15 inches in diameter. If the measurement is 0.5 or less after calculating to diameter, I round my diameter down.

Announcement

The Cook Inlet Chapter of the Society of American Foresters is taking orders for its 2020 spring seedling sale. Seedlings purchased will be available for pickup on Saturday, May 16, at locations in Anchorage and Wasilla. Kenai Peninsula purchasers will be contacted with details for a pickup location after the main seedling distribution.

The order form and more information are available online from the chapter’s website at [www.alaska.forestry.org/TreeSale](http://www.alaska.forestry.org/TreeSale). Species include lodgepole pine, Siberian larch, Scotch pine, white spruce, Colorado spruce and paper birch. Check the website for potential updates. The chapter is following COVID-19 guidance from health officials, and the distribution method may need to change.
Industry Corner: Viking Lumber

Glen Holt, RREA forester

The timber industry in Southeast Alaska was huge in the 1970s and ’80s compared to now. To this day, it continues to utilize commercial tree species, including Sitka spruce, red cedar, yellow cedar, and western and mountain hemlock. It obtains commercial timber from the Tongass National Forest, Alaska Native corporations, the State of Alaska, university and Mental Health Trust timberlands. The Tongass National Forest provided most of the timber volume for all mills adjacent to it.

Now, Viking Lumber Company Inc., which is located near the town of Klawock on Prince of Wales Island, is the last sizable mill in the region. Viking buys most of its wood from timber sales offered in the Tongass National Forest but also from state forestlands, university and Mental Health Trust lands and from Native corporate timber lands. The company cuts large old-growth trees that can produce highly desirable tight-grained, clear boards.

Log trucks loaded with huge logs run back to the mill from timber sales all over the island. Logging equipment of necessity here is equally huge. Large piles of logs are organized throughout Viking’s log sort yard. Several huge piles of wood chips are worked by an equally large dozer.

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Lumber is milled and then barged to the Lower 48 and shipped all over the United States, where it is made into molding, trim, door and window frames, piano soundboards and other products often best made only from Alaska wood. You can’t find a Viking board for sale in the area. All of it at this time is shipped to the Lower 48.

Viking firelogs are also manufactured in Klawock and are made from its large supply of wood chips generated from sawmill waste and wood that wouldn’t make decent lumber. Nothing is wasted at the Viking wood yard. The biomass logs are made from 100% compressed wood formed under high pressure and heat. No adhesives or chemicals are used. Pallets of boxes of these biomass products are sold in Alaska. Many tons of them are marketed throughout Southeast at prices competitive with well-seasoned firewood. They have a low moisture content, store well in a dry location, and boxes of eight firelogs are not too heavy for the average person to handle.

Operating the largest sawmill in the Tongass National Forest is not without its challenges. Timber at times can be hard to get in the quantity, quality, location and seasonality needed to maintain an even flow of forest products for the present and future. Recent
Books and Publications

In this section we identify books and publications that may be of interest to our readers with natural resource topics that have recently been made available to us for forest landowners, forest land managers, tree stewards, rural and community foresters, practitioners and scientists interested in forest and natural resource research and management.

If you become aware of a book or publication all of us might benefit from knowing about, please share it with us through my email address, ggholt@gsi.net. It would be much appreciated and we all stand to gain by the extra resources to refer to.

This edition looks at a publication written by the Alaska Department of Fish and Game Division of Wildlife Conservation. We are glad to add it to our library of knowledge and I will be referring to it often when helping forest landowners plan and implement projects within their forests.


Introduction (from the booklet)

This guide briefly describes practices to enhance or conserve features of wildlife habitat in managed forests of central and northern Alaska. Property owners and logging contractors can implement these tips during harvest of firewood or timber, and land managers can employ the mechanical or prescribed fire techniques to enhance habitat where tree harvest is not desired or economical.

This is not a comprehensive planning guide. More information on wildlife habitat features and ecology of managed boreal forest can be found in the brochure “Guidelines for wildlife habitat management in Alaska boreal forest.” Much greater detail, including landscape planning of timber harvest, can be found in the technical bulletin “Managing boreal forest for timber and wildlife in the Tanana Valley of Eastern Interior Alaska.” Both are available through the Alaska Department of Fish and Game website under the “Habitat” tab.
Boreal Forest Newsletter Articles

We’ve been asked about articles that appeared in earlier editions of the Boreal Forest Newsletter. Here’s a list of previous issues and topics. You can access all past issues at www.uaf.edu/ces/naturalresources/rrea/.

**Fall 2013**
- Dealing with Wind-Damaged Spruce
- Firewood: Cutting, Splitting and Stacking
- The Case for Defensible Space
- Tree Felling: Safe Tree Cutting for Firewood
- The Forest Growth and Yield Program
- Seasoning Firewood Saves Money
- Quaking Aspen
- Industry Corner
- Announcements and Classifieds

**Spring 2014**
- Birch Sap Season
- FSWCD Tree Sales
- Ruffed Grouse Surveys Near Tok
- Logging in Delta for Pellets
- Alaska Birch
- Industry Corner: Superior Pellet Inc.
- Announcements and Classifieds

**Fall/Winter 2014**
- Birch Tree Decline
- The Debate Over Clearcutting
- DOF Harvests Spruce Cones
- Heating Your Home with Wood
- Purchasing Firewood in Alaska
- Tok School Biomass Project
- White Spruce
- Industry Corner: Young's Timber
- Announcements and Classifieds

**Spring/Summer 2015**
- Managing Your Forest Den Trees
- Prune in Early Spring
- Log Cabin Building Class
- Which Trees to Cut
- Labeling Numerous Woodpiles
- Balsam Poplar
- Citizen Science
- Early Detection of Bark Beetles
- Forest Grouse Surveys
- Tree Sales
- Alaska Community Tree Stewards

**Spring/Summer 2016**
- Forestry and Small Private Forest Land Management Objectives in Alaska
- Timber Harvest Methods Promoting Forest Regeneration, Part 2
- Forestry Tools: Using a Biltmore or Cruiser Stick to Determine Tree and Log Volumes (About-Forestry.com)
- SNRE Forest Research: The 30-Year Outcome of Assisted Regeneration Treatments in a Burned and Salvaged Interior Alaska Boreal Forest
- Wildfire! Create “Survivable” Space!
- Insects and Other Forest Problems: Do You Use Local Firewood? (USDA Forest Service)
- Book Review: Norwegian Wood
- Forest Products Corner: Biochar: A Value-Added Forest Product
- Announcements

**Fall 2019**
- Alaska’s Board of Forestry
- Fall Activities for Spruce Beetle Mitigation
- The Renewable Resources Extension Act Program
- Cutting Your Own Firewood
- Forest Management on Nonindustrial Private Forest (NIPF) Lands
- Splitting, Stacking and Seasoning Firewood
- Featured Tree: Sitka Spruce