Fall/Winter 2015

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:

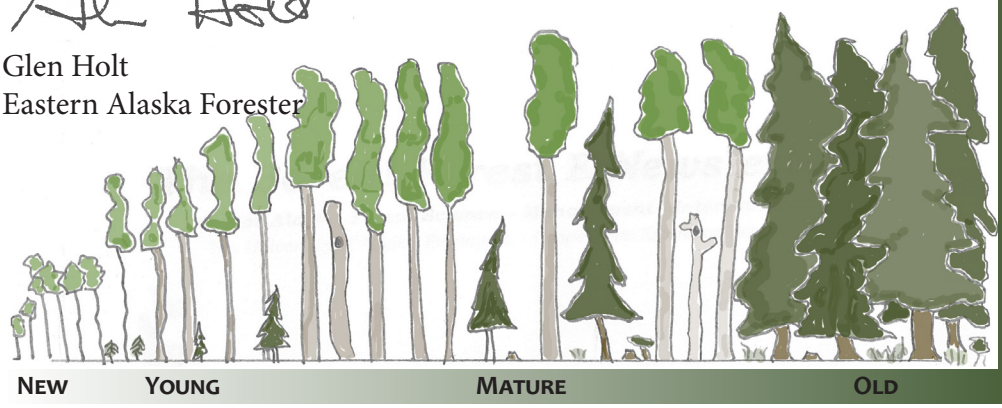
Last summer more than 5 million acres burned in Alaska. The State Division of Forestry, Bureau of Land Management and the Alaska Fire Service, along with national wildland fire crews, suppression experts and aircraft brought up from the Lower 48 and Canada, worked to fight the fires. More than 50 homes and structures were lost in Alaska. Many more were saved because of fire suppression efforts. Property loss was far higher in the Lower 48 this year.

Fire scientists and fire weather forecasters predict the possibility of larger, more frequent and more intense wildfires in Alaska if our climatic change continues.

In this edition we will briefly define some scientific methods in the practice of forestry, and we will review the modern forest management methods foresters use in Alaska. In this edition we will look at forest ecosystem and biodiversity and what some UAF forestry researchers are doing in Alaska. We will also be introduced to a new nonprofit organization promoting the "working forest" concept, outline Alaska's black spruce tree species, begin to discuss the role of forest management and look at some forest insect pest problems. And we look at several biomass projects in Interior Alaska that were part of our recent biomass tour.

Have a great winter and get ready for late winter woodcutting as you stockpile next year's seasoned firewood!

Glen Holt
Eastern Alaska Forester



What's Inside

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Forestry, Forest Management and Their Future in Alaska

Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

Many Alaskans ask me if forest management that includes logging is sustainable. The short answer is YES! State Forestry and private forest land managers are required by state regulation to reforest logged lands. In general, actively managed forests regenerate better than the similar but unmanaged stands of trees. A properly and actively managed forest provides more products and has more desirable attributes than one that is left to the random acts of nature.

Wikipedia defines *forestry* as "the science and craft of creating, managing, using, conserving and repairing forests and associated resources to meet desired goals, needs and values for human benefit."

Silviculture is defined by the Canadian Province of British Columbia as "the art and science of controlling the establishment, growth, composition and quality of forest vegetation for the full range of forest resource objectives. Successful silviculture depends on clearly defined management objectives."

The Society of American Foresters: Dictionary of Forestry defines *forest management* as "the practical application of biological, physical, quantitative, managerial, economic, social and policy principles to the regeneration, management, utilization and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest." It goes on to say that forest management includes management for aesthetics, fish, recreation, urban values, water, wilderness, wildlife, wood products and other forest resource values.

Forestry is one of the most broad-based sciences in the field of natural resources management. One can go a lot of different directions in the profession of forestry.

The "management" of forest resources takes into account all valuable forest assets to determine the appropriate methods for harvesting timber to be manufactured into products we all use every day.

Alaska has a large commercial timber resource base that has largely been unmanaged because of its location. Harvesting these timber resources may be economically challenging where there are limited viable markets for that timber because of the long distances to markets. However, harvesting local timber provides local and regionally needed forest products and provides a greater net economic benefit to local communities than purchasing timber managed and manufactured elsewhere. The challenge to foresters, other resource managers and commercial timber landowners is to harvest Alaska's timber sustainably so it will regenerate a forest for the future.

Economically feasible access to timber resources is an issue. Professional foresters scientifically determine the annual-allowable cut on state-managed forest lands. Throughout mainland Alaska, less than 10% of what could be sustainably harvested on state-owned forest lands is actually harvested.

What is the future of forestry in Alaska? There will be plenty of forestry opportunities in Alaska's future given the number of acres of timber burned, killed by insects, dying of old age or blown down by the weather along with accessibility, new markets, appropriate timber harvest technology and changing public perceptions about managing forests as a renewable resource. Although it is reasonable to assume that biomass probably won't be used more than 100 years from now, it could be. And our changing climate might make it feasible to truck wood products up the Dalton Highway to be shipped along with other Alaska products north across the Arctic Ocean. Who knows?

Timber Harvest Methods Promoting Forest Regeneration, Part One

Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

Article 8 of the Alaska State Constitution states: "It is the policy of the State to encourage the … development of its resources by making them available for maximum use consistent with the public interest." This requires state foresters to provide timber resources from state-owned designated forest lands that will provide forest products and do forest management in compliance with their policies and under the Alaska Forest Resources and Practices Act (FRPA, AS 41.17). The FRPA governs how timber access, harvesting and reforestation occur on state, private and municipal lands in Alaska.

State, private and Native corporate forest landowners are required to harvest timber sustainably, protect important fish habitat and fish passage on Alaskan waterways and regenerate those forest lands within a specified period of time. In doing so, state and other forest landowners improve other important forest resources including wildlife habitat, access, recreational opportunity, subsistence, wildfire protection, landscape diversity and local economic opportunities. Timber harvests provide forest products and forest managers are required to renew the timber stand so that it regenerates back to a forest at least as productive as the forest that was harvested. Agency and private foresters utilize modern forestry science and harvest methods developed site specifically to enhance and improve their forested lands, maintaining the economic and biologic opportunities these lands provide.

The practice of forestry based silvicultural timber harvest systems are designed to promote healthy and diverse forests for the future. Without their application the result would most likely be spotty or random tree stocking and poor forest regeneration.

The first two timber harvest methods used in Alaska and presented here regenerate an even-aged forest. The practice of all silvicultural timber harvest methods and systems continue to evolve and develop. Harvest methods are separated into "classifications." The intent of these classifications and system methods is to encourage sustainable, healthy and well-stocked forests for future generations as physical and biological conditions determine.

The Practice of Silviculture, 9th edition, by D.M. Smith outlines proven, practical and widely accepted forestry methods and is used as a guide for foresters harvesting timber to attain natural or artificial forest regeneration. The following information on three of the six classifications of reproductive forestry methods are adapted from the book and from "Tree Harvesting Methods That Encourage Forest Regeneration" by Steve Nix (see References for web address).

Even-aged forest management methods

An even-age forest usually regenerates, often in large areas, after a wildfire. The trees that grow back are all about the same age. Site productivity, location and many factors determine the forest's growth rate and survival on a specific site. Hardwoods, including birch and aspen, most often regenerate first, overtopping slower-growing conifers like spruce. The following even-age timber harvest methods try to replicate conditions similar to the aftermath of a wildfire.

Clearcutting Method — This method removes all trees from a cutting unit to best regenerate that stand back to a forest. Clearcutting in Interior Alaska is used when the forest is composed of shade-intolerant tree species such as aspen, balsam poplar, cottonwood and birch. Clearcutting is also used when most of the trees in a timber stand are over-mature, in poor health, poorly formed, unable to improve due to disease, insects or old age and there is little existing pre-harvest regeneration to rejuvenate the forest.

The clearcutting method is used (barring other resource concerns) when old age leads to an unproductive or "decadent" forest that is declining faster than it is growing. Unless there is another compelling reason to do so, partially cutting this forest stand does it little good and ends up retaining "cull" trees that have no chance of economic improvement. An over-mature aspen, balsam poplar or cottonwood stand made up of biologically old, dying, cull and low-value trees may require clearcutting to re-establish a young healthy forest. Clearcutting will maintain this younger

The coppice-forest or sprouting method using clearcuts

Aspen, balsam poplar and cottonwood are most successfully regenerated when the coppice method of regeneration is used. These tree species regenerate and rejuvenate best from root sprouting after logging during the dormant season from mid fall through early spring, just prior to sap run.

The coppice method regenerates forests from root sprouts. Root sprouting aspen, balsam poplar and cottonwood tree species respond immediately during the next growing season with exceptional vigor and growth. Often many thousands of these trees will sprout and outpace planted seedling growth by far. To facilitate re-sprouting, a clearcut is often the best logging method for these species.

Stump sprouts: Alaska birch can *stump sprout* after cutting or death by wildfire. Natural stands of birch are best regenerated after wildfire exposes mineral soil and the area is adjacent to a birch seed source. Interior Alaska foresters understand that controlled burning can be effective when regenerating a birch stand; however, ideal times for controlled burning are also during the wildfire season when no fire management resources are available since all efforts are directed to suppressing wildfires and protecting lives, homes and property.

This stand of aspen in the Mat-Su Valley Moose Range is only 10 years old and it regenerated from root sprouts after a winter clearcut.

forest type, providing a more diverse array of mixed habitats for wildlife that require younger age classes of forest growth, especially hardwoods like aspen, birch, poplar and willows.

This stand was high-graded; the best trees were cut. It is very understocked. Stand residuals won't improve, are of low economic value and are unlikely to adequately regenerate.

Clearcutting is also a method used when harvesting mixed birch/white spruce stands if the object is to replace them with a similar mixed stand. Mixed hardwood conifer spruce stands are regenerated most successfully by natural seed that falls on mineral soil. Spruce may be planted to bolster white spruce stocking. An available birch and spruce seed source and a favorable seed bed condition for germination must exist to be successful, both for natural seeding and planted trees. Generally, the site must be prepared using heavy equipment, such as a dozer or an excavator, to "scarify" the site, which exposes mineral soil so tree seeds can germinate and escape undue grass and shrub competition.

This stand was logged and immediately scarified using a small dozer in 1985.

Dozer site scarification is a site preparation tool that exposes mineral soil to seed fall and promotes natural regeneration as well as provides competition free places to plant seedlings.

Two years later, in 1987, the forest was rapidly regenerating. Here, balsam poplar/cottonwood seeds grow from their cottony seeds on this prepared site. This forest was also planted to a variety of conifers. In 2015, approximately 30 years later, the stand is fully regenerated with a mixed stand of naturally regenerated hardwoods and spruce and planted spruce, pine and Siberian larch.

This stand was clearcut more than 15 years ago. Aspen and white spruce are growing back into a well-stocked mixed stand. Planted white spruce supplemented natural seeding from the adjacent forest.

Clearcutting in Southeast Alaska has proved to be a useful method that successfully regenerates western hemlock and Sitka spruce. Clearcutting a hemlock/spruce stand often requires precommercial thinning to remedy overstocking and promote the growth of larger, more valuable trees in a shorter span of time.

Seed-Tree Method — This modification of a clearcut leaves seed trees scattered within the cutting unit. Seed trees are used in conjunction with site preparation methods to expose mineral soil for effective seed germination. This method is used in Interior Alaska with scarification that adequately exposes mineral soil to regenerate birch and/or white spruce. Even so, white spruce seedlings are often planted in addition to ensure adequate stocking and arrangement of this valuable timber tree species.

A number of "seed trees" are left singly or in small groups to establish the next even-aged forest. This method frees the forester from depending on seeding from outside the harvest unit. Ideally, seed trees should be healthy, able to survive high winds and produce viable seeds prolifically and there should be enough trees left to do the job without undue shad-

ing. Often seed trees succumb to snow bending, especially pole-sized or small saw timber-sized stands that have acclimated to growing in dense forest stands. After sufficient seedling regeneration has occurred, seed trees may be harvested, but it is rarely economically feasible to do so commercially in Interior or Southcentral Alaska.

Using any harvest method, a forester may determine if it is in the best interest of the landowner to bolster natural regeneration with planted seedlings, especially with higher value species.

Seed tree cuts could be used in Southeast Alaska to increase Sitka spruce stocking as opposed to excessive stocking by western hemlock, which is a less valuable timber species. Clearcuts there favor western hemlock in certain conditions. In Southeast Alaska, foresters may find it economically feasible to sell large Sitka spruce seed trees after appropriate spruce regeneration, if the condition and market for those trees allow.

Shelterwood Method — A shelterwood condition occurs when a stand has undergone a number of cuttings between establishment and final harvest. These harvests and thinning occur over a relatively short period of time leading up to the final rotation: the age at which the entire stand is harvested and the new even-aged stand is allowed free to grow. The partial "shelter" overtopping the establishment of even-aged reproduction acts as seed trees. Here, too, the additional shading must be factored in as to whether this method is appropriate.

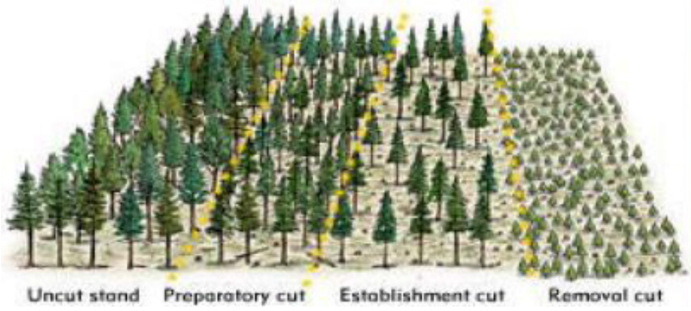
This method could work in a mixed aspen/poplar/white spruce forest where the hardwoods are cut first. Understand that if enough light shines on the forest floor, aspen will regenerate and probably provide good moose browse, but the aspen might not prosper due to the lack of full sunlight. Removal of the overtopping and co-dominant hardwood stand along with some of the poorly formed white spruce could improve the residual spruce stand by fostering additional accelerated spruce growth

This method may also be useful in Southeast Alaska for managing Sitka spruce stocking and reproduction. Sitka spruce are moderately shade-tolerant and the added spruce seed from a Sitka spruce overstory has been shown to help establishment of that species at stand maturity.

Two objectives described for a shelterwood cut include (1) making ground space available by cutting trees that are lowering in value and (2) using trees that are increasing in value as a seed source and for seedling protection as these trees continue to financially mature. You are maintaining the best trees to grow while cutting trees with lower value for new understory seedling space. This wouldn't be a good method where there will be only intolerant (light-loving tree species) tree seeds available to regenerate.

The sequence of this particular method should be done by making (1) a preparatory cutting that prepares and stimulates seed trees for reproduction, (2) a seed tree cutting to further open vacant growing space for seeding and (3) a removal cutting that frees the established seedlings.

Foresters and timber producers must weigh the economics and feasibility of applying this method of harvest, especially when logging low-value timber and considering the shade-intolerant species managed in Interior Alaska.



From: www.forestrynepal.org

In our next newsletter we will outline Part 2 of "Tree Harvesting Methods That Encourage Forest Regeneration." I encourage all of you interested in forest management to Google "about forestry," which will lead to forestry.about.com and many excellent articles written by forestry expert, Steve Nix.

References

Nix, S. 2015. Tree Harvesting Methods That Encourage Forest Regeneration: The Major Natural and Artificial Reforestation Schemes, http://forestry.about.com/od/silviculture/a/Natural-And-Artificial-Methods-Of-Forest-Regeneration.htm

The Forest Ecosystem & Biodiversity

Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

Forest ecology is an ecological science that studies, as much as possible, the complete biotic (plants, animals etc.) and abiotic (soils, geology, weather etc.) systems within a defined forested area. A forest ecologist seeks to understand basic biology and community population dynamics, species biodiversity, environmental interdependence and how these factors coexist with human pressures, including aesthetic preferences and economic necessity. The forest ecologist must also understand the nonliving principles of energy flow, water and gas cycles, weather and topographic influences affecting the plant and animal communities that interact making up the local forest.

Forest ecosystems are dynamic living things and subject to factors like ecological aging, forest succession from one age class to another, environmental catastrophe and plant/animal/human population dynamics in the many scenarios that affect that local forest.

A forest ecosystem is comprised of many other "systems within systems," which are extremely complicated. There could be innumerable systems within a local forest and sometimes comparing them even within the same region is not exact. Science and forest ecologists may never know all there is to complete the study nor gather all the information necessary to a final satisfaction or the final answer to the many questions they are asked. As with all branches of science, forest ecology is a field where there is much yet to learn.

The "forest ecosystem" was recently defined by the "Convention of Biological Diversity": "A forest ecosystem can be defined at a range of scales. It is a dynamic complex of plant, animal and microorganism communities and their abiotic environment interacting as a functional unit, where trees are a key component of the system. Humans, with their cultural, economic and environmental needs are an integral part of many forest ecosystems."

Alaska is huge and has many forest ecosystems where human intervention throughout many years has played a role in the structure and function of our forests. Wildfire is probably the largest single impact on forests in Interior and Southcentral Alaska. Many fire scientists and forest ecologists predict that fire along with an apparent climatic warming trend may play an increasing role in the make-up and composition of our future forest lands.

Alaska forests produce an array of resources, including timber products.

The Working Forest Group TWFG

Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

A new organization, The Working Forest Group (TWFG), formed in Alaska to promote the concept of a "Working Forest" here in Alaska. The concept is not new in other parts of the United States, Europe and the world where forested areas owned by private individuals, states, counties and central governmental agencies actively manage their forests to provide a number and variety of goods and services, including recreational opportunity, resource health and healthy sustainable supplies of renewable timber for the many products people use every day.

As many may recall, timber availability has markedly declined in Southeast Alaska after the large pulp industry there went out of business and the U.S. Forest Service decided to reduce timber harvesting on most national forests.

The nexus of this Alaskan group was formed in Southeast Alaska by experienced professional foresters, natural resource consultants, university researchers and others convinced that active forest management was not only a plus for the health of our forests and wildlife resources but also much needed for rural community development and economic opportunity in all of Alaska.

The goal of the group is to once again help educate Alaskans about the "working forest" concept by promoting and implementing active forest management. As stated on their website: their goals include:

- Implement its "working forest" concept throughout Alaska.
- Align and support industries and other user groups dependent upon forest resources.
- Promote healthy economies, stable communities, and healthy environments through responsible utilization of natural resources.
- Support research and provide useful information and data to help educate, stimulate discussion, and foster solution based activities in Alaska.

The working forest concept is a model in sustainability and its primary goal is to unite those with common interests and provide support for the environment, the social structure of communities and our resource-based economies.

The group would like to help be a voice for the principle that all industries are responsible for the sustainable use of natural resources and the forest and they would like to help be a vehicle for multiple use forest management.

The concepts will work throughout Alaska too. If anyone is interested in working with or learning more about The Working Forest Group, Google "The Working Forest Group in Alaska" and contact it by email at Erin@AKWorkingForest.org.

This "working forest" produced saw logs, firewood, wildlife habitat, recreational ski trails, birch sap, birch bark, understory vegetation for landscaping and a multitude of other developing landowner forest values.

The Cooperative Alaska Forest Inventory Project

Matthew Stevens, Research Forester, Forest Growth and Yield Program, University of Alaska Fairbanks

The 2015 summer field season was very successful for the Cooperative Alaska Forest Inventory project (CAFI) run by the Forest Growth and Yield Program within the School of Natural Resources and Extension at UAF. Working in the field from mid-May through the end of August, forestry field assistants remeasured a total of 49 permanent sample plots throughout Alaska. The major areas that were visited this field season were in Tok, Delta Junction, Fairbanks and most of the Matanuska-Susitna Valley. The CAFI proj-

Feature Tree: Black Spruce

Picea mariana

Alaskan black spruce is most characteristic of cold wet flats, muskegs, north-facing slopes, silty valley terraces and lake margins in the spruce-birch Interior forests up to about 2,000 ft. in elevation. Stands are often found in permafrost areas where soils are relatively cold. It is a resinous evergreen usually small in stature, from 15 to 30 feet tall and 3-6 inches in diameter. Sometimes it grows no more than a shrub less than 10 feet tall. Black spruce may also exhibit a number of stems growing up at the base from branches that have grown down into the surrounding deep moss layer and have popped up becoming an additional leader of that same tree root system.

Black spruce is rarely more than medium-sized, attaining a height of 50feet or with a diameter of more than 9 inches. Except for firewood and occasional use as poles and cabin logs, black spruce in Alaska at this time has limited economic value. Vast areas of black spruce provide actual habitat for a limited number of wildlife species but older stands may foster a wide and varied variety of lichens important to such big game species as caribou.

Black spruce needles are short-stalked, spreading on all sides of twigs which are generally attached to short compact branches. Their needles are shorter than white spruce needles at ¼ to ⅝ inches long and are 4-angled, pointed, stiff, ashy blue-green, with whitish lines on all sides.

Twigs are slender and covered with very short reddish hairs easily seen with a hand lens, becoming brown and rough from peg-like bases of the needles.

The bark is thin, composed of gray or blackish scales that are brown colored on the back side. The inner bark is a yellowish color in black spruce.

Black spruce cones curve downward on short stalks and are small and egg-shaped being nearly round from ⅝ to 1¼ inches long. The cone scales are brittle and slightly toothed. Their color ranges from a dull gray or blackish. The cones are often conspicuously clumped at the top of the tree and may remain on the tree several years. New black spruce cones are generally closed. They open to spread their seeds after a number of hot summers or wildfire.

Left: Black spruce cones are small and egg-shaped, almost round. Right: Black spruce are a slow-growing tree often associated with colder soil permafrost areas.

Black spruce forests are often underlain with moss and several species of lichen.

References

Viereck, L.A. and E.L. Little. 2007. *Alaska Trees and Shrubs*, 2nd edition. University of Alaska Press.

ect also has permanent sample plots along the Dalton Highway, on the Kenai Peninsula and throughout the Copper River Valley. The crew consisted of two forestry field assistants, two German forestry students and myself as the crew leader.

The CAFI project has been run by the Forest Growth and Yield program for a long time. Some of the permanent sample plots that were measured this past field season were measured for the fifth time. On a five-year rotation of measurements, the oldest plots that have been measured five times were established 25 years ago. Information gathered at these sites is used to assess the health, growth and yield of Interior forests. The information can be used to develop management tools that Alaskan landowners need to make informed decisions on land management issues that they face.

Hosting the two German students was a great experience for everyone involved. Interesting conversations about similarities and differences between American and German forestry and culture were often held as the summer progressed. Both of the students and I will cherish the opportunity to partake in a cross-cultural working environment.

The 2016 field season will concentrate on another rotation of permanent sample plots in the Tanana and Matanuska-Susitna valley. Attentive preparations made this off-season, which are already underway, and should lead to another productive field season next summer.

The 2015 UAF Forest Inventory Crew monitors stand growth progress and characteristics.

The Biomass Opportunity in Alaska

Interior Alaska Biomass Projects

Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

Last October the USDA Forest Service, the Alaska Energy Authority and the UAF Cooperative Extension Service hosted a biomass tour from Anchorage to Fairbanks. Participants from agencies, villages and biomass energy researchers joined the tour in Anchorage going north to Fairbanks. Another group took the same tour from Fairbanks back headed back south. More than 20 Participants from all over Alaska and the Yukon Territory participated. Operators of the biomass facilities were informative and gracious dealing with both groups.

Biomass is a viable alternative to fuel oil for heating homes and buildings. Many communities have abundant wood resources around them they are using to supplement or replace non-renewable petroleum based products for heating. Home heating fuel oil has cost as much as $10.00 a gallon delivered to remote locations.

Using locally produced renewable wood as cordwood, chips or pellets has proven economically advantageous to many communities that want to save money on heating costs, provide local economic opportunity and establish energy security.

Biomass use in Alaska is creating local infrastructure that is locally sustainable. No one expects the price of fuel oil to remain at current low levels. Local production prevents gaps in supply or transportation that can occur when obtaining energy that is refined outside of Alaska.

The following is a list of locations that converted to renewable and locally obtained wood biomass for heating and in one case, producing electricity.

The **Cross Road Medical Center** in Glennallen converted from fuel oil boilers to cordwood and wood pellet boilers. It purchases locally dry beetle- and fire-killed cordwood. Fuel oiler boilers are relegated to backup.

Empyre Elite cordwood boilers at the Glennallen Cross Road Medical Facility

The **Kenny Lake School** just finished construction of a KOB pellet boiler system to heat its facility and is bringing it on line to supplement fuel oil as that price rises in the future.

The **Tonsina River Lodge** converted from fuel oil and woodstove heat to Empyre Elite cordwood gasification boilers. It saves a considerable amount of money burning dry, seasoned, standing beetle-killed timber in a very efficient and less smoky gasification wood boiler as opposed to using fuel oil for heat and wood stoves.

The **Village of Gulkana** uses Garn cordwood gasification boilers to heat its school, offices and housing for the elderly. The village has a pellet boiler for the warmer spring and fall seasons. Timber comes from road and wildfire defensible space projects. Gulkana is also constructing a large pellet boiler and wood pellet plant to supply wood pellets and compressed "wood bricks" used as a supplement for traditional cordwood stoves.

Gulkana's Garn cordwood boilers are fully operational and use a local source of fuel for heat.

The **Village of Chistochina** is building a KOB pellet system to heat its village school, clinic and tribal offices in the future.

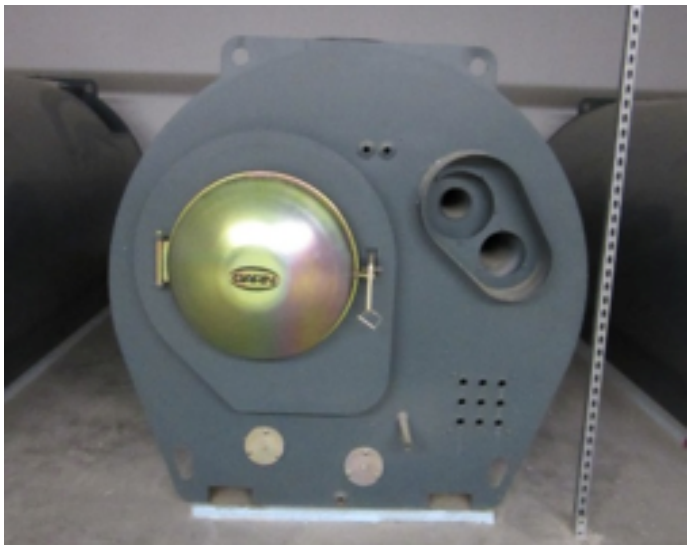
The **Mentasta Lake wood chip boiler** is an automated system that uses a thermal storage water tank. This highly efficient chip boiler system heats the school, clinic and tribal offices. It creates less smoke than the average catalytic wood stove for a home in town. Wood chips are obtained from the Tok School Biomass Project 60 miles north. All chips come from

fuels mitigation projects to reduce volatile forest fuels surrounding these heavily forested Interior Alaska communities.

The **Tok School** biomass project uses a Messersmith system with a steam turbine to produce combined heat and power. An adjacent greenhouse also uses heat from this system. The steam turbine provides most of the school's electricity. The greenhouse is a teaching aid that employs students and provides fresh produce throughout the winter for all six schools in the Alaska Gateway School District. Thousands of dollars saved by the school district have been used to add additional school programs for students. The fuel wood comes from federally funded fuels mitigation programs that create defensible space around Tok. Previously this wood was burned in the winter for disposal. Local wood chip production creates local employment that supports the community, providing economic diversity in an area that needs jobs and economic opportunity.

This large, highly efficient, state-of-the-art Tok School chip boiler produces almost no smoke.

The **Tanacross Village** cordwood boiler central heating system will heat several buildings including the new tribal offices, shop and rental office units. Firewood obtained from the local forest includes dead -dry, wind-thrown and fire-killed timber.



In Tanacross, four highly efficient Garn boilers will provide locally obtained heat for the new office facility.

Dry Creek Community and Logging and Milling Associates, between Delta and Tok, is a saw mill, dry kiln, log home-fabricating and wood biomass company. It has a wood pellet plant that produces premium-grade wood pellets for wood pellet stove users in the area. Slabs and waste wood from the mill are chipped and sold to the Delta School for use in its wood chip heating facility.

In Dry Creek, wood residue from milling is made into chips and wood pellets for heating.

The **Delta School** uses a Messersmith chip boiler to provide heat for the school, outlying buildings and shops. Over the years it has saved thousands of dollars using locally obtained, sustainable and renewable wood chips.

The Delta School chip biomass boiler and chip storage system is housed in one building.

The **Superior Pellet Fuels** company located in North Pole, 10 miles east of Fairbanks, produces premium wood pellets and its new "pellet log" product utilizing locally obtained, poor quality, spruce and aspen timber for heating homes and other buildings. The company currently employs a half dozen people, and a few more work in the woods as contractors to supply low-quality timber that is perfect for pellets. Superior Pellet envisions that as the price of fuel oil rises and people notice the economic benefits of a local energy source and understand the environmental benefits of using a carbon friendly fuel, its market will expand.

A half-acre of packaged Superior pellet logs on pallets are ready for sale to people with traditional wood stoves.

What is Bugging Our Forests?

Aspen Tortrix Recovery

Nick Lisuzzo, USDA Forest Service, Forest Health Program, Fairbanks, Alaska, and Glen Holt, Eastern Alaska forester, UAF Cooperative Extension Service

Last May there were numerous reports of aspen defoliation in the Goldstream Valley on the north side of Fairbanks. An area approximately 50 acres in size has been heavily defoliated by the caterpillar, large aspen tortrix (*Choristoneura conflictana* Walker). Brief, intense outbreaks are common throughout the range of aspen and typically last two to three years before collapsing. These outbreaks can grow to cover thousands of acres. The larvae tie together leaves with webbing and feed on the plant tissue. They will web other species of plants and feed on them if they run out of available aspen foliage. Although the forest can look very grim, leafless and covered in webbing, the trees will often create a second flush of leaves later in the summer. Historically there has been little long-term damage to the aspen trees associated with past outbreaks. (Posted in: Forest Health, Lepidoptera)

May 2015 Aspen Tortrix defoliation on aspen trees and caterpillar webbing on white spruce conifers.

This aspen stand in May in the Goldstream area was denuded of all leaves.

Near total aspen defoliation in May was largely re-leafed by the end of August in this same aspen stand in the Goldstream valley.

Note from Glen Holt: By the middle of August I returned to the area Nick surveyed and found the stand documented recovering with a second flush of leaves. Next season it will be interesting to see if an infestation of aspen tortrix occurs with same intensity. In the meantime, we can expect some additional understory growth of plants and shrubs that received more than normal sunlight under this closed canopy of pole-sized aspen.

No more webbing and a "second flush" of leaf growth indicates the aspen stand is working on recovery.

Announcements

Tanana Valley State Forest Citizens' Advisory Committee Recruitment

The Alaska Division of Forestry is seeking applications for four seats on the Tanana Valley State Forest Citizens' Advisory Committee that expire on December 31, 2015. Reappointments will be reconsidered for members with expired terms.

This 12-person committee advises the Division of Forestry on plans and proposals for managing the 1.8 million-acre Tanana Valley State Forest and other forested lands managed by the Alaska DNR in the Tanana Valley. The committee is also a forum for gathering public opinion on management of state forests and helps build a regional consensus about forestry. These are unpaid, volunteer positions. Meetings are held about four times each year. More information about the committee may be found at www.forestry.alaska.gov/tvsf_committee.htm. Descriptions of the vacant or expired seats are provided below:

- **Regional Representative,** Lower Tanana Valley. This seat represents the public on a regional basis. This includes commercial and noncommercial as well as consumptive and nonconsumptive uses of the forest area. The representative should reside in

the western Tanana Valley west of the Fairbanks North Star Borough.

- **Private Forest User.** Represents the incidental forest user for both consumptive and non-consumptive activities including subsistence and personal use.
- **Mining Industry**. Represents organizations and individuals involved in the mineral exploration, extraction,and processing industries.
- **Tourism Industry.** Represents the commercial operators who directly use forest lands as well as those whose customers are incidentally exposed.

If you are interested in one of these positions, mail a letter explaining your interests and your qualifications to:

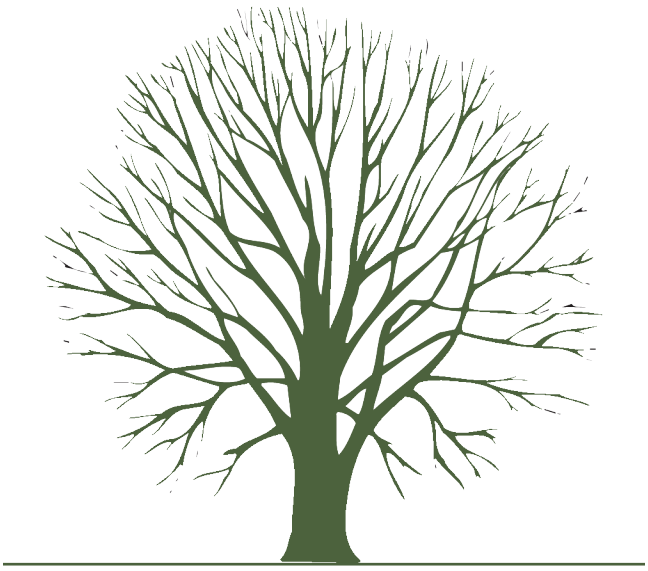
Jim Schwarber, Alaska Division of Forestry
3700 Airport Way, Fairbanks, AK 99709-4699

fax: 907-451-2690
email: to james.schwarber@alaska.gov

Be sure that your letter is received no later than 5 p.m., Wednesday, January 6, 2016.

Firewood Workshop in Fairbanks

Check the Fairbanks Daily News Miner and the UAF Cooperative Extension website for more information, including date and location, of the firewood workshop. This will be on a Saturday in February on the UAF campus.



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.