



The Lark Hotel used cross-laminated timber extensively in its recent expansion. Photo by: Think Tank Design Group, Inc. Bozeman, MT.

Emerging Wood Products Innovation

By Tom Perry, Wood Products and Wood Energy Program Manager, Montana DNRC

These are exciting times for Tree Farmers. US softwood lumber demand is forecast to increase for the next decade¹, and new products and technologies are gaining exposure. Recent wood innovations are diversifying the types of products produced and increasing the utilization opportunities for saw-log quality material, lower grade material, and material traditionally disposed of in slash piles. What does an increase in demand, utilization, and diversification mean for you and your Tree Farm? It means more treatment options and lower per acre treatment costs, helping you realize better outcomes in your forest. Here are some impactful wood products you can expect to see gain exposure in the coming years.

Cross-laminated timber (CLT) is being adopted rapidly in North America. Smartlam, the first

US manufacturer of CLT, is located in Columbia Falls, MT. If you are not already familiar with this technology, picture sheets of “plywood” 10 feet wide and 40 feet long made from cross-grained layers of dimensional lumber. It’s big, it’s thick, and it’s strong...so strong it is a suitable replacement for concrete and steel in non-residential construction. Wood is also the only major building material that removes more carbon from the atmosphere during growth than is emitted during harvest, processing and transport combined. As cities strive to make their development more sustainable, expect more and more non-residential construction to utilize wood. Douglas-fir and western larch saw-logs are currently the preferred stock for manufacturing CLT panels in the Northwest.

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Letter from the Chair

Allen Chrisman, Chair, Montana Tree Farm Program

This has been another packed year for Montana Tree Farm. You will notice our Fall Newsletter is a little later than normal. Our previous editor, Chris Town, had to step down due to other responsibilities and so Angela Wells stepped in to help once her maternity leave completed in mid-September. Our congratulations to Angela and Lucas for their new addition and future Tree Farmer!

Membership Fees: While we had planned on implementing a Membership Fee of \$30 per Tree Farm owner in January, 2018, the American Tree Farm System has decided not to implement a \$10 per Tree Farmer assessment to offset the costs of Third Party Certification for at least a year. In addition, National has proposed an initiative to reduce the administrative burden on state programs by taking over specific work (Data Base Management, Inspector Assignments and Certification, Third Party Certification Assessments and other items) to free up state programs to focus on

working with Tree Farmers and reaching out to other forest landowners. Consequently, at the Montana Tree Farm Annual Meeting on September 29th, the membership adopted the recommendation from the Steering Committee to defer the implementation of membership fees until the decision on certification assessment fees and the restructuring of state program workload is clarified. The Steering Committee believes we need a reliable source of funds to continue to deliver to Montana Tree Farmers the services you deserve, including funding our Administrative Assistant position.

Annual Tree Farm Meeting: We had an outstanding Annual Meeting at the Lincoln County Fairgrounds in Eureka on September 29. Our spring 2019 newsletter will feature a full write-up from Steve Arno as well as a feature on our 2018 Tree Farmer of the Year, Franklin Coles of Bozeman.

Strategic Plan Update: One of the guiding documents that is required to maintain our State certification is a Strategic Plan. Our current Plan was drafted in 2014, and is in need of revision. The Steering Committee met in May and affirmed the four Focus Areas that we will use as the core of our Strategic Plan:

Focus Area #1: Provide and Increase Services and Benefits to Tree Farmers

a. Provide information and web links on forestry services such as a list of consulting foresters, professional loggers and mills.

b. Lead: Jared Richardson;
Co-lead : Mark Boardman

Focus Area #2: Recruit New Tree Farmers

a. Increase the number of Tree Farms in the program by 10% (net) each year

b. Lead: Angela Wells, Co-Leads: Jim Costamagna, Mark Boardman and Pat Mandzak

Focus Area #3: Capacity Building

a. Increase the committee's ability to do work

b. Recruit new steering committee members

c. Form New Partnerships

d. Lead: Allen Chrisman; Co-lead: Mark Boardman

Focus Area #4: Long-Term Financial Sustainability

a. Lead: Joe Moran; Co-leads Gary Johnson and Bonnie Simpson

The Committee is balancing work on the Strategic Plan with other ongoing items. If you have questions, comments or opinions on where the Montana Tree Farm Program should be headed, please feel free to weigh in.

Montana Forest Practices Best Management Practices Audit 2018:

The Montana Department of Natural Resources and Conservation is charged with auditing the compliance and effectiveness of Montana's Best Management Practices (BMPs) and compliance with the Streamside Management Zone (SMZ) laws related to timber harvest. I was able to represent Non-Industrial Private Forest Owners (NIPF's) during the past two Audit cycles – the summer of 2016 and 2018. The process is very well organized – harvest units are selected randomly from Federal, State, Industrial, and Small Private forestlands. The Audit Team – consisting of professionals in hydrology,

soils, fisheries, road engineering, and forestry – review the units for compliance with the voluntary BMPs, as well as the effectiveness of the BMPs as implemented.

It is an excellent opportunity to become familiar with Montana's BMPs (which are voluntary per legislation, but are required to maintain Tree Farm Certification) and the State's SMZ laws. Montana has excellent compliance with the BMPs. This is important to Tree Farmers, since we much prefer a voluntary system of compliance compared to prescribed regulation from the State. The next Audit cycle will be 2020. At that time we will be asking Montana Tree Farmers to volunteer to help fill positions on the Audit Teams (Northwest Montana, Western Montana, and Eastern Montana) to represent small private forest owners. For more information, please contact me.

Elected Officers and Administrative Assistant:

- I finish out my term as Chair at the end of December, and Vice Chair Jared Richardson will take over the Chair position in January 2019. We are open for nominations for **Vice Chair**, a term that starts in January 2019 and proceeds to Chair in January 2021. We are very interested in a Tree Farmer representative.
- Gary Johnson has served as **Treasurer** forever, and would very much like to turn the responsibilities over to someone else. This office comes with a stipend. Skill with Excel spreadsheets and basic accounting is necessary.
- And our **Administrative Assistant/Secretary**, Bonnie Simpson, is unable to continue with us next year. We will be looking for a replacement. This is a part time paid position that would begin in January. Writing skills and experience with common office software is necessary.

Please let me know if you are interested in any of these positions.

Do you have questions, comments, or want more information on Montana Tree Farm? Please feel free to contact me at achrisman52@gmail.com or by phone at (406) 249-6130.

Sincerely, *Allen*

Allen Chrisman,
Chair, Montana Tree Farm Program

Nationally, **biochar** is also becoming a commercially viable forest product and may provide an outlet for slash and pre-commercial sized trees, forest material that has been too expensive to utilize in the past. Biochar is similar to charcoal in that it is produced by heating wood in a low oxygen environment. Slight alterations in the heating process give it different properties than charcoal, however. The applications for biochar are constantly expanding. As a soil amendment it has incredible water holding and nutrient fixing capabilities, and commercial agriculture is a dominant user of biochar. It is capable of remediating heavy metal and acid contamination in soils; its application in mine reclamation as a toxin binder has been proven. It is being used in industrial applications as an emissions filter and can also be used to remove excessive fertilizer from water bodies.



A custom kiln on private forest land in the Blackfoot Valley burns logging residues to create biochar, a highly absorbent porous substance similar to charcoal which can be used in remediation of water and soil contamination as well as improving soil fertility. The kiln was manufactured in 2017 by students in Missoula's Hellgate High School's welding class. Photo by: Martin Twer.

Most commercial US biochar production has historically used urban wood waste as a feed stock due to its low costs. The combination of an increased focus on mitigating wild fire and increased product demand is encouraging producers of biochar to explore forest biomass as a feed stock. Currently, biochar production occurs in Montana at a very small scale. However, the traditionally non-commercial forest material in Montana's forests has been identified as a valuable potential feed stock for large scale production. Anticipate all trees greater than 1" DBH as potential biochar feedstock, and processing and hauling of slash as a viable alternative to pile burning. For a tree farmer, supplying feed-stock for biochar production could replace piling and burning of slash following harvests, and decrease costs of fuel reduction treatments.

Currently, mill by-products like sawdust can be used for heating lumber kilns, manufacturing wood pellets for home heating, and making light duty wood products like particle board. However, higher value products such as **wood fiber insulation** manufactured from mill by-products increase milling efficiency and provide higher returns than traditional low-value log purchases. Wood fiber insulation replaces fiberglass and polystyrene insulation in both residential and non-residential construction. The superior moisture transfer, 'r-value' and acoustic performance of this product has catalyzed its growing popularity in Europe over the last few decades. Currently, wood fiber insulation products are imported to the US. Imports have risen enough that companies are exploring potential production sites in the US; however, this product is still too new and a little too unfamiliar to catch the attention of a lot of domestic mills. Expect importation of this product to increase in tandem with CLT construction and in residential construction as people look for more sustainable building materials.

Tree Farmers steward an increasingly important resource. All around the world people are demanding less carbon intensive materials to meet society's needs. People are looking for innovative products and businesses to increase industrial sustainability. Manufacturing of CLT is here, in MT, now. Manufacturing of Biochar in MT is likely to increase. Manufacture of new products like wood fiber insulation may take a little longer to reach Montana given our state's distance to urban population centers but increasing interest among local architects and engineers in using materials that are regionally sourced combined with a building boom in Montana's major cities may lead to demand in the future.

Forest ownership and responsible management costs money, but it is an investment like no other. The fulfillment for an owner of a well-managed forest is much greater than numbers in a spreadsheet. For Tree Farm owners, a diverse forest products market can make the difference between implementing a stewardship treatment versus being left with no options other than to liquidate the resource or leave it untreated and highly susceptible to catastrophic loss from wildfire, insects and diseases. ♦

1 Ekström, H. "Global Timber and Wood Products Market Update". Wood Resources International LLC. <https://woodprices.com/wp-content/uploads/2018/03/New-Study-Outlook-for-US-Softwood-Lumber-Supply-and-Demand-to-2030.pdf> 2017.

Selling Logs in Montana

By Chris Damrow, Forester, F.H. Stoltze Land & Lumber Co.

Selling logs to mills in Montana isn't quite as easy as showing up at the mill with a trailer full of logs anymore, but it's not terribly difficult either. Most mills require a valid, signed Log Purchase Agreement to be in place before deliveries can begin and there is a little paperwork and groundwork to complete to make that happen.

Before you start cutting, call around to a few mills and ask if they are looking for wood and what their specifications - e.g. minimum top size, log lengths - are. It helps to know what products will be manufactured from your trees (sawlogs, post & rail, firewood, pulp etc.) since most mills are fairly specialized in what type of wood they take and what they make out of it. However, most will also be helpful in pointing you in the right direction for outlets to contact for selling other types of products. If you're not sure what products you might have most mills have trained foresters on staff to answer those questions, usually with an onsite consultation.

Another great resource I recommend calling before you cut (it's actually their slogan) is your local Montana DNRC Service Forester. A list of service foresters can be found at <http://dnrc.mt.gov/divisions/forestry/forestry-assistance/>. They can assist you through all phases of the timber sale process from recommendations on potential markets for your wood to seedling orders from the State nursery for reforestation following harvest if necessary. They will also provide guidance on complying with Montana's forest practices laws and voluntary best management practices. Remember, following Montana's laws and best management practices is one of the eight Tree Farm Standards of Certification!

Reputable loggers can also provide advice on how and where to sell your logs. Often, they will take care of the marketing for you. Montana Tree Farm recommends choosing loggers who are certified through the accredited logging professional (ALP) program offered by the Montana Logging Association. Call MLA at (406) 752-3168 for a list of certified loggers or visit http://www.logging.org/accredited_logging_professional/index.php.

You or your contractor will need to contact the MT DNRC office in your area and apply for a Hazard Reduction Agreement (HRA) and get a copy of that permit to the mills you are selling products to. It is state law that receiving mills must have a copy of that permit to accept logs into their yard and most mills require a copy of that permit first in order to issue a Log Purchase Agreement. It's a \$25 application fee and the DNRC withholds a small percentage of your payments from the mill. This serves as a notification to the State and a bond between the State and HRA permit holder that they are not creating a fire hazard. Once the slash has been cleaned up the DNRC will refund most of the withholding funds to the HRA holder. HRA permits typically expire after 2 years. While it's often the contractor doing the harvesting and marketing of wood who applies for the HRA, it's important for the landowner to be aware of this permit since they may ultimately be held accountable for slash disposal.



Photo by Kelley Hirning

The type of paperwork required by mills before issuing log purchase agreements does vary somewhat. Some may just require the HRA permit. Others may require proof of ownership of the property (deed) or payment instructions from the landowners if payment is going to someone other than them. In some counties most of this information can simply be acquired online by the mill to make things easier. Make sure you call the mill ahead of time so they can inform you of what they need so you can have everything ready to present for a Log Purchase Agreement.

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Glossary of Mill Terminology

From Loren Rose, Chief Operating Officer, Pyramid Mountain Lumber

Editor's note: This list of commonly used mill terminology was developed by Loren Rose, Chief Operating Officer at Pyramid Mountain Lumber. It is displayed in several places at the mill including the break room and is intended to help employees understand the most important technical concepts of their day-to-day work. The glossary has been edited for clarity and length and is being reprinted with Mr. Rose's permission.

MBF: Thousand board feet. It is the unit of measure by which lumber is sold and logs are purchased. The official definition would be a cube containing 12 square inches (144 cubic inches). Easier to visualize is a 2x4 that is 18 inches long, or a 12-inch-long piece of 1x12. Adding some confusion is the fact that logs are sold on an MBF basis (log scale) which does not correspond exactly to the volume of lumber it will produce (lumber scale). Log scale was developed over 100 years ago and a 2x4 was actual 2 inches by 4 inches. Today it is 1.5 inches by 3.5 inches. Also, saws are much thinner today than 100 years ago and computer technology, like curve sawing, allows sawmills to maximize the lumber volume in a log.

Scale: Scale, or log scale, is the volume of logs on a truck. The measurement is called Scribner Decimal C – or “Scribner” – after a man named J.M. Scribner, who published it in 1846. It is based on diagrams of circles that show the amount of boards that will be utilized from diameters of logs. Since most logs are purchased based on scale, it is an extremely important part of the log buying process. When logs are scaled, each is measured for length and diameter on both ends. Then the scalers look for log defect. That would include rot, sweep, crook, swelled or hooked butts, rotten limbs, and fire scar. There is also manufacturing defect, improper lengths, poor bucking or small tops. At Pyramid, a report is generated for each load that is scaled and is shared with the logger. It is an important piece of information for both the company and the logger and helps maintain a good relationship between the company, the logger, and the landowner the logger is working for.

Overrun, aka Recovery: A mathematical calculation equivalent to lumber scale divided by log scale. If a sawmill gets 2 board feet of lumber for each 1 board foot of log, the overrun is 2.0 (2 divided by 1). Each species has a different recovery due to the lumber produced and the grade rule for each product.

Cant: Logs are cut into pieces or “broken down” in a series of steps. When a log goes through a primary breakdown machine – such as a head rig, twin, or end-dogging log feeding system – the sawyer takes the outer edge off two sides of the log, making a flat surface called an opening face. The sawyer also orients the log before they start cutting it so that any “hump” in the log is facing up. Picture a banana that has the two ends on the counter and the middle of the banana is a couple of inches off the counter. Carefully, you could cut banana slices all the same length. That is the goal at the sawmill with logs. Once a log has an opening face on both sides, the operator releases the cant to the curve saw.

Curve saw: A secondary breakdown machine that cuts the cant based on its curve. The cant is scanned with lasers and a computer processes the scanned image and designs the sawing solution. The cant actually goes through the curve saw in a straight line and the saws move in the cut along the arc of the cant. The curve saw is actually three saws rotating on axles, or arbors. Saws on one arbor cut the bottom six or more inches of the cant and the top arbor saws cut the top of the cant, assuming the cant is thicker than six inches. Both bottom and top arbors are connected to a large third arbor that rotates as the cant is passing through the saws.

Wane: The highest grades of lumber have four square edges. Any edge that is not square has wane on it, usually because it comes from the rind of the log. To maximize recovery, some wane is left on boards at the sawmill. Those boards would be on the outer edge of the log and can easily be seen at the curve saw. The boards coming out of the center of the cant have four square edges, while the piece on either side of the cant will have wane. Some cants will have two pieces on each side with wane.

Offset: That space on the board wider than six inches that has been cut on the curve saw where the top and the bottom saws nearly come together. Obviously, the

saw blades cannot touch, so the goal of the filers is to get them as close to each other as possible. There are spacers, called guides, between the saw blades. In a perfect world, the top and bottom saws would line up perfectly. During a shift, some saws move ever so slightly. When that happens, offset occurs. The drop out operator behind the curve saw is the first person to see boards emerge and part of their job is to watch the offset. A rule of thumb is the thickness of a dime is acceptable. Anything more than that and the filers are called to come change saws or adjust the arbors.

Blue stain: A fungus that typically affects pines and changes the color their wood fiber. It is actually more gray than blue. It can start by insects entering trees or occurs naturally as trees die, like those killed in a fire. While blue stain, or stain, might be attractive and folks like the look of it, the grade scale says it cannot be better than a #3 grade. Sometimes the difference between #2 and #3 grade is \$200 per MBF. In today's prices, a #2 16 x 8 is worth \$7.31 while a 16 foot #3 is only worth \$4.91, illustrating the importance of maintaining grade. When you see sprinklers in a log yard it's because mills are trying to keep wood wet to prevent blue stain from starting in log decks. Blue stain is also the reason why it's important to salvage timber quickly. Blue stain is a visual defect; there is nothing wrong structurally with the board. Another quirk in the grade rule is that blue stain does not downgrade dimension lumber. That is why stud mills can utilize salvage logs a couple years longer than specialty lumber mills.

Residuals: In the process of converting logs to lumber, there are four by-products – chips, sawdust, shavings (from the planing process), and bark. These are called residuals. Mills have several strategies for using residuals, from selling them to secondary processors (such as a particle board manufacturer) to burning them to produce steam for kiln-drying lumber. Residuals can generate a significant percentage of mills' revenue stream, making them an important but often overlooked part of their business structure.

Dunnage: Any number of items produced to ease the handling of lumber. Lumber trucks put 2x4s on their beds and stack lumber on top of them forklift drivers can get their forks in and out. At the planer, 2x4s are "ripped" in half and then placed in sets of three on

top of a unit of finished lumber, again to be easily moved by forklift. Lathe is ripped at the planer to place on surfaced (planed) units as they are stacked to lend stability to the unit. A lot of the wood used internally at a mill comes from wood the planer infeed workers pull out ahead of the planer due to some characteristic of the piece that makes it unsuitable for processing. Once the lumber hits the floor, employees chop the usable portion out and stack it. The unusable portion goes into a dumpster and ultimately in the chipper.

Stickers: 5-foot-long pieces of 1x4 fir ripped in half and placed every two feet on each row of rough lumber as it exits the sawmill. The purpose of the stickers is to provide enough room between each row of lumber for adequate air flow to properly dry the lumber when it is in the kilns. Both stickers and dunnage are accounted for as "Company Use Lumber." When you add the labor to rip and handle those small pieces plus the raw value of the wood itself, they get very expensive. If you are on a mill tour and you walk by a good 2x2 or sticker lying in a runway, you are walking by over a dollar in value. Most of us would stop and pick up a dollar bill, but very few of us pick up 2x2s or stickers. ♦

DENNIS SWIFT MEMORIAL Tree Farm Inspector Recognition Award

Each year the Montana Tree Farm System recognizes the top Tree Farm Inspectors at the annual meeting. Many inspectors volunteer their time, equipment and vehicle use in promoting the Tree Farm System through their certification and inspection activity.

Are you willing to support Montana Tree Farm Inspectors by contributing to the Dennis Swift Inspector Recognition Award?

YES, I would like to show my support. I have included a donation of \$_____.

Please make your check payable to Montana Tree Farm System and return it with this slip to:

Montana Tree Farm System, Inc.
P.O. Box 17276
Missoula, MT 59808-7276

The Montana Tree Farm System is a non-profit, 501(c)(3) organization, and donations are tax deductible.

Most mills gladly accept logs delivered by individuals and contractors they are not affiliated with, also known as “gatewood”. Gatewood can be delivered by log truck, dump truck or 5th wheel trailer and pickup. I’ve even seen it delivered with a side dump truck, but make sure when you’re talking with the mill to clarify if they can accept the configuration you are wanting to use if it’s not a regular log truck.

If you’ve got trees and you’re interested in commercial harvest at some point, remember that market conditions change seasonally and even monthly. We hear people say, “There’s no one who will buy my logs,” at times when mills are actually scrambling for wood. So feel free to give your local mills a call when you are thinking of selling some timber, and do it more than once every decade. Make sure to have an appointment if you stop by, as foresters are famous for disappearing to the woods. ♦

Happy Trails for Habitat, Recreation and Views

Text and Photos By Lorna and Jim Rittenburg

This article is a reprint from the Summer 2018 issue of *Northwest Woodlands* magazine, a benefit of membership in the Idaho, Montana, Oregon or Washington family forestland owner association. For membership information, please contact the Montana Forest Owners Association at 406-586-6362 or info@montanaforestowners.org

After spending 35 years raising our kids in Pennsylvania, we decided it was time for a change. We sold our house, loaded the U-Haul and headed to northwest Montana to take on a new adventure. We bought property with a house on 142 acres of forest, nestled on the edge of Glacier National Park. Little did we know what was in store as we drove the final 40 miles of dirt road.

We had seen old photos of the property from 25 years ago that showed dramatic views into Glacier National Park to the east and across the Whitefish Mountains to the west. Old photos showed elk grazing near a pond on the property and people riding their horses on trails. We heard stories of the past when pioneers homesteaded, growing hay and raising cattle.

It was early summer of 2017, in what was to become one of the worst wildfire seasons in Montana’s recent history. The property had evolved. There were no open vistas or noticeable wildlife to be found on the property. The mountain views were crowded out by densely stocked stands of primarily lodgepole pine. Initial hikes of the property involved scrambling, and sometimes crawling, through thick trees, ducking under tree limbs and swatting massive mosquitoes, all while admiring colorful but invasive noxious weeds.

Northwest Montana was experiencing hotter than average temperatures, lower than average rainfall, dry vegetation and blustery winds. The dense and uniform forest was at high risk. Forest fires began popping up in the area and we knew we had to take immediate action to manage the land. Fortunately, Montana State University Extension in collaboration with Stoltze Lumber Company of Columbia Falls has designed the perfect solution for new landowners like us. They coordinate a low-cost, annual Forest Stewardship workshop. We registered as soon as we heard about the opportunity. The week long workshop is designed to educate owners of family forests and assist them in developing achievable forest management plans for their property. During the course, participants prioritize goals and develop a long-term strategic plan to identify sustainable ways to meet goals, both ecologically and financially. Potential grants and resources to help with costs of implementing the plan are identified. As a part of the Forest Stewardship course, we listened and interacted with foresters, wildlife biologists, forest financial experts and other landowners who provided a wealth of knowledge in the different aspects of forest management. They helped us develop a strategy to implement our goals.

We had a long-term goal that the forest should have some commercial value to cover the costs of maintaining a healthy forest for future generations. Our plan took into consideration the existing forest conditions, topography, rainfall patterns, aspect, soil types and the value of commercial and pre-commercial timber on the property. The primary goal was to establish and use trails as the backbone for implementing and maintaining the secondary goals of the plan, which enhanced the property not just for recreation, but also for thriving habitats, healthy forests and soils, and a sustainable income mechanism to cover the long-term costs of family forest stewardship.

The property is bordered by several million acres of National Forest. An abundant variety of wildlife uses the Forest as part of their large, regional range. To encourage wildlife onto the property, we needed to provide forage for herbivores and the predators would follow. Dense forests provide plenty of hiding and thermal cover. We envisioned a trail system that meandered through a diverse network of meadows, islands of dense cover and “parked-out” areas of larger trees and native grasses. This would provide a wide variety of habitats for wildlife, including deer, elk, moose, snowshoe hares, lynx, wolves and bears. By letting the mosaic of habitats guide the trail plan, we could enhance the viewshed and aesthetic value of the property by opening “windows” into Glacier National Park. We would provide recreational opportunities for hiking, wildlife viewing, snowshoeing, cross-country skiing and snowmobiling, and help cover the management costs by selling associated timber from thinning.

In late summer of 2017, we consulted with Mark Boardman of Stoltze Lumber Company who surveyed the property and evaluated the existing timber. We designed a carefully balanced plan of cutting commercial timber for saw logs and poles to offset costs of pre-commercial thinning, clearing trails and meadows, and planting new trees. Consideration was given to future stand diversity and productivity, avoiding impact to riparian areas, control of noxious weeds and planting palatable, native grasses to encourage ungulates. In the strategy, we also carefully considered the reduction of fuel and slash treatment.

The skid roads that were used to remove the timber were also intentionally designed and placed to become the basis of the trail system. Extending about 1.75 miles, the skid roads provided a perimeter trail around the property. This placement of the skid roads and location of the landing sites for timber processing had the secondary advantage of clearing views of the mountains. Our trail system would connect to National Forest roads, hundreds of miles of old skid trails and existing hiking trails that wind through pristine wilderness.

To establish the skid roads as the primary trails, we first cleared all stumps and fallen logs, sprayed for noxious weeds and planted with grass mix that would sprout early in the spring before the noxious weeds



Lorna Rittenburg and Mark Boardman observe a harvest in progress.

could take hold. Being skid road width, the primary trails allow snowmobiles and ATVs to access the area for ongoing management and maintenance. The skid roads wind through a wonderfully diverse mosaic of habitats, leading to the slash piles that will become both permanent and temporary meadows after burning. They pass through reserve islands of dense lodgepole that provide cover for small game and birds. The islands are interspersed with small meadows and parked-out forest where healthy Douglas-fir, larch, cottonwood, spruce and aspen were favored and lodgepole pine were largely removed.

The trails pass by small piles of cut timber which provide a habitat for a variety of small mammals and birds. Dead trees were left as snags for birds of prey and woodpeckers. There were a number of small aspen stands in the forest. To allow the aspen groves to flourish and enhance habitat, all trees within 20 feet of the existing stands were removed. The trails meander through aspen stands that will provide beautiful seasonal colors in the fall and help lighten up the forest in the summer and winter with their white bark. To encourage birds, nesting boxes were hung along the trails and logs and brush were piled as habitat to provide thermal cover for snowshoe hares. To monitor the progress towards our healthy habitat goal, we placed a few game cameras along the trails to observe new visitors.

In the fall of 2017, the snow came early; the lumber company finished their work with the skid roads and initial thinning by early December. Peace was restored to the forest. We spent a wonderful first winter snowmobiling, snowshoeing and crosscountry skiing on our new trails and admiring the dark night

skies and views into Glacier National Park and the Whitefish Mountains in the Flathead National Forest.

From the new trail system, we are already observing significantly more wildlife. During winter, the tracks in the snow are monitored to evaluate progress. The results are both rewarding and informative. Small rodents love the dense areas of cover. The elk, deer, moose, bobcat, wolves and foxes appear to enter through National Forest land, using the new trails to roam throughout the property. Elk are frequent visitors to the newly thinned areas around both the house and pond. We even had a moose and calf wander by the house, and on one occasion caught an elk on video licking the game camera. With the arrival of spring and new grasses appearing in meadow areas, more animals will frequent the property and become a regular part of the new trail environment.



Using a snowmobile with a tow sled, we can travel around the trails and conduct maintenance. In this case the sled is carrying bird boxes which are being positioned in trees alongside the trails and meadow areas.

Sustainably managing the trail system and forest will be an ongoing process. Plans for 2018 include connecting the wider skid roads with narrower winding paths that are cut by hand and maintained with a weed wacker. The skid roads and meadow areas will be maintained using a brush hog attachment on the Bobcat. Spraying of meadows, trails and roads to prevent spread of noxious weeds, followed by seeding with succulent grasses, will be an ongoing part of the trail maintenance program.

The Natural Resources Conservation Service (NRCS) provides technical and financial assistance through their Environmental Quality Incentive Program (EQIP). We have submitted an application and are currently working with the NRCS to develop a multi-

year plan, which will include additional precommercial thinning and tree planting to enhance forest health and diversity.

In summary, using the trail system to define forest management zones and the location of skid roads allowed us to establish a path toward a healthier forest with recreational and aesthetic value, and diverse habitats— all within six months of moving to the property. As new family forestland owners, the process of developing a forest management plan and building a trail system has connected us deeply with the property—the habitat that it provides and the wildlife that relies on it—making it quickly feel like our home and habitat too, despite being recent transplants. It's a dream-come-true to bring in the New Year with all of the family on the trail, enjoy the views of the park and the wildlife tracks, and ski cross-country to bed. ♦

To Cut or Not to Cut: Factors Influencing Private Landowners' Timber Harvest Decisions

By Kate C. Marcille, Steven W. Hayes, and Todd A. Morgan
Bureau of Business and Economic Research www.bber.umt.edu

An important decision facing any forest landowner is determining when to harvest your timber. The decision to harvest will influence the composition, growth and condition of your future forest as well as your return on investment. The financial component of timing timber harvest often drives this decision-making process and it can be difficult to determine the optimal time to cut. Whether you are considering your first timber sale or have owned timberland for many years, every landowner finds themselves trying to determine the worth of their timber and the best time to harvest.

As a forest landowner you may have the desire or need to harvest some of your trees and you might wonder when the time is right to try and sell your logs, asking “How much are my trees worth?” Considerations regarding the characteristics of your forestland, the types of trees you'll be harvesting, where your trees will go and what products might ultimately be made from them are important to answering this question.

Many variables can affect the value of timber and it can be difficult to gauge whether or not the market is favorable for selling your logs. Understanding and tracking log prices can play a crucial role for landowners making harvesting decisions. Quarterly delivered log prices can be found on the University of Montana's Bureau of Business and Economic Research (BBER) Forest Industry Research Program's webpage (<http://www.bber.umt.edu/FIR/default.asp>). Available data on current Montana delivered log prices, as well as recent trends in log prices, can help inform landowners (Figure 1).

Although a snapshot in time, delivered log prices can help landowners see what is happening in the general log market. It is important to note that these prices are not necessarily a reflection of current market prices. Fair market prices may vary a great deal based on log sizes, length, quality, contract size and terms, and a number of other factors. In addition, while log prices and lumber prices often follow similar trends, they do

not always track well together (Figure 1). Lumber prices can fluctuate widely with lumber demand and can be tracked weekly where log price changes happen more gradually and are tracked quarterly. Timing of the changes in log and lumber prices is not always in sync and one can lag the other when prices increase or decline. For example, the steep decline of lumber prices from 2005 to 2010, which included the "Great Recession", was followed by a decline in log prices. Although a delay is indicated in the figure, log prices declined during the same period and log price recovery took longer to develop when the economy and lumber demand improved.

Private forest owners need to consider many variables when thinking about the primary forest products

industry as a market for their timber. For example, the answer to when you should sell your logs may be tied to how many logs you have to sell, what species they are, current contractor availability, distance to milling facilities, and general supply and demand. Think local. The cost of hauling increases with the distance logs are hauled, so longer haul distances can reduce the stumpage you receive for your timber. Your logs may be worth a few more dollars at a more distant mill, but will that price difference cover the additional haul cost?

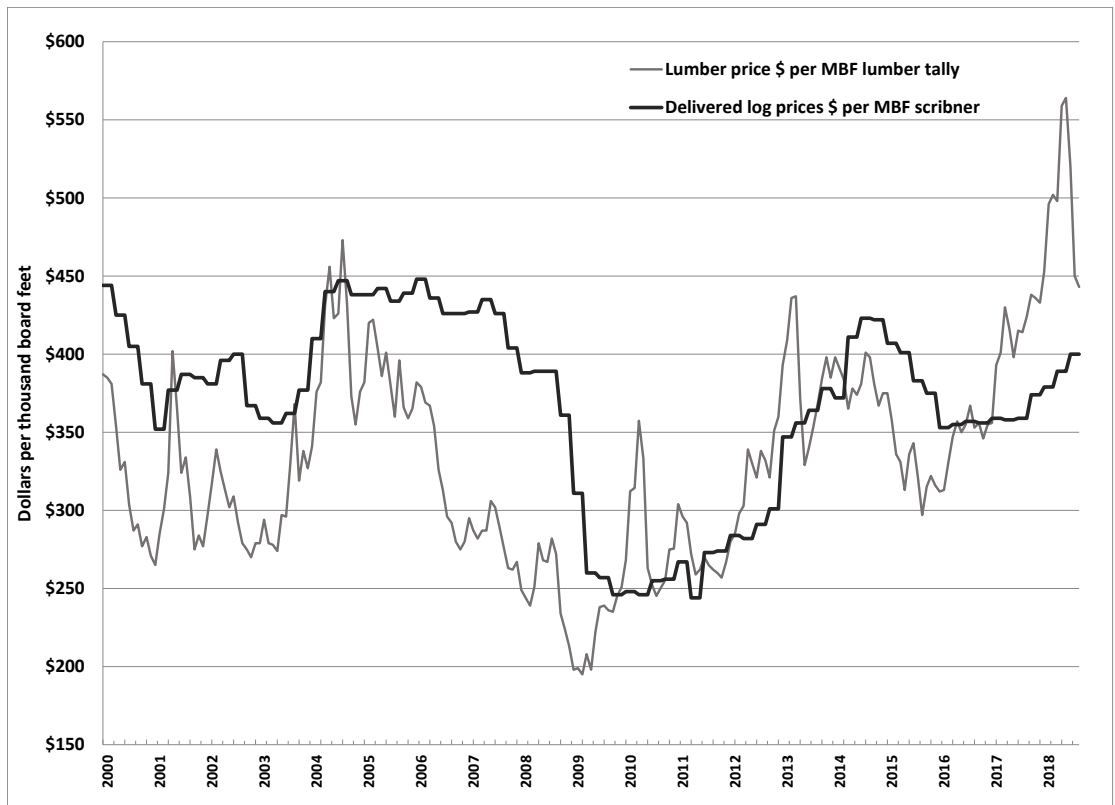


Figure 1.

One size does not fit all. There may be multiple mills and different types of facilities in your area and each may have different specifications for the logs they will accept. Material that is not acceptable for a certain sawmill may be fine for another sawmill, or ideal for a pulpmill, chipping yard, post & pole operation, log home manufacturer, or biomass energy facility. Merchandizing for multiple markets should enable you to get more revenue from your harvest and reduce the amount of slash that needs to be treated.

One forest owner's trash can be another's treasure. Some types of facilities may pay substantially more for similar material and perceptions of log quality can vary. For example, a log home manufacturer may pay

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two to five times more for dead lodgepole pine than a sawmill; or a veneer/plywood facility may pay \$50 to \$100 more per MBF Scribner for larch or Douglas-fir logs meeting certain specifications than a sawmill; or a post & pole plant may pay more for similar material than a pulpmill or chipping yard. Perhaps slash will continue to evolve in its utility and become a truly merchantable product/revenue source for landowners, rather than remaining a costly disposal issue.

Know when to seek professional help. It is a good idea to work with an experienced forester to help you get the most for your logs. A forester can help ensure that you are achieving the goals you want for your land in the long-term and that the harvesting activities are in legal compliance. Your local DNRC service forester (<http://dnrc.mt.gov/divisions/forestry/forestry-assistance>) is a good place to start. A service forester will be able to guide you toward potential outlets, advise you of forest practices laws and best management practices, and help you decide if consulting forestry services are an option for you. The Society of American Foresters (www.safnet.org/

certifiedforester) and the Association of Consulting Foresters (www.acf-foresters.org) are good places to start for referrals to a qualified professional forester in your area. In addition, most large mills have procurement foresters who can work with you to complete a harvest.

Landowners should consider multiple factors when making forest management decisions; financial return is only one component. One of the most important things to remember is there is not an absolute value for logs and no simple formula for the value of your trees. Timber does not have a fair market value in the way many commodities do. The value of your timber is comprised of a variety of components, including what a buyer is willing to pay for it. Forest management decisions should consider all factors - financial, ecological, silvicultural, etc. - that influence a stand of timber or forest. Ultimately, conducting timber harvests that align with your overarching goals and objectives for your desired future forest conditions and engaging with professional foresters will result in the most successful timberland management for your specific situation. ♦