The Forest Steward's Journal

Winter 2022 Volume 35

Journal of the Forest Stewardship Foundation

The MISSION of the Forest Stewardship Foundation is to "educate and inform landowners, natural resource professionals and the general public about the science and ecology of forest lands, the many values derived from forested lands and the principles of sustainable forest land development."

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From the Chair

Just when we thought the Covid 19 epidemic was slowing down we start getting another surge! We all are sick and tired of talking about this subject, but hopefully we can make the best of our situation. We managed to pull off the 2021 Forest Landowner Conference via Zoom, but like many of you I felt it came up far short of actually meeting in person. This year we plan on returning to the Colonial Delta Marriot in Helena along with offering a Zoom alternative for folks that are reluctant about gathering together. Mark April 22nd on your calendar for this conference, which is being co-sponsored with the Montana Society of American Foresters(SAF). We plan on providing valuable information not only for forest landowners, but also for natural resource professionals. The theme of this year's conference is "Human and Ecological Response to Fire". On the morning of the 23rd the Foundation will provide a free Insect & Disease workshop in cooperation with the Montana DNRC and SAF will be offering a wildlife workshop prior to the conference on the 21st. All at the Colonial.

This edition of the journal explores that confusing subject of carbon credits. We know that trees store carbon, but did you know that some forest landowners are actually getting paid to do so in response to helping resolve the global warming issue? There are some very strong feelings both for and against this practice and regardless of where you stand on the subject, it is becoming more of a consideration in the planning process. Until recently carbon credits were only being considered for very large acreages, however organizations like the American Forest Foundation (Tree Farm) are now making carbon credit contracts available for smaller acreages.

Many of us forest landowners are taking a wait and see attitude toward the subject. Personally I believe that good forest management should be rewarded. Doesn't sustainable forestry also equate to or comes close to maximizing carbon credits? You make the call.

Ed Levert, Chair

Common Needle Diseases of Larch

Jill Hautaniemi, Montana DNRC Forest Pathologist

Picture 1: Western larch with characteristic symptoms of larch needle blight.

The western larch (Larix laricis) is a beautiful and iconic tree of Rocky Mountain forests, famous for the bright yellow color of its needles in fall. A deciduous conifer, the larch naturally changes color and drops its needles every year. In addition to this scheduled loss of foliage, however, there are also needle diseases that will cause color change and needle death in larches such as larch needle cast (Meria laricis) and larch needle blight (Hypodermella laricis).

Larch needle cast infections start as yellow/brown spotting on the foliage that grows until it encircles the needle, killing it and causing the whole needle to appear brown. Dead needles are then shed or "cast" by the tree. Needles infected with larch needle blight die quickly, turn a red/brown color and droop within 2 weeks of infection. The dead needles then remain on the tree and fade to a grey or brown color, becoming limp (Picture 1). In both diseases, spores are produced on the dead needles.

It can seem difficult to tell the difference between seasonal needle drop and a larch needle disease but there are key differences. To begin with, larches only drop their needles in the fall, whereas symptoms of needle disease will first appear in the spring after wet weather. Seasonal needle drop usually occurs uniformly and in sync with their neighbors while discoloration and needle death caused by needle diseases may be patchy, uneven, or concentrated towards the bottom of the crown. In the fall, the whole larch needle changes color, whereas foliar pathogens will often manifest as spots or brown tips on the needles. Trees infested with needle blight will also retain clusters of dead needles for 1 to 3 years after death instead of dropping them shortly after death.

It is common to see both larch needle cast and larch needle blight on the same tree. Alone, these diseases would not have much of an impact; together, however, they can cause significant stress if they reinfect the same trees over a period of multiple years. Chronic infections can result in growth loss, stunting of needles, decreased needle production, and sometimes even mortality on seedlings or very small trees. Disease can be kept at manageable levels by removing the most susceptible trees from a stand and maintaining enough spacing to allow air flow to dry the foliage after rain.

This may sound grim but both diseases are limited in their ability to cause repeated infections. These needle pathogens are most successful at infection when the needles are still succulent, and the weather is cool and wet. If the weather is too hot or dry when the larch first breaks bud, these diseases are unlikely to get established that growing season. As a result, although infections are common, they are not usually severe, and mortality is rare. Unless a larch is under significant stress prior to infection, the long-term effects of these diseases on a tree should be small.

Is There an Opportunity for Small Acreage Private Landowners to Participate in Carbon Trading?

By: Sam Gilbert, Stewardship Foundation Board Member

A carbon credit (offset) is a generic term for a tradable certificate that represents one metric ton of carbon dioxide that is sequestered by a project. A purchaser uses the credit to offset or compensate for emissions that the organization is generating. A seller gets income for the commitment to sequester carbon for a period of time (as low as one year, but usually 40 to 100 years) [4.]

Carbon trading started in 1997 with the signing of the Kyoto Protocol and has generated increasing interest with the Paris Agreement of 2016 and the recent 2021 Agreement. The agreements have goals of cutting greenhouse gas emissions in half by 2030 and to zero by 2050. This reduction is expected to be achieved by reducing fossil fuels carbon, improved technologies to capture and store carbon emissions, by natural carbon storage and by other means. Natural carbon storage is the capture and storage of carbon through natural processes in the soil, wetlands, forests and grasslands and in wood products. Studies in the United States over more than 50 years show that forests have captured 12 to 15% of domestic fossil-carbon emissions. Projections indicate that if the nation launched a full-scale effort, they could store an additional 20% or one-third of domestic emissions[1].

Modelling for the full-scale effort assumed there would be more tree planting, extending the time periods between harvest entries and rotation lengths, a 25-year hiatus on harvest in all "natural forest management" lands, and increased use of wood products for construction versus energy/carbon intensive materials such as steel and concrete[1]. They recognized that there are significant differences between various areas of the country and that no one set of rules will fit them all.

Two Carbon Markets

The California Compliance market mandates that companies which are over limit on carbon dioxide production must purchase credits. The Compliance market is currently selling at $12-13 per credit (metric ton) and requires a 100 year commitment[2]. Several forest and rangeland landowners in Montana with larger ownerships have been successful in developing a project and selling the credits on the Compliance market. However, landowners with less than 5000 acres have generally not been able to overcome the upfront costs of a research quality inventory that must achieve a 5-10% sampling error for a 90% confidence level that might cost $500 per plot to achieve[2]. Recent rule changes have also limited the amount of credits that a company can buy and also reduced the amount of credits that can be purchased from outside of California. This also limits the ability of a landowner to enter this market[1].

The Voluntary market is for socially responsible companies and those concerned about future legislation that are willing to set emission goals and purchase credits. The Voluntary market is currently selling at $7-13 per credit (metric ton) and requires a 1 to 40 year commitment[2]. The longer-term commitments have more creditability for actually making a difference in climate change and tend to sell for a higher value[4]. Some projections indicate that the Voluntary market might reach a value of $85 per credit by 2030. Prices increase as more companies seek to buy credits. However, some companies prefer to buy credits only from certain geographic areas or certain timber types.

New protocols are being accepted where inventory by remote imagery or for multiple ownerships will be acceptable to reduce upfront costs. Organizations such as the American Forest Foundation and The Nature Conservancy have developed the Family Forest Carbon Program platform and Finite Carbon has developed the CORE Carbon platform to help small forest landowners participate in the Voluntary Market[4]. Providers such as SIG Carbon can help landowners with the whole process and defer some of the upfront costs[2].

The Nature Conservancy has summarized the scientific basis that increased tree planting and improved forestry practices can effectively offset carbon emissions. The American Forest Foundation is trying to develop a platform where donations from companies and individuals would provide a fund that landowners with at least 30 forest acres would be able to use for upfront costs if they are found to be eligible. A forester would be assigned to verify the eligibility and to provide guidance on the process and the implementation of the improved practices. Some of the receipts from the sale of credits would go back into the fund to pay for

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future projects. The Family Forest Carbon Program has stated that they will not accept protocols that eliminate the ability of a landowner to also achieve other conservation objectives that they might have for their property[3]. The details haven't been firmed up for the platform yet.

Improved Forest Management

Landowners can sell credits by committing to a carbon management objective. The objective can be based on maintaining current sustainable forestry practices such as maintaining high levels of carbon stocks and cutting below the level of annual growth. They can also be paid for increasing carbon stocks through planting trees, reducing timber harvest volumes, converting logged forests to protected forest and extending rotation age or cutting cycles of managed forests[2]. "Carbon defense" where forest treatments are applied to mitigate the effects of fire and insects is recognized as an acceptable treatment[1].

Credit Generation

Credits are generated by comparing the Baseline Scenario against the Project Scenario. The Baseline Scenario is a purely hypothetical scenario of business as usual or worst case. The Project Scenario is based on the inventory and projections of carbon volume on the property over the duration of the project[2]. The industry standard is 40 years, but could be less.

The baseline is the average number of metric tons of stored carbon per acre established within a geographic region and by ownership class (private, public. tribal, etc.). A safety buffer of some percent of the average number of tons is established to compensate for losses due to fire, insects, overcutting or other factors. The difference between the safety buffer amount and the project amount is available for credits. The owner could choose to sell some or all of those credits. As the annual difference between growth and loss is determined over time, those credits could also be sold. The credits can be sold at a fixed price or adjustable price over the time period of the commitment. Initial payment is received at the date of sale[2].

Reversals of carbon levels could occur during the period of the commitment. Unintentional loss such as by fire or insects will be mostly covered by the safety buffer in the collection pool. Intentional loss such as the landowner deciding to overcut annual growth will result in the landowner being liable to buy other credits or pay back from the initial selling payment[2].

Landowner Commitment

During the first 20 years of a 40 year commitment, the landowner is obligated to costs associated with completing the initial project inventory, completing annual monitoring documents and reporting disturbance activities such as fire or insects, and completing a full project inventory every ten years. Third party verification is required to generate annual credits. Annual growth and expenses can be grouped by years. In the second 20 year period, the landowner could choose an off-ramp option that would eliminate the need to continue inventory and verification requirements, but would still require annual reporting. The total 40-year commitment remains in effect[2].

Project Developers

Project developers may be able to cover upfront expenses and risks, manage all phases of project development, initiate market and auction credits and obtain buyer commitments, manage annual credit generation and protocol reporting requirements. They are paid by the landowner and operate under a 10 to 40 year contract[2].

Conclusion

Small acreage landowners have had a difficult time entering the carbon trade market. However, with increased interest from companies entering the voluntary market, with support from platforms such as Family Forest Carbon Program and CORE Carbon and with assistance from project developers, the opportunities seem to be improving. However, things are still in the early stages of development and not readily available yet.

Information sources for this article: [1.] Big trees, tall buildings: How forests can help solve global warming through carbon storage by David Atkins 11/2021. [2.] Carbon Offsets From Improved Forest Management by Dr. Thomas Buchholz, Presentation to Montana Chapter SAF 10/2021 [3.] Family Forest Carbon Program, American Forest Foundation and The Nature Conservancy [4.] Making Sense of the Evolving Small Forest Landowner Voluntary Carbon Market by Caitlin Guthrie and Nathan Hanzelka of Finite Carbon.

Weed Control

By: Judy McKelvey

My husband Pat and I have lived in the North Fork Travis Creek area, located south of Helena, MT, for most of 50 years. Our homestead property, where we built our home and raised our family, came with few noxious weeds. Thistles of various kinds were evident in some spots and were controlled mechanically. After our first small logging project, more weeds appeared on the landscape. Within a few years, as other Travis Creek area residents became aware of the growing noxious weed problem, we formed a weed management group in the neighborhood. We worked with the Forest Service and other already trained group members to become educated as to the proper application of herbicides for weed control and which products were most effective. With the Forest Service and Jefferson County, our weed management group set up a yearly weed control day in June or early July. Before spray day, community members would walk areas of concern and identify them to be treated on spray day. In the early years, the group applied for and received grant money for specific projects.

In 2014, Pat and I purchased additional property along Buffalo Creek. It was a property with potential but had a poorly managed existing logging project with multiple trees left lying on the landscape and numerous noxious weeds rampantly growing everywhere. Initially, I treated areas within sight of the more traveled logging trails and two-track roads leading to the old homestead cabin on the property. Each year I walked additional areas expanding my knowledge of the physical attributes of the property and, of course, the problem weed areas. The areas initially treated show great improvement as the seed source was reduced. The last two years I have been able to apply a 2nd treatment in the Fall, further reducing seed production in some of the more infested areas. Animal trails will always need treatment because multiple seed heads are carried in animal fur. For example, elk bedding sites often show three or more types of noxious species germinating within the same bed.

Spotted knapweed, hoary alyssum, cheat grass, hounds' tongue, Canada and musk thistle, as well as nuisance species not necessarily identified as noxious were present. Montana's Noxious Weed's is a handy reference publication that includes identification information and control recommendations for each noxious weed. The booklet is available from your County Weed District. A downloadable PDF of this publication is available online at: http://msuextension.org/publications/AgandNatural Resources/EB0159.pdf

In hindsight, we would have sprayed infected areas prior to our mechanical logging project in hopes of reducing the seed spread, our weed control labor, and material costs. If a project is in your future, pre-project spraying is recommended for two years prior to bringing equipment into your area.

Spraying has become a Spring through Fall activity for me. Our hopes include introducing biological weed control for some species. A useful guide is Field Guide for the Biological Control of Weeds in the Northwest. A downloadable PDF of this publication is available online at: https://www.ibiocontrol.org/westernweeds.pdf [ibiocontrol.org]

Biological weed control is expensive but hopefully longer lasting and easier on the environment than other methods. At times, especially if there is moisture in the soil, mechanical treatments are useful additions to my integrated management tool box. Hoary alyssum is often difficult to kill with herbicide unless sprayed at the perfect time. It appears to die but returns. I have found that pulling in areas where the root comes up with the foliage is effective. Hoary alyssum often has multiple stiff stems and if a person can pull its handful of stems all at once when the soil is moist, it can be pulled along with its long root intact.

Earlier in 2021, I determined that I should become a certified Pesticide Applicator through the Lewis and Clark County Extension Service so I could use restricted herbicides. Not having studied and taken a test in numerous years, I was somewhat over whelmed by the idea. The Extension Agent administered the test with no time limit and allowing an open book. I passed! At this point, I added Tordon to the chemicals in our arsenal in order to combat leafy spurge.

In Spring and summer, weather permitting, I spend several days a week, up to 4 hours per day, carrying my one-gallon sprayer. I have come to anticipate the long walks, enjoying the scenery, encouraged by the shrinking diameters of weedy areas, and counting my blessings living in such a beautiful landscape.

Editor's note: Judy and Pat McKelvey are the 2020 Montana Tree Farmers of the Year.

Grants for Landowners

Erik Warrington, Montana DNRC Forestry Assistance Stewardship Program

Do you see conifer trees in your forest turn red and wonder why? Does the idea of a wildfire, and what might happen if one encountered your property cross your mind? Do you consider why wildlife does, or doesn't frequent your woods? Maybe you feel equipped to respond to these thoughts, or perhaps sometimes they keep you up at night?

I have a one-acre postage stamp on the valley floor with broad-leafed trees in my yard. I don't reflect on these thoughts about my own property, but I do about the properties that I drive by on my way home, when I'm on a road trip, or out engaging with private landowners for my day job. I grew up spending part of each summer working with my grandfather on 100 acres of what I always thought was the best place in Montana (in a lot of ways it still is). We cleared blow-down and winter damaged trees from his road system, brushed out the property boundaries, and collected firewood. We managed the forest to meet his practical needs, and that is ok, but we didn't manage the forest thinking about what it needed.

Fast-forward 25 years. Trees do a lot of growing in that time, especially in the northwest corner of the state. That 100 acres was overstocked with elements of disease and mortality; not to mention the risk for potential wildfire behavior that was present. Elk didn't frequent the property anymore either. By this time, I understood a thing or two about trees and forests. After a couple of years of conversations with him, my grandfather elected to take action with his forest. It was better late than never, but in a lot of ways the ship had sailed to achieve certain desired conditions that he hoped to see and experience in his remaining tenure of the land. It's easy to forget that trees and forest systems are dynamic, that change is inevitable and sometimes beyond our control.

You might be like my grandfather, needing to act and having a significant change of conditions facing you when things settle, or you might me in a position to make incremental changes over time. When it comes to good planning and help, several options are in front of you.

Technical assistance: The Department of Natural Resources and Conservation (DNRC) has Service Foresters located around the state to help you, the private forest landowner, with professional expertise as you navigate actively and sustainably managing your forest. Visit: dnrc.mt.gov/serviceforestry for more information. Additionally, the Natural Resource Conservation Service (NRCS), your local Conservation District, and county Extension Service office can also provide a suite of natural resource assistance.

Education: The DNRC partners with MSU Extension Forestry to provide forest landowners a unique offering of Forest Stewardship Planning Workshops; an in-depth crash course on forestry topics, assessing your forested property, and developing your own forest management plan. Visit: forestry.msuextension.org for more information. Another avenue of advancing your commitment to sustainable forest management is to join the Montana Tree Farm System and participate in network of landowners interested in sustaining a renewable resource and providing clean water and wildlife habitat within the state. Visit: treefarmsystem.org for more information.

Financial assistance: We are fortunate to have a viable forest products industry which provides options to fund or offset the costs of managing your forest by merchandising the renewable resource, wood, from your management project. Sometimes though, the actions taken don't yield enough, or perhaps any revenue to support the work being completed. In these circumstances, there may be grant funding or other financial assistance to help you cover the costs of the work. The DNRC offers grants to local partners and sometimes directly with landowners to provide cost-share assistance to private forest landowners. These grants focus on reducing wildfire risk and improving forest health conditions. Visit: dnrc.mt.gov/stewardship to learn about opportunities in your area. The NRCS is another great resource for financial assistance. Among other programs, their Environmental Quality Incentives Program, known as EQIP, addresses forest health and wildfire risk concerns, long-term growth objectives, conifer encroachment, and other forest conservation practices. Do a web search for "*NRCS Montana What's Available in My County*" to learn more.

Remember, forests are dynamic, and you have the privilege of playing a role in the process of change towards achieve your goals and desired conditions for your forest. From a practical implementation perspective to a financial one, this can be daunting. Many of the educational or financial assistance programs have particular enrollment periods and vary where opportunities may exist. Reach out to your local DNRC Service Forester to learn what is available for you.

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Please Join the Forest Stewardship Foundation

Through memberships of only $25/year we have been able to secure grants, publish and distribute the semi/annual Forest Stewards Journal to over 1200 addresses and co-sponsor the annual forest landowner conference and insect and disease workshop. Making forest education happen across the state is what we are all about. Over the past 25+ years these efforts have also included conservation easement and succession planning workshops, sponsorships of forest stewardship workshops along with a host of other efforts.

As a non-profit organization our board members are not paid, but are passionate about this cause. Your membership means a great deal to our continuing success. Our membership has steadily increased over time to 130 members. Please consider joining the foundation by completing the membership application form/envelope found in each winter's edition of the Journal or by going to our website at: https://www.ForestStewardshipFoundation.org.

Thanks for your help.
Ed Levert, Chair