

# Montana Family Forest News

Rules to Thin by:  
Species, Spacing,  
Size & Shape



## About the cover

There is the old saying: an ounce of prevention equals a pound of cure. This certainly holds true for trees as well. Big trees dying or falling over often get our attention well before the seedlings that spring up in the understory, and much like our own kids, tree seedlings grow up before we know it. We are mostly happy to see tree regeneration, which means our forest is sustainable. That is until it suddenly gets too hard to walk through or a local wildfire makes us look at the dense thicket that has developed with slightly different eyes. When did those trees get that dense and tall? And by then it is an expensive and laborious endeavor to rectify. Thinning young tree regeneration is one of the easiest forest treatments we can do, that in the long term will have the most profound impact on our future forest.

Keeping dense tree regeneration from reoccurring may be more difficult, depending on the species and available moisture in your forest. How to control dense grand fir and Douglas-fir regeneration from occurring is probably one of the most common complaints I have heard from landowners and professional foresters alike, and there are no easy or even good answers. Fire ecologists want us to believe that applying frequent prescribed fires is the solution, and for certain landscapes it certainly is a viable tool that historically was used extensively by native people that lived in and traveled across Montana landscapes. But the use of prescribed fire is difficult, expensive and carries with it an enormous risk in today's world of denser human population than it did historically, when a fire could be lit and left to its own devices as the locals moved on to another location. Learning from the past is essential for all of us to learn from our ancestors so we can avoid old mistakes and deal with the new ones we make. However, wishing to recreate the past ignores the fact that any point in time is unique with a history and set of circumstances that led up to that point. In today's world, greater use of fire may have a significant and useful role to play, but maybe less than mechanical treatment of the vegetation around us. We cannot light a match and walk away anymore because every acre counts in today's world that supports 8 times as many people as just 200 years ago (Montana had slightly more than 200,000 people in 1900!).

This edition of the Montana forestry newsletter does not address fire or prescribed burning, but rather offers some perspectives of how to manage tree regeneration. It is a job just like raising kids, and requires constant attention and effort. If we ignore them, then we should not be surprised when the outcome is a little different than we might have expected. Managing tree regeneration requires doing a little at a time, all of the time. The rewards are great to watch, especially when some patches are left to their wild state and others are more closely cared for. Northern Rockies forests are mostly designed to function as a mosaic, as are the wildlife species that inhabit them. Developing a strategic plan for the vegetation on your property is fun to do, and should never be written in stone. It should remain adaptable and based on the reality of what nature cooks up for you every season and every year. Late winter and early spring is one of my favorite times of year to work in my forest, and thinning seedlings over a melted hard snowpack is also when I find such work both effective and at its easiest. All of us at Extension Forestry hope you find this year's edition of the forest landowners newsletter interesting and useful!

Peter Kolb, MSU Extension Forestry Specialist

# From the Editor's Desk

This newsletter is possible through funding from the Renewable Resources Extension Act (RREA). It highlights numerous articles focused on information and resources that forest landowners can use to better their knowledge and potentially implement on their own land. The overall concept is to provide articles that capture one's attention based on current issues and updates on various organizations on a state and national level. Our goal is to provide articles that will give important information and encourage landowners to develop new ideas towards their land. **The newsletter is also available electrically at <http://forestry.msuextension.org/publications.html>.**

Warm regards,

Christina Oppegard

Designer:

Christina Oppegard

MSU Extension Program Manager

Editor

Peter Kolb

MSU Extension Forestry Specialist

Advisor:

Cindy Peterson

MSU Extension Associate Forestry Specialist

Financial Contributors:

Montana Tree Farm

Montana Stewardship Foundation

Montana State University Extension Forestry

Montana Forest Owners Association

The U.S. Department of Agriculture (USDA), Montana State University and Montana State University Extension prohibit discrimination in all of their programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital and family status. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Cody Stone, Director of Extension, Montana State University, Bozeman, MT 59717.

# Table of Contents

## Front Cover

Rules to Thin by: Species, Spacing, Size & Shape  
*By: Peter Kolb (PhD) MSU Extension Forestry Specialist*

## Tree Farm News

- 1 Letter from the Montana Tree Farm Chair  
*By: Holly McKenzie, Montana Tree Farm Chair*
- 2 Educator of the Year  
*By: Holly McKenzie, Montana Tree Farm Chair*
- 4 Walk in the Woods and Timber Tour  
Save the Date, Women in the Woods Workshop  
*By: Holly McKenzie, Montana Tree Farm Chair*
- 5 Mary Naegeli Memorial Scholarship  
*By: Holly McKenzie, Montana Tree Farm Chair*  
Montana Tree Farm Educator and Logger of the  
Year Nominations  
*Submitted by: Allen Chrisman*  
Save the Date, Annual Tree Farm Meeting  
*By: Holly McKenzie, Montana Tree Farm Chair*

## MFOA

- 6 Letter from the President  
*By: Allen Chrisman, President of Montana Forest Owners  
Association*  
Montana Natural Resources Youth Camp  
*Submitted by: Christina Oppegard*
- 7 Precommercial Thinning in Lodgepole Pine Forests  
*By: Allen Chrisman, President of Montana Forest Owners  
Association*
- 8 2021 Montana Forest Land Valuation Process  
*By: Allen Chrisman, President of Montana Forest Owners  
Association*

## Forest Stewardship Steering Committee

- 9 Rules to Thin By: Lessons Learned Over the Years  
*By: Paul Cockrell, Montana Stewardship Steering  
Committee Chair*

## Forest Stewardship Foundation News

- 10 Forest Stewardship Foundation  
*By: Ed Levert, Forest Stewardship Foundation Chair*  
Save the Date, 11th Annual Landowner  
Conference  
*Submitted by: Ed Levert, Forest Stewardship  
Foundation Chair*

## Extension News

- 11 Pre-commercial Thinning - Why, When, and  
How?  
*By: Peter Kolb (PhD) MSU Extension Forestry  
Specialist*
- 24 2021 Master Forest Stewardship Graduates  
*Submitted by: Christina Oppegard*

## Advertisements

- 24 SmartLam North America
- 25 Weyerhaeuser  
Pyramid Mountain Lumber, Inc.  
Watershed Consulting, LLC.
- 26 F.H. Stoltze Land & Lumber Company
- 27 Idaho Forest Group
- 28 Germany Forest, Culture, and History Study  
Tour Announcement  
*Submitted by: Peter Kolb (Ph.D.), MSU Extension  
Forestry*
- 29 2021 Calendar of Workshop and Events

## Explanation of Back Page

- 30 What's rustling in the forest understory?  
*By: Peter Kolb (PhD) MSU Extension Forestry  
Specialist*



## Letter from the Montana Tree Farm Chair

By: Holly McKenzie, Montana Tree Farm Chair.



What a wild ride this past year has been! Two years ago, when Allen and Jared asked me to step up and take a leadership role in Montana Tree Farm, I had no idea what I was in for. Our Montana Tree Farm Steering Committee is the best committee I have ever been involved with, hands down. The volunteers are professional and hard working. They include a wide variety of forestland owners, private forestry assistance folks, agency specialists, industry foresters, retired foresters, and fire experts. These individuals work hard to lobby for you, the private forestland owner, and ensure state taxation is fair and just. They train the inspectors and work with third party auditors so that Tree Farms meet the defined standards of sustainability and certification.

The Montana Tree Farm has continued to meet during this past year of COVID-19 restrictions, and we wrote grants for upcoming breakfast meetings, a peer mentoring coordinator, Project Learning Tree workshops for teachers and young people, and a new Women in the Woods workshop (save-the-date-notice in this issue of the Family Forest Newsletter). We organized an awesome Annual Meeting in Clancy, Montana for early October. This had to be postponed until the Fall of 2021, but if you attend, you'll meet the 2020 Logger and Tree Farmer of the Year, both of whom are featured in this issue of the Family Forest Newsletter! You will also see the Mark's Lumber sawmill, showroom, and planer where specialty lumber, beams, flooring, and doors are made by a family who takes special care in the products they showcase near Clancy and Lump Gulch. Once you meet Steve Marks or his brother, Gary, who owns the Marks-Miller Post and Pole yard, you'll never forget either one of them. They are the quintessential "salt of the earth" sort of people who settled Montana, and they stand by their products that are grown right here in our forests!

This year has also been a time of transition across Montana: like it or not, you have new neighbors! With urban congestion, riots, lockdowns, and closed schools, there are thousands of new people moving to Montana and many are brand new forestland owners. I hope our existing Family Forests and Tree Farms are inspirational to those who have just acquired Montana forestland. Your knowledge and experience in managing your own forest leaves you well qualified to speak on behalf of the tools and information that Montana Tree Farm can offer to new forestland owners. Be a "peer mentor" to your new neighbors! Contact us or your inspector when a new neighbor needs a brochure about Tree Farm. Everyone benefits from the MSU Extension Forest stewardship Classes and they are a great place to start if someone needs to write a management plan and immerse themselves into Forestry 101. Most of you are aware that MSU Extension offers follow-up courses as well.

This issue of the Family Forest Newsletter centers on the theme of "thinning your forest," and it couldn't be more timely. The NRCS, USFS, and DNRC are all pursuing cross-boundary projects that enhance forest health through a combination of thinning and fire to restore our forestlands across Montana. Sawlog prices are the best we've seen in over a decade so thinning the forest makes more sense than ever! Many of our forests are over-stocked and the result is a tangle of competing thickets and pole size trees that need 12 – 15 feet of space to stretch out and grow! The larger the tree, the more space it needs to avoid competition. Turn your forest into your own exercise gym where the result of hard work is a pile of firewood and stronger biceps! Social distancing is just one of the many benefits of working on your Family Forest. Enjoy this issue, and I sincerely hope we all see more of one another this year!

## Educator of the Year

**Rick Trembath**

**Flathead Forestry and Fire Consulting (Bigfork)**



The Montana Tree Farm System recently announced the 2020 Award Winners by recognizing outstanding individuals for their contributions to Forestry in Montana.

Rick has had an outstanding 40+ year career in forestry starting with the Flathead Hotshots in 1967. He spent the majority of his career working for the Flathead National Forest in Timber Management and Wildland Fire and continues to work on Wildland Fire Teams despite being “retired”. He has been working as an Adjunct Professor at Flathead Valley Community College for over a decade as an instructor of Forest Fire Management and Ecology. Rick regularly lectures on Wildland Fire Behavior, Fire Suppression, and Fire Management for organizations such as Montana Tree Farm, the Montana Logging Association, Society of American Foresters, and Montana State University Extension Forestry.

## Inspector of the Year

**Holly McKenzie**

**Private Forestry Consultant (Columbia Falls)**



As a Consulting Forester Holly works with Landowners and understands the importance of working with people of all ages and backgrounds to help them understand Environmental and Forest Management. Holly’s ability to connect with people and her enthusiasm for all things tree related shine through in her outreach to landowners and involvement in many organizations such as Society of American Foresters, Montana Tree Farm, Montana Natural Resources Youth Camp and Family Forestry Expo.

Holly is being recognized for recruiting numerous new Tree Farmers in 2020 and completing several required and voluntary periodic inspections of existing Tree Farms, all with overwhelming positive feedback from landowners she worked with. Holly also assumes the role of Chair of the Montana Tree Farm Steering Committee in 2021. Holly, her husband and their two children also manage their own 12-acre Tree Farm.

## Logger of the Year

### Eddy Jungers J&E Contracting (Seeley Lake)



Eddy started the logging company with his father John over 20 years ago and was one of the early adopters of Cut-to-Length (CTL) logging equipment in Montana. This innovative approach to forest management is particularly adept at utilizing small diameter trees and having minimal impact in the woods, two things that particularly resonate with private landowners.

Eddy's exceptional work on many Tree Farm properties across the State and his ability to transform imperiled landscapes back into healthy vibrant forests is worthy of recognition. Eddy's calm and forthright manner provides landowners the reassurance that their forest is in good hands and the land will be managed by a professional.

## Tree Farmer of the Year

### Pat and Judy McKelvey McKelvey Tree Farm (Clancy)



The McKelvey's have been active Tree Farmers for over 15 years on their property tucked in the mountains between Clancy and Helena. Pat and Judy have worked tirelessly to improve forested conditions on property that has been in the McKelvey family for generations. They continually involve their children and grandchildren in activities on their Tree Farm and keep adding acres to ensure a well-managed family legacy.

Though retired Pat spent his career working in Wildland Fire Management and mitigation, has been a long-term advocate for Fire Safe Montana and continues to serve as a member of the Elkhorn's Coordinating Group, Big Belts-Elkhorns Divide Resource Collaborative, Upper Missouri Resource Advisory Group, Montana Forest Owners Association, Montana State University Extension Forestry Stewardship, and Montana Tree Farm.

The McKelveys have encouraged their neighbors to join Tree Farm and perform forest management and hazardous fuels reduction projects. They are frequently seen in public service announcements promoting responsible forest management and hazardous fuels mitigation. They are also past recipients of the award from Montana Firesafe for sustained efforts over many years.



# WALK IN THE WOODS and TIMBER TOUR

## REQUEST FOR \$500 GRANT PROPOSALS

### PROGRAM INFORMATION

Some of the most widely attended and popular activities of Montana Forest Products Week are the Walks in the Woods and Timber Tours hosted by community groups, educators, mills, foresters and forest landowners. Montana Tree Farm is pleased to announce that funding is available to support Walks in the Woods or Timber Tours held *on Tree Farms* in celebration of Forest Products Week 2021 or nearby dates.

Eligible applicants include PLT (Project Learning Tree) educators or facilitators who wish to coordinate a Walk in the Woods or Timber Tour in partnership with a Montana Tree Farmer. Other applicants might include a Tree Farmer who is willing to host a workshop and work with a PLT educator to provide activities on their Tree Farm. Successful proposals will identify the Walk in the Woods or Timber Tour site and host, include a program of activities or agenda, and describe how the tour will highlight the Tree Farm program. Successful proposals must *also* include elements highlighting the importance of local wood products, working forest landscapes, or the forestry sector. Allowable expenses may include but are not limited to refreshments, transportation for large groups, door prizes, porta potties, and educational materials. Requests for staff salary will be evaluated on a case-by-case basis. Marketing materials are not eligible for funding and applicants are expected to have a designated audience prior to applying for assistance.

Timeframe: Walks in the Woods or Timber Tours must take place during 2021. The maximum award is \$500 per tour and / or \$150 for PLT facilitators who help teach the program.

This funding is available thanks to a grant from the American Forest Foundation to increase collaboration between Project Learning Tree and the Montana Tree Farm program.

### APPLICATION INSTRUCTIONS

**Applications will be provided and processed on a first-come,  
first-served basis until November, 2021.**

**SUBMIT ELECTRONICALLY TO: Holly McKenzie or the Tree Farm Steering Committee**

**GLYNHOLLY@GMAIL.COM**



Save the Date

Women  
in the  
Woods  
Workshop

May 22-23, 2021

Spend the weekend or a day connecting with women landowners, learning about forests & the skills needed to care for them, while enjoying the courses taught by women for women at Lubrecht Forest near Greenough, Montana. All COVID public health recommendations will be followed at the workshop.

From beginner to expert, women landowners with **all levels of experience** are welcome!



**Learn how to:**

- Operate your chainsaw safely
- Select trees for a healthy forest
- Reduce wildfire risk on your forest land

If you have any questions or would like to reserve a spot, please contact **Ashley Juran** at 406.542.4280 or [ashley.juran@mt.gov](mailto:ashley.juran@mt.gov)



Workshop made possible by grant funding from the American Forest Foundation in partnership with Montana Tree Farm Program and grant funding from the USDA Forest Service in partnership with the Montana Department of Natural Resources and Conservation







## Mary Naegeli Memorial Scholarship

\$1,000 in 2021

MT Tree Farm offers a \$1,000 scholarship annually to a resident of Montana enrolled (for the first time) or attending any accredited institution of higher education, on a full time basis, have a cumulative grade point average of 2.5 or above, and must demonstrate an interest in forestry.

**Applicants must have a Tree Farmer or a Tree Farm Inspector as a reference.** Perhaps you know someone who qualifies for this scholarship. If so, please let them know about this great opportunity.

Contact Cindy Peterson at 406-243-4706 or [cindy.peterson@umontana.edu](mailto:cindy.peterson@umontana.edu) to be connected with one. For more information and how to apply go to: <https://www.treefarmssystem.org/montana-awards-and-scholarship> application are due May 31, 2021.

The objective of this scholarship is to help a student with an interest in forestry and also to provide information to students about Tree Farm and the family forests of Montana. Making a connection between future foresters and land managers can lead to the development of long term personal and professional relationships.



## We want you... and your nominations!

The Montana Tree Farm committee is looking for nominations for Tree Farmer, Educator, and Logger of the Year. Nomination forms can be found at [www.treefarmssystem.org/montana](http://www.treefarmssystem.org/montana) the "Awards" section. Please contact Allen Chrisman at 406-249-3160 or [achrisman52@gmail.com](mailto:achrisman52@gmail.com) for more information.

**Nominations are due by July 1, 2021**

*Image credit: [https://commons.wikimedia.org/wiki/File:Uncle\\_Sam\\_9628pointing\\_finger%29.jpg](https://commons.wikimedia.org/wiki/File:Uncle_Sam_9628pointing_finger%29.jpg)*



# montana TREE FARM system

Montana Tree Farm's Steering Committee invites you to join the statewide Annual Tree Farm Meeting. The event kicks off with coffee and pastries at Mark's Lumber followed by two Tree Farm field tours (McKelvey and Wilson Tree Farms). Transportation provided. Tours followed by lunch, a silent auction, and a short business meeting.

Tree Farm Annual Meeting – Invitation and Registration mailed in August!

Saturday, October 2, 2021

8:00 am to 2:30 pm

Mark's Lumber, 15 Lump Gulch; Clancy, Montana.....8 miles south of Helena



## Letter from the President

*By: Allen Chrisman, President*



A brief introduction of the 2021 Officers of Montana Forest Owners Association: At our January meeting, the Board of Directors elected Allen Chrisman President, Dave Atkins Vice President, Robin Kolb Treasurer, and re-elected Cameron Wohlschlegel as our Secretary.

We thank Debra Parker Foley for her service as President. She will continue on the Board of Directors as Past President. We also thank Bill Wilsey for his excellent service as our Treasurer. Both he and Hilary have had to step down from the Board of Directors.

Of course, we thank both Mike and Jody Christianson for their extraordinary service as President and Treasurer. We so much miss their outstanding engagement and service to Montana Forest Owners. Their leadership of Montana Forest Owners Association from 2015 to 2020 was incredible. Montana Forest Owners owe a debt to them for being the heart and soul of MFOA...

Going forward, barring unforeseen circumstances, I have offered to serve two years as President, and Dave Atkins has agreed to two years as Vice President, followed by two years as President. Each of us plan to serve two years as Past President also. We hope this will provide continuity for MFOA that will strengthen our organization going forward.

Already, MFOA has been actively engaged in a significant issue regarding the valuation of your forest land for tax purposes. Read about that in a separate article in this issue. If you want to make a difference, and join others in protecting your rights as a forest land owner in Montana, please consider joining us – only \$25 per year. Thanks for your support. Enroll online here: <https://www.montanaforestowners.org/>.



## Montana Natural Resources Youth Camp

July 18-23, 2021

Lubrecht Experimental Forest, Greenough

Camp Fee: \$300.00 (6-days)

We invite all youth ages 13-18 to spend one week in the rustic setting of Lubrecht Experimental Forest east of Missoula and learn about Montana's natural resources. The accommodations are comfortable, the food is great, and the instruction and friendships are the best.

Campers learn about forests, streams, soils, geology, range land, wildlife, and recreation, and spend a half-day rafting the Alberton Gorge of the Clark Fork River. In between the field sessions, taught largely by professionals that volunteer from a variety of natural resources based agencies and industries, specialty evening programs, guest speakers, hands-on learning-through-discovery, and campfires provide for a lasting summer camp experience.

Scholarships and applications are available at [forestry.msuextension.org/mnryc.html](https://forestry.msuextension.org/mnryc.html) or Contact Christina Oppegard, Camp Director at 406-243-2773 or [christina.oppegard@mso.umt.edu](mailto:christina.oppegard@mso.umt.edu).

# Precommercial Thinning in Lodgepole Pine Forests

*By: Allen Chrisman, President of Montana Forest Owners Association*

In the North Fork of the Flathead, where our Family Forest is located, we get wonderful natural regeneration from lodgepole pine and other species. Especially after fire, the lodgepole pine comes in thick and dense. Stocking levels of thousands of trees per acre are common. While these stocking levels can be intimidating, forest owners can make significant improvement with reasonable effort.

**Height Growth:** We found after the fires of 2003, that early thinning actually improved height growth. Side by side ownerships demonstrated that early thinning to a fairly dense 6' x 6' spacing resulted in trees that were 8' to 12' in ten years, compared to unthinned stands (extremely dense in the thousands of trees per acre) of only 4' to 5' tall. This was impressive, since thinning in general increases diameter growth and not necessarily height growth.

**Species Preference:** Because we get such incredible regeneration from lodgepole pine, it is important to observe which species grow well on your sites, and do what you can to maintain and improve species diversity. Sometimes this includes planting, but don't miss the opportunity to improve species diversity with thinning. Western larch is a well-adapted species for the North Fork, as is Engelmann spruce on moist sites. Douglas-fir works in the drier sites, and including subalpine fir for diversity is not bad – it provides good moose browse as well as snowshoe hare browse. Your Montana Department of Natural Resources and Conservation Service Forester can give you good advice about which trees are best suited for your site.

**Spacing:** Several options exist for deciding the spacing guides for your leave trees. In areas where you are proximate to the Home Ignition Zone, spacing crowns 10' apart to minimize the potential to initiate or sustain a running crown fire is a good practice. For younger stands of predominately lodgepole pine, denser spacing (8' x 8' or so) will reduce the potential for big, wolfy branches to develop. Dense stands like this will certainly need another treatment (firewood or post and pole removal) down the road to allow the trees to continue to develop into merchantable stems. If thinning is delayed until the trees are 15' to 20' tall, you can easily thin to 10' x 10' or 12' x 12' in one treatment. Your Service Forester can again advise a spacing based on your management objectives.

**Slash Disposal:** In the cool, moist stands in the North Fork, lopping and scattering slash can be done with excellent results. I like to fall the trees so they are aligned in the same direction, and not cross-stacked. Then I lop the branches so the bole rests on the ground, and I buck the bole into segments as well. Doing this reduces the slash to much less than 12" in depth. The heavy, wet snow compresses the slash down to good contact with the soil which speeds decomposition. Piling and burning or chipping is not necessary outside the Home Ignition Zone.

**Pruning:** While it isn't required, I find it useful to prune the leave trees – this removes western gall rust and dwarf mistletoe infected branches, as well as potential sites for those infections. In addition, the pruning increases sight distances – which we find very important in our grizzly bear habitat. Reducing the chance for surprise encounters with major predators is one of our management objectives.

**Other Considerations:** Leaving unthinned patches 30' in diameter is recommended for hiding cover for larger mammals. In addition, constructing brush piles – 4' by 4' by 4' – scattered through your thinning will provide habitat and escape cover for small mammals.

**Financial Support:** The Natural Resources Conservation Service (NRCS) is the best source of funding for precommercial treatments. Look for Targeted Implementation Projects (TIPs) through their Environmental Quality Incentives Program (EQIP) that focus on making change on a landscape scale to reduce hazardous fuels, improve spacing and species diversity.

**Summary:** Your management objectives ought to guide the thinning that you plan. Don't be afraid to get started and try something. Get good advice, and get started. Thinning can be hard work – but it can be incredibly satisfying as you transition the forest in front of you to one that is more functional, healthier, and free to grow. Like I tell many of my neighbors, "Decide which trees you want to keep, and mow down the rest." You will be pleased with the results.

## 2021 Montana Forest Land Valuation Process

By: *Allen Chrisman, President of Montana Forest Owners Association*

If you are like me, and are fortunate enough to own forest land in Montana, you are thankful that the property tax on the forest land itself is pretty reasonable. If you have a structure on that forest land, you know that most of your property taxes are a result of those improvements.

The 1991 Montana “Forest Lands Tax Act” eliminated the standing inventory tax system and replaced it with the forest land productivity tax. Your forest land is taxed on its productivity, and not on its standing timber. The minimum acreage to qualify as forest land is 15 contiguous acres of productive forest land, which is reappraised every six years.

The Legislature established a Forest Land Taxation Advisory Committee (FLTAC) consisting of seven members to make recommendations to the Department of Revenue (DOR) on valuing Montana’s forest land properly. This Committee was supposed to be commissioned in October, 2018, and involved in the process of determining the valuation of forest lands for this reappraisal period, due in January 2021. Instead, it was convened on November 9, 2020, *two years late*, with only *two months* to be involved in this critical process.

***The State of Montana failed to follow their own process and it is a disservice to private forest owners.***

The Valuation method is detailed and laborious. The short version is that Montana DNRC Timber Sale data was used to get an estimated value per acre by Region around the State. **The proceeds from the DNRC Timber Sales did not accurately reflect the values that private forest owners get from their timber sales.**

The Department of Revenue analysis of the DNRC data left out direct sales – usually of small volume – because they were often due to abnormal circumstances, including lack of access. We are concerned about this – because the volume of sales from private forest owners – sometimes 100 to 200 thousand board feet – was not represented in the DNRC data. The DOR acknowledged that the DNRC sales were much larger, and small sales were not included in the analysis. Obviously, mobilization and other costs are significantly higher per thousand for the smaller sales. An assessment by the FLTAC Committee showed that the DOR Valuation did not reflect anything close to the value that could be derived from comparing delivered log prices adjusted by reasonable logging costs. **The Valuation as it stands would result in an 80% increase in Forest Land Valuation across the State.**

The Montana Forest Owners Association and Montana Tree Farm participated in all meetings and submitted comments on the record stating our concerns. We urged the FLTAC to recommend to the Department of Revenue that they either:

1. Adjust downward the Valuation on private forest lands (which at this late stage in the process would be arbitrary and not supported by analysis), or
2. Adopt a tax rate that would result in a revenue neutral tax schedule for private forest land.

The Forest Land Taxation Advisory Committee’s Recommendation to the Department of Revenue echoed our Recommendations perfectly.

Subsequently, both MFOA and Montana Tree Farm participated in meetings with DOR Staff to try to resolve the issues with the Valuation. This included testifying before the Senate Taxation Committee.

At this writing, it appears a bill to implement a Revenue Neutral Tax Rate for Tax Years 2021 and 2022 has very good support; and a bill to reconvene the Forest Land Taxation Advisory Committee in the summer of 2021 to begin working on a revised Valuation in time for the 2023 Tax Year appears to be well supported too. Enactment of both of these bills would resolve the issue for the short term, as well as set up the FLTAC to correct the Valuation. That would be a tremendous victory for Montana Forest Land Owners.

For more information on Forest Land Taxation and the Committee, go to their website:

<https://mtrevenue.gov/resources/government/forest-land-taxation-advisory-committee/>

## Rules to Thin By: Lessons Learned Over the Years

*By: Paul Cockrell, Montana Stewardship Steering Committee Chair*

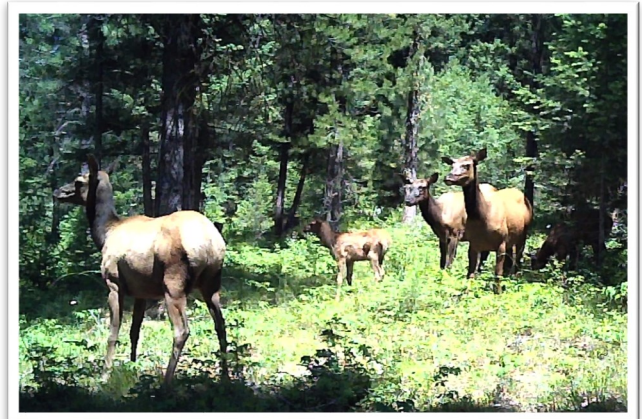
Having owned our 160 acre timber property for 13 years now, there are a number of examples of thinning work to reflect back upon. What are some of the observed benefits of this thinning? What worked and what could be improved upon? How best to even get started? Our property had a large component of young overstocked Douglas-fir thickets that needed thinning. Some dense areas of lodgepole and ponderosa pine as well. Enjoyable and satisfying work that also wasn't going to be completed over night.



That meant that the thinning work would have to be prioritized. Unfortunately in the beginning, some of the areas that needed it the most were neglected due to steep and hard to access terrain. Areas close to roads and skid trails received attention first. Early on, I tended to leave too many trees, only to have to come back for more thinning soon after. Once the easy areas were completed, it was time to start focusing on the more difficult sites. Hard work, but over time many more acres were visited by me and my chainsaw.

Root rot and drought stress have caused a lot of mortality in the remaining Douglas-fir trees in recent years. The larger trees have made good lumber, and the smaller trees have made good firewood. Having several patches of root rot infected fir continue to expand in size, earlier heavy thinning may have slowed the spread in hind sight. Now the best recourse is to cut down the dead Douglas-fir and let the healthy pine regen take its place. In areas of poor soil, with dry south and west facing slopes, drought stress has done some thinning work for me. More firewood! Opening up these areas to more sunlight, and burning the course woody debris has really promoted the native grasses like Idaho fescue, and forbs such as paintbrush, balsamroot, and lupine.

Some of the areas with better soil, and more moisture, I have purposely left with a more dense spacing of trees for wildlife security, particularly for deer and elk. Elk and their calves use these shaded areas frequently during the spring and summer, and deer use them year round. Cutting out the dead-wood on old serviceberry and willow shrubs generate new shoots the deer and elk like to browse on. Wildlife has always been a high ranking priority for Diane and I on our forest property, and it has been rewarding to see them benefit from good forest management.



I have just completed my eighth year term as a private forest landowner on the MFSSC, and am now term limited out. It has been fun learning and working with like-minded committee members, and wish the committee continued success.



## Forest Stewardship Foundation

*By: Ed Levert, Forest Stewardship Foundation Chair*

Wow! Let's hope 2021 works out better than 2020. Once again we are in the middle of planning along with our co-sponsor Northwest Management, Inc. for the Eleventh Forest Landowners Conference. However, this year it will actually happen. Our board decided that an actual conference this spring was too risky, so we are doing a virtual one instead. The good news is you won't have to drive all the way to Helena. The bad news is we are going to miss interacting with our old and new friends at the conference.

We decided that we will do this Zoom conference on April 22nd and 23rd, with three hour sessions each day with numerous speakers and breaks. The title of the conference is "Becoming the Best Forest Steward Possible." We have many outstanding presenters lined up, so please mark the event down on your calendar and look for additional sign up information in the near future. You will soon be able to check out our agenda and register on our website at: <https://www.ForestStewardshipFoundation.org>. There will be a \$25 registration fee. If you are reluctant to try a Zoom presentation, don't worry, as we have a professional facilitator who will guide us through the process. SAF continuing education and ALP credits will be available.

Sure, we have been slowed down this year because of COVID-19, but we are still producing our bi-annual Forest Stewards Journal and have plans to produce a series of YouTube videos on resource educational subjects. We also hope to have an insect and disease workshop at our actual 2022 conference.

You can help our non-profit organization continue to offer services to forest landowners by joining the Foundation on our website or sending \$25 to the Forest Stewardship Foundation; PO Box 1056; Libby, MT 59923.

Ed Levert, Chair

### Save the Date!

11th Annual Landowner Conference, Virtual

Thursday and Friday, April 22-23, 2021

*"Become the Best Forest Steward Possible"*

For registration and additional details go to:

<https://www.foreststewardshipfoundation.org/events>

*Virtual conference is hosted by the Langdon Group, Northwest Management, Inc.,  
and the Montana Forest Stewardship Foundation*

## Pre-commercial Thinning - Why, When, and How?

By: Peter Kolb (PhD) MSU Extension Forestry Specialist

Thinning overly dense clumps of young trees to offer residual trees more light, soil water and space to grow more vigorously is fairly intuitive for anyone who has grown a vegetable garden. The classic example might be carrots, that unless thinned at an early stage, will never develop into the size vegetables we see in the grocery store and instead remain as bunches of pencil thin orange rootlets. But when to thin clumps of tree regeneration, what spacing individual trees need, and how to select which seedlings to leave can make this process complicated, labor intensive and expensive. All too often we end up relying on some cookbook approach that uses a standard prescription that might be an 8 x 8 ft. spacing for seedlings, 14 x 14 ft. for saplings, and 20 x 20 ft. for pole sized trees. This is fairly straight-forward and seems to work, but can such guidelines be modified to better meet the differing and often combined goals of fire hazard reduction, insect and disease resistance, optimal growth, wildlife habitat and even increased grazing potential?

### Tree regeneration—whether you want it or not!

Traditionally, forest cultural practices have been separated into “stand improvement” and “regeneration harvests.” The first is designed to improve the growth and health of the trees left on the site—much like thinning and weeding carrots mentioned in the introduction. The second type of management practice is designed to both harvest trees and promote tree regeneration. Both practices are intended to result in both healthy forest conditions and commercially marketable logs over time, though a major goal for a regeneration harvest is also to promote tree regeneration of a desired tree species. Regardless of the forest management goal, any kind of manipulation of forest conditions can result in some level of disturbance to the forest light/water balance and soil surface, which in turn promotes tree regeneration, whether it is wanted or not. Even less obvious natural events, such as climatic variability that result in summers that are cooler and wetter at lower elevations, or warmer at higher elevations, can promote tree regeneration. This is why most Northern Rockies forest ecosystems have patchy tree regeneration and multiple age classes mixed in with mature overstory trees. Every landowner and forest manager must be prepared for the occurrence of natural tree regeneration in their forest, which sometimes is



**Picture 1.** Factors affecting natural tree regeneration include: cone crops with viable seeds of the species we want, cycles of cone and seed insects, cycles of ground based rodents, the right weather (moisture and temperature conditions for seed germination and seedling survival), and the right soil and site conditions for the species we are promoting. When such events coincide, dense regeneration occurs (left picture). When they do not, no regeneration may be the result (right picture). Both of the above pictures were taken several years after the same fire, in locations separated by perhaps 1-mile, but subtle differences in the afore mentioned conditions resulted in very different tree regeneration scenarios.



**Picture 2.** Planned and planted tree regeneration

challenges for forest managers is to promote natural tree regeneration when it is desired, for the species wanted, and at the site appropriate spacing. Since many factors (Pictures 1 & 3) need to align to achieve desired tree regeneration, it is likely that the result is often not enough regeneration, or far too much, and sometimes of the species we don't want. Planting tree seedlings is an alternative that can stack the odds in our favor— but also carry with them costs, and the need for careful planning and site preparation (Picture 2).

For the purpose of understanding and planning for natural tree regeneration, most tree species can be lumped into two categories: Sun tolerant, and shade tolerant. We often refer to the former as “sun

sometimes not. Failure to do so can result in overly dense stands of trees that can turn into water stressed stands of trees, fire hazards, insect and disease prone thickets, and the longer they are left in an overly dense condition, expensive treatments.

### Which tree species to manage for?

Across the Northern Rockies we can miss considering the ecological nuances that different tree species have developed over time to compete against each other, and ultimately reproduce and grow well across some pretty variable site conditions. Like any biological organism, trees are designed to reproduce opportunistically when some combination of conditions stimulate seed production. One of the biggest



**Picture 3.** Any kind of disturbance that creates exposed mineral soil and reduces competition from other vegetation will promote tree regeneration—whether it is desired or not, such as the road cut (upper left). If the disturbance creates an opening where 4-6 hours daily sunlight can reach the soil surface, sun tolerant species may dominate (upper right). In general, the greater the soil disturbance (but not soil removal through erosion) the more natural regeneration can be expected. Shade tolerant species also gain an advantage from soil disturbance, but are not dependent on it (lower left). Wetter summers after a good seed crop, and low seed predation from insects, birds and rodents can result in “pulses” of mass regeneration. Most shade tolerant species across the Northern Rockies will produce mass regeneration events under forest canopies every 5-20 years.

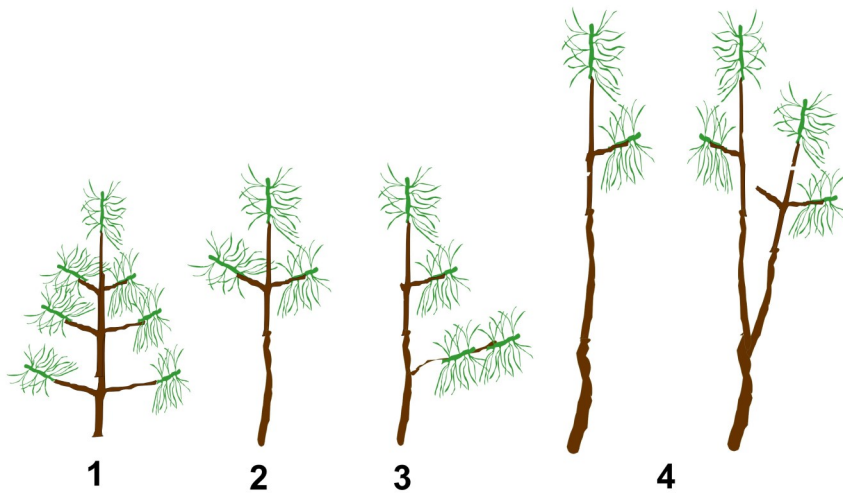


loving,” but in reality full spring sunlight provides about twice as much energy as a tree can handle and thus sun “tolerant species” have developed special mechanisms to survive too much sun. Species such as ponderosa pine, lodgepole pine and western larch can tolerate full sunlight as seedlings, but the same physiological mechanisms that allow them to survive the baking heat of a full sun exposed site, do not allow them to grow well in a partially or fully shaded site. Alternatively, Douglas-fir, grand fir, subalpine fir, hemlock and western red cedar can survive in partial to full shade as seedlings because their needles are designed to absorb all sunlight. In the forest understory environment where only 5-20% of the sun’s energy penetrates, their needles are adapted to absorb every photon of light that hits them. These same needle designs, however, can result in their overheating in full sunlight, especially on South and West facing aspects.

For sun tolerant species, the same adaptations for dealing with the heat of the sun also improves their tolerance of fire, and germination and rooting habits for finding soil water and nutrients on disturbed soils. Thus across Montana where drought and fire are more common than wet cool summers, managing for sun tolerant tree species can be an important objective. Alternatively, shade tolerant species are not very fire resistant, and tend to be favored in the cool forest understory soil where their more shallow rooting habit can take advantage of the nutrient rich zone between forest organic debris and mineral soil. This allows them to germinate more easily under an existing forest canopy, and often prolifically. Such dense regeneration is also more prone to drought stress, and the potential to stagnate into poorly formed and slow growing seedlings and saplings, that compete for soil water with overstory trees, and are susceptible to defoliating insects and severe wildfire behavior (Picture 4). Understanding the specific conditions where each tree species is adapted to regenerate best is an essential part of long term forest management planning for health and resilience, and achieving the forest conditions that best meet your goals. Under most circumstance, tree regeneration can usually benefit from some selective thinning to achieve the best species mix and spacing needs to meet the forest landowner’s objectives.



**Picture 4.** Dense seedling regeneration, particularly from partial to full shade tolerant species, often occurs naturally when a good seed year coincides with ensuing cooler and wetter summers that stimulate seed germination and seedling survival. More often than not, this results in dense thickets of tree seedlings, where each individual is competing against its neighbors. In their quest for more sunlight, shaded seedlings grow around obstacles, such as existing larger trees and develop crooked stems with log defects known as “sweep” and “crook.” Douglas-fir is notorious for developing such stems as it is only partially shade tolerant, and thus actively seeks to grow into sun “patches.” This quest to find more sunlight also stimulates height growth (phototropism) at the expense of stem diameter growth and results in spindly tall seedlings with one sided or “lollipop” crowns that are prone to bending and breaking from heavy snowfall events. When left to fend for themselves, such clumps of partially shade tolerant (Douglas-fir and Engelmann spruce) or full shade tolerant (grand fir, hemlock, western red cedar) can grow into clumps of crooked thin trees (left to right sequence in above pictures showing 3-10 year seedlings, 20-80 year poles, and 100-200 year old mature trees).



**Figure 1.** Seedling 1 indicates development and location with adequate sunlight for good future growth. Seedling 2 might develop in a setting crowded with other seedlings as does seedling 3. Short or one sided crowns are very prone to snow breakage as wet heavy snow on an unbalanced crown causes them to bend over. Seedling 4 indicates poor growing conditions that might include lack of light and water and past injury. Such seedlings have bad form that predisposes them to stunted growth and a lesser chance for developing into a larger and resilient tree.

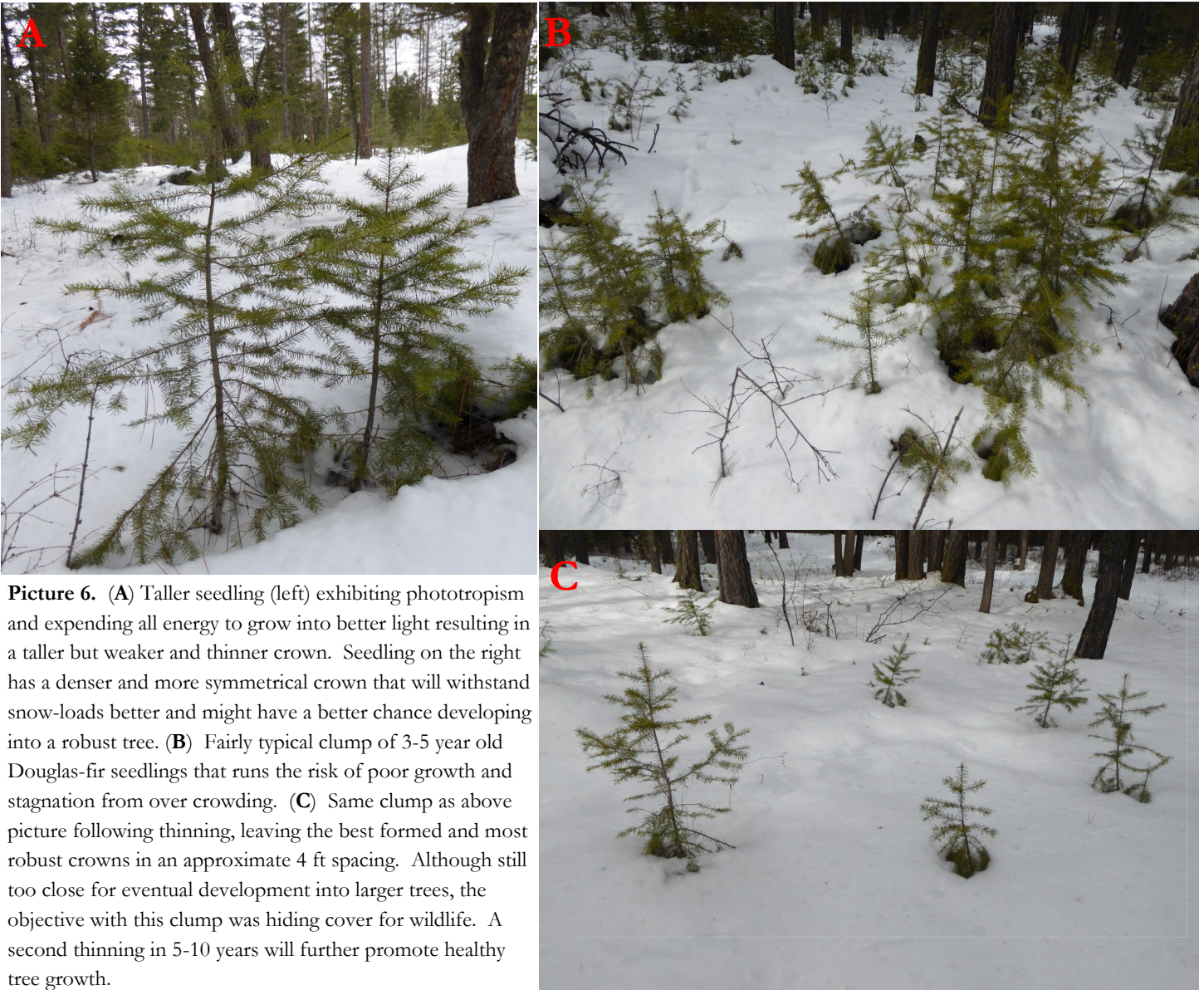
### Selecting seedlings to leave

For most forest landowners and managers across Montana, achieving wildfire and insect resistant stands of trees is near the top of the list of their objectives. Promoting regeneration of sun tolerant species (pine and larch) is one means of helping create a more disturbance resilient forest as these species tend to be more resistant to fire, insects, and root diseases. Many landowners also prefer to keep an intact overstory of large trees on their property, which favors an abundance of shade tolerant species regeneration. How to keep grand fir or Douglas-fir regeneration at desirable densities while promoting sun tolerant species remains a challenge for most managers. And what a desirable density might be with regard to tree seedling size, site conditions and landowner objectives can be

variable. Managing for maximum timber production might require closer spacing recommendations than managing for fire resistant stands for example (Table 1). Drier sites might also require a wider spacing between tree seedlings and mature trees than wetter sites.



**Picture 5.** (A) Shade tolerant Douglas-fir seedling (left) and sun tolerant Ponderosa pine seedling (right) growing in semi-shade of a forest overstory. Although smaller and younger the Douglas-fir seedling is the better choice for this location as spindly growth of P. pine indicates sub-optimal light and poor chance to develop into robust tree unless overstory removal provides more direct sunlight. (B) When clumps of seedlings occur such as these three Douglas-fir seedlings, picking the seedling with the best shaped crown, good needle retention and color will result in the best chance for that seedling developing into a vigorous and healthy mature tree. Height growth may or may not coincide with these characteristics, as sometimes taller seedlings also have narrower stems that are more prone to bending. In this clump, the tallest seedling (center) also has the best formed crown, densest foliage and deep green color indicating less stress, and would be the best choice to leave. One sided crown development is common when seedlings develop in clumps and predisposed trees to snow and rain damage and poor future growth.



**Picture 6.** (A) Taller seedling (left) exhibiting phototropism and expending all energy to grow into better light resulting in a taller but weaker and thinner crown. Seedling on the right has a denser and more symmetrical crown that will withstand snow-loads better and might have a better chance developing into a robust tree. (B) Fairly typical clump of 3-5 year old Douglas-fir seedlings that runs the risk of poor growth and stagnation from over crowding. (C) Same clump as above picture following thinning, leaving the best formed and most robust crowns in an approximate 4 ft spacing. Although still too close for eventual development into larger trees, the objective with this clump was hiding cover for wildlife. A second thinning in 5-10 years will further promote healthy tree growth.

Any forested stand of trees may develop patchy and clumpy natural regeneration, varying in species distribution, age classes, density and seedling vigor. How best to manage tree regeneration that varies so widely on any given site will depend a lot on landowner objectives. Should every clump of regeneration be treated the same - thick and thin, tall and short, monoculture or diverse species - where a particular spacing goal has been determined, or should each clump be modified based on individual characteristics? Also, if sun-tolerant species are more desirable for property management objectives, should these species be favored during thinning regardless of their location and condition? (Picture 5) What about the size and shape of tree seedling crowns—what should be considered when deciding which individual seedling to leave and which ones to remove? (Pictures 6, 7, 8 and 9, Figure 1).

Matching species to the conditions of the microsite where they are growing is perhaps one of the most critical decisions that can be made when precommercial thinning. Shade tolerant species will grow better in partial shade than sun tolerant species, even if they are more prone to fire damage or insects. Sun tolerant species may regenerate in partially shaded sites, but grow poorly as individuals or in clumps where small sun-patches occur. Seedling and sapling crown shape and condition can offer an indicator if they are capable of good future growth in their current location. Spindly tall seedlings indicates that they have developed in overcrowded conditions or where there is too little sunlight. This same rule applies to both sun



**Picture 7.** Thinning seedlings when they are 1-3 feet tall requires the least work (or cost) and allows good selection for growth, form and species. Debris from smaller seedlings might be minimal enough to be scattered or raked into small piles. Treating several acres a day per person is a reasonable expectation.



**Picture 8.** Within 10 years inconspicuous small seedlings can turn into very conspicuous saplings that require 2-3X more work to thin than smaller seedlings. It also results in the creation of significant debris that should be either chipped or piled and burned, which takes about as much effort as the initial thinning of seedlings. When seedlings have grown in dense clumps for too long they have the



tendency to grow very one sided crowns. This may result in a more difficult spacing options and leaving seedlings that have less optimal crown shapes.

**Picture 9.** Thinning smaller seedlings and saplings can be accomplished most efficiently with a brush cutting head on a shoulder mounted “weed” trimmer. Different cutting heads have been developed for smaller diameter seedlings (top) or larger diameter stems (bottom) which feature chainsaw teeth. Cutting with a trimmer is best accomplished in spring and early summer when seedlings stems are softer— though many different cutting head styles exist for different applications. Cutting up to 3” diameter stems or larger is possible, but increasingly difficult to do as stems get larger and more woody.

Table 1 Seedling spacing guidelines

<u>Goals</u>	<u>Growth spacing</u> <u>Drysite/Wetsite</u>	<u>Wildlife</u>	<u>Wildfire</u>	<u>Shade or Sun</u>
<b>Ponderosa pine</b> Mature goal: 20+” DBH 20-40ft spacing 80-24 trees per acre	10 -16 ft spacing 420 to 160 trees per acre  14 - 8ft spacing 230 - 660 tpa	Variable spacing 4-16 ft with denser and more open patches , minimum patch size 1/20 acre	Increasing fire tolerance with size and age. 14-20ft spacing with lower branch pruning	Preferred species in full sun and dry sites, poor species for understory or shaded sites
<b>Douglas-fir/Spruce</b> Mature goal: 24+” DBH 24-29ft spacing 76-51 trees per acre	10-15 ft. spacing 412-200 tpa  8-12 ft spacing 618-286 tpa	Variable spacing 4-15 ft, leaving some dense patches with a minimum patch size of 1/100 acre	Low to moderate fire tolerance, keeps highly flammable dead twigs & lichens. Must prune up! 16-30 ft. spacing	Prefers partial shaded sites, grows poorly in full shade, can grow well in full sun, though sunscalds if converted from full shade to full sun quickly.
<b>Lodgepole pine</b> Mature goal: 18+”DBH 27-34 ft. spacing 60-40 Trees per acre	15 ft spacing 200 tpa  11ft spacing 350 tpa	Even spacing is pretty natural for this species 6-18 ft. spacing. Wider spacing promotes wider limbed wildlife trees	Younger trees are not very flammable 14-20ft spacing if trees have good crowns. Pitchy stems and beetle kill an issue	Needs full sun—gaps need to be as wide as surrounding trees are tall for regeneration. Damp areas prone to gall rust when too dense.
<b>Western Larch</b> Mature goal: 20+” DBH 22-27 ft. spacing 93-62 Trees per acre	9-15 ft spacing 496-205 tpa  8-12ft spacing 744-308 tpa	Develops in dense clumps with tall whips, prone to snow breakage. Bears may peel bark for cambium in spring.	Fire tolerant -not flammable until very old and decayed. Maintain spacing to promote full crowns.	Needs full sun or will develop into tall thin whips that bend over with heavy snow. Thin early, not much need to prune.
<b>Grand fir</b> Mature goal: 20+” DBH 22-25 ft. spacing 103-68 trees per acre	9-14 ft spacing 550-227 tpa  7-11ft. spacing 825-249 tpa	Dense clumps used for bird nesting, tolerates very dense clumps, leave some 1/100 acre clumps	Very fire sensitive and flammable. Holds onto dead twigs and has high bark and needle pitch content that easily flames. 16+ ft spacing	Prefers shaded sites, N and East aspects not suitable for most full sun sites on S & W aspects. Easily sun scalds when overstory removed. Prone to stem and root decay.
<b>Western Red Cedar</b>	Only thin when very young: 8-16 ft	8-14 ft.-makes for dense hiding cover	Fire sensitive, poor species to leave if planning any fire	Full shade to partial shade: riparian areas not well suited for S & W aspects

**Sources:**

Ecology and Management of Eastern Oregon Forests, Manual 12. 2005. Emmingham, Oester, Fitzgerald, Filip and Edge. Oregon State University Extension Service. 208 pages. P. Kolb note: Excellent book that offers much greater detail than the above chart.

Proceedings—Future Forests of the Mountain West: A Stand Culture Symposium. Wyman C. Schmidt—Compiler. 1988. USDA Forest Service, Intermountain Research Station GTR INT-243 P.Kolb note: Out of print.



**Picture 10.** Once tree saplings reach a larger size (A) thinning generates significant debris. What to do with the thinned out stems requires some logistic thinking—as dragging this material can be labor intensive. Creating many small piles (B) is the easiest but pile placement needs to be strategic if piles are to be burned. Seedlings and saplings are more sensitive to radiant heat (C) from burn piles than mature trees. Creating strategic small clearings for burn piles might be considered in the thinning plan.

tolerant and shade tolerant species. Sun tolerant species can grow in slightly shaded environments but will develop spindly crowns where too much shade occurs. Partially shade tolerant species (Douglas-fir) develop better crowns where sun tolerant species start to fail from too much shade, but increasing shade will also cause these to grow poorly compared to true shade tolerant species such as grand fir and western red cedar. Species selection should be for the species best adapted to the light conditions where they are growing, unless some treatment of overstory trees is also planned that will provide more sunlight in the near future.

What about foliage density and color? Some seedlings and saplings may exhibit more yellow foliage than the tree next to them. Foliage color might be the result of local microsite differences in nutrient availability, or greater exposure to some external stress. Sometimes a taller seedling is more exposed to the elements, and may suffer more wind and frost or “drying” conditions that may cause yellow foliage. This is particularly the case for seedlings on more exposed sites towards the end of winter when warm temperatures allow for needle water loss but frozen soils prevent soil water absorption by the root. Individual seedlings showing discoloration may also indicate the start of some root pathogen (especially Douglas-fir and grand fir) that we cannot see that is causing root dieback. Foliage color can be an indicator of many things—but in general, darker green indicates healthier needle biochemistry, which in turn indicates better potential tree growth and defense.

Insect and disease resistance is a little tougher to select for unless there are active pests working on the seedlings being thinned, in which case seedlings that are not being attacked should be left. Every tree seedling is a product of its individual genetic potential, the site it is growing on, and some degree of luck. Western gall rust is an example of a disease that will infect some pine seedlings and saplings and not others for several reasons. Selectively removing seedlings with galls may help select for individuals that are exhibiting some genetic resistance, as well as being located on the right spot where they may just avoid infection, or have the right soil nutrition for defense.



## When to thin?

There are many statistics regarding the number of seeds a tree produces that actually germinate to into a seedling, and how many seedlings survive to become a mature tree. It is fair to indicate the odds are pretty tremendous—perhaps 1 in every 10,000 seeds germinates and survives to grow into a seedling and 1 in every 1000 seedlings survives to become a mature tree. Luck always plays a role, but there are also selective pressures that are important to consider. More fully developed seeds will produce a stronger rootlet that will find water and nutrients for the seedling to grow, and seedlings with better genes matching the challenges of the site will often grow taller and more robust. Thus the logic behind selecting the tallest seedlings in a clump to leave and removing the shorter stunted seedlings is fairly sound.

The purpose of thinning is to promote tree seedling survival and for them to grow taller, larger and healthier as quickly as possible. However, it is also important to consider the effects of phototropism in seedlings—where poor light will cause some seedlings to divert all their energy to growing towards more light, resulting in a tall spindly seedling that have difficulty withstanding the pressures of wind, heavy rain, or snow accumulation. Thus taller

**Picture 11.** These pictures show the longer term consequences of thinning to different spacing. In general, the wider the spacing between trees, the faster trees will develop larger diameters.

seedlings that also have well developed and symmetrical crown structure should be preferable to seedlings that are just taller. Crown symmetry and needle density is perhaps more important in seedlings than mature trees because small trees are less able to withstand weight imbalance from snow accumulation than mature trees and are likely to bend over in heavy wet snow storms. The selection process should be for seedlings with future potential to grow, versus just past growth.

Seedling size and age is also an important factor to consider. Small seedlings are by far the easiest to thin using a stringer trimmer type tool with a brush cutting blade (Picture 9). Heavy duty trimmers are recommended for this kind of work and different style cutting blades are available.

As seedlings get taller they are also more conspicuous, and more difficult to cut down and dispose of. Seedling stem diameters that approach 2" can be cut using a powerful trimmer, but often are easier to cut with a chainsaw. Chainsaw thinning is hard work in a stooped position. Hitting soil and dulling teeth requires frequent chain sharpening. Alternatively leaving taller stems can result in a hazardous obstacle course to navigate through. Cut stumps often last 3-10 years before they decay enough to break off.

Although small seedlings are easier to thin, a site might look very sparse (Picture 6c)



**Picture 12.** For each species and site there is an optimum spacing that reflects the tradeoff between improving stem diameter growth, and too wide a spacing where trees retain lateral branches and openings allow for seedling recruitment.





**Picture 13.** Spacing seedlings too widely when they are young can result in faster growing trees, but also lower limb retention that results in knotty wood. Ponderosa pine (A) that was spaced close to 20 feet is shade intolerant and eventually loses lower limbs whereas Douglas fir (B) that is more shade tolerant keeps its lower limbs longer at the same spacing. Branch retention might be good for wildlife and privacy, but less valuable for wildfire hazard reduction and timber growth. Lodgepole pine that is widely spaced as seedlings (C) also will retain lower branches. For all species, wider spacing will eventually require periodic lower branch pruning (D) for fire hazard reduction and timber value.

Following thinning and a natural tendency is to leave seedlings closer than they need to be. Smaller seedlings are more susceptible to potential damage from snow loads, fire, animal trampling and competing vegetation. As seedlings approach 3-4 ft in height they are more robust to disturbances (Picture 8). At this height they may also be easier to select for based on growth rates and crown characteristics. As seedlings grow taller they also need more space and thus might crowd each other into developing severe one-sided or small crowns. The longer tree regeneration is left in a crowded condition, the more difficult it might become to leave seedlings/saplings with quality crowns. Thinning 6-16 ft dense regeneration often results in tall unbalanced whips that are easily bent over by wind or heavy snow loads.

Another consideration for what size to start thinning is debris generation. As seedlings get larger, it becomes more probable that a thinning debris treatment is needed. It also can result in a thinning debris disposal problem (Picture 10) that adds to the overall cost of time and finances. Ultimately the decision of when to thin tree regeneration is usually made when thickets of trees become conspicuous. There is little research data available that has looked at the tradeoffs of thinning 1-3 ft tall seedlings versus 4-10+ ft tall seedlings. The former might result in more mortality to residual seedlings (though not my personal experience),



**Picture 14.** Thinning understory tree regeneration might be treated differently than seedlings and saplings in openings. (A & B) show variable density thinning of Douglas-fir seedlings in the understory to promote growth yet retain wildlife nesting and hiding cover as well as moderate fire resilience. A greater emphasis on seeding/sapling growth as well as fire hazard reduction might look more like (C). Varying the spacing (D) such as wider for seedlings under larger trees versus closer spacing for those in nearby openings adjusts for light and soil water competition.

**Picture 15.** Thinning and leaving clumps can be a viable alternative for creating more complex forest stands that offer unique wildlife habitat and visual diversity (below). When possible leave sun-tolerant species on the South and West sides of the clumps and shade tolerant species on the North and East sides to take best advantage of sunlight.





**Picture 16.** How large a “stand” of trees to treat with a particular set of guidelines determines how complex any forest will be in the future. Some prefer larger areas with a uniform tree composition, and others a more complex system of smaller patches. Both how a forest overstory is treated and how tree regeneration is treated determines the trajectory of any forested area into the future—that may change in 5 years, or remain the same for the next 300+ years. Every giant old tree started as a seedling.....eventually with space to grow.

all understory trees is also often recommended. Alternatively, denser groups of trees tend to be more attractive as hiding and nesting cover for certain wildlife. Most forest owners and managers will at some time have to deal with more tree regeneration than they would like. Starting thinning practices early offers many benefits, with perhaps a few potential unwanted consequences.

Hand thinning using a chainsaw or similar tool will result in significant woody debris that needs to be treated either by feeding it through a chipper or piling and burning. The logistics of hand dragging and feeding through a chipper are time consuming. Creating many small burn piles might be more time efficient but requires adequate space to ignite piles without scorching surrounding trees. Mechanical mastication (Picture 12 and 16) is an efficient way to treat larger acreages, but requires larger equipment to traverse the terrain and can leave behind thicker mats of wood chips that might inhibit desirable grass and forb growth and promote weeds.

An important part of thinning is not only what tree seedlings you leave behind to grow, but what kind of other understory vegetation is left to occupy the opened soil and space. Competition from native grasses and forbs, often considered detrimental to tree regeneration, is helpful once tree regeneration goals have been met and seedlings have grown tall enough to capture enough sunlight, and developed deeper root systems. Healthy understory vegetation will help prevent unwanted future crops of overly dense tree regeneration from reoccurring, as well as preventing noxious weeds from establishing or spreading through forests. Forbs such as lupines, or shrubs such as alder and ceanothus are capable of fixing atmospheric nitrogen and fertilizing the soil of this essential but limited macro nutrient. Ground cover also provides a home for voles, deer-mice and other seed predators that will help keep dense tree regeneration in check as well as providing food sources for small predators. They are all part of the jigsaw puzzle we call “nature.”

whereas the latter is more expensive and labor intensive. In most cases, transitioning a dense patch of tree regeneration into healthy taller trees may optimally require at least two thinning treatments, one for smaller trees and once again as they approach a pole size (3-8 inch stem diameter). If one thinning for optimal tree density is implemented for small seedlings, branch pruning might be needed.

### **Practical spacing tradeoffs**

The ideal spacing between tree seedlings varies considerably depending on site, species and management goals. Fire hazard resistance guidelines call for fairly wide spacing to reduce the risk of one tree torching from igniting its neighbors. For more mature stand protection the removal of most or

MSU Extension Forestry would like to recognize the following landowners for completing the requirements to be recognized as **Master Forest Stewards** in Montana!

### Congratulations

**Jim Fey**

**Gary Johnson**

To gain the status of “Master Forest Steward”, landowners must attend an additional 7 courses from the following offerings in addition to taking the Forest Stewardship class and completing a verified forest plan. Courses at our annual mini-college count towards meeting this goal. We have quite a few landowners who are one class away from completing this requirement and look forward to recognizing them next year. It is no small accomplishment to reach this status and we appreciate their dedication to continually learning all they can about our forests and how to help conserve them. It is our pleasure to work with such outstanding forest stewards!

1. Forest Understory Plant/Range Identification and Management
2. Forest Harvesting Practices
3. Forest Debris Management - Wildfire Hazard Mitigation
4. Forest Wildlife Habitat Identification and Management
5. Forest Roads Assessment and Design
6. Forest Insect and Disease Identification and Management
7. Forest Riparian Area Assessment
8. Forest Noxious Weed Management
9. Forest Financial Planning



**We are a Montana headquartered employer with a great reputation. We have an in-house Design and Engineering Team who are ready to help with any questions you may have.**

**[www.smartlam.com](http://www.smartlam.com)**

610 3rd Street West  
Columbia Falls, MT 59912





“We at Weyerhaeuser promote the American Tree Farm System as an effective tool for expanding and certifying sustainable forest management with family forest landowners and our log procurement programs have a preference for Tree Farm-certified raw material sourced from these landowners.”

**GROWING A TRULY GREAT COMPANY**



## Supporting Sustaining Forestry

Trust our professional to care for your forest.  
For Hands-on Experience, call:

**PML Seeley Lake**

Scott Kuehn, Resource Forester  
Office: 406-677-2201 Ext. 34  
Mobile: 406-546-9304  
montanaforester@yahoo.com

**PML Bitterroot**

Doug Wasileski, Resource Forester  
Office: 406-777-0464  
Mobile: 406-239-2476

**PML Missoula**

Zachary Bashoor, Resource Forester  
Office: 406-677-2201  
Mobile: 406-369-5162  
Zachary.bashoor@pyramidlumber.com



Serving Western Montana for 20 Years!

- Complete Land Stewardship Services
- Forest Assessments and Management Plans
- Light-on-the-Land Forest Work
- Fire Hazard Reduction Services
- Arborist and Orchard Services
- Riparian Restoration
- Revegetation and Custom Growing
- Aerial Surveys and Mapping Services
- Floating Islands and Clean Water Solutions

To Learn More, Visit our Website:

[www.watershedconsulting.com](http://www.watershedconsulting.com)

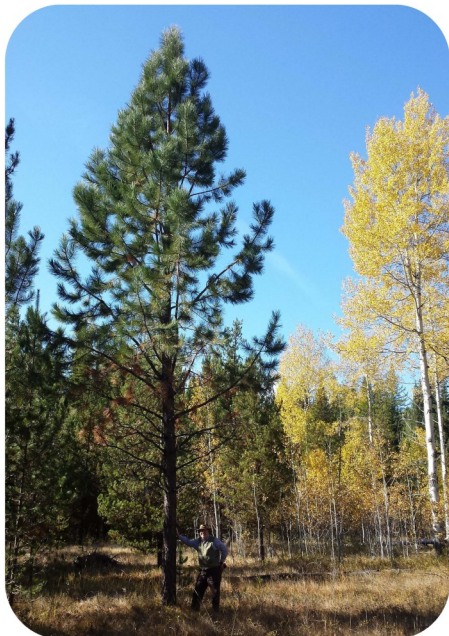
(406) 541-2565

# F.H. Stoltze Land & Lumber Co.

## Services We Offer to the Landowner:

- Forest Tract Planning
- Tree Selection & Marking
- Harvesting and Marketing
- Improve Aesthetics & Recreational Opportunities
- Reduce Wildfire Hazards
- Homesite Clearing

## Forest Stewardship for the Private Landowner



**IMPROVE** the health of your forest

**PROTECT** your home and forest from fire

**MANAGE** your land for the future

**ENJOY** your forest and the wildlife



## Purchasing Logs and Stumpage We Specialize in Meeting Landowners Stewardship Goals!

We are actively purchasing Ponderosa Pine, Lodgepole Pine, Engelmann Spruce, Alpine Fir, Grand Fir, Douglas-fir and Western Larch. We offer competitive prices for logs, standing timber and timberland. Let our professional foresters help you meet your land management objectives.



**406-892-7005**

Serving Northwest Montana since 1912



# THANK YOU MONTANA PARTNERS FOR ALL YOUR HARD WORK IN 2020

## LOG ACQUISITION & CUTTING EDGE MILLS

Idaho Forest Group leads the industry with excellence, innovation and superior mill technology.



The St. Regis Mill is currently purchasing the following saw log species:

Douglas-Fir | Western Larch | Lodgepole Pine | Alpine Fir | Spruce | Grand Fir | White Pine | Western Red Cedar



WOOD FOR A GROWING WORLD

[IDFG.COM](http://IDFG.COM)

CONTACT SKYLER F. HOEFER AT (406) 830-0814



## Germany Forest, Culture and History Study Tour

May 15-29, 2022



*2017 study group on the Schafberg in Austria looking into Bavaria*



*The "Waitburg" where Luther translated the Bible from Greek into German—setting in motion the Reformation, essentially establishing the notion of "individual rights". Located near the town of Eisenach, where first forestry texts were published.*



*Ehrfurt— perfectly preserved ancient city and cultural center of Thuringia*

Spend 2 weeks in scenic Bavaria and Thuringia experiencing forestry, history and culture. Tour starts in the ancient Bishop seat and University town of Freising, just 15 minutes by bus from the Munich International Airport. A few

days will be spent examining the arboretum of the King of Bavaria's estate in Munich as well as the University Forest and educational forest nature walk. From there we will travel south to Munich's municipal watershed forest, and the logging museum in Ruppolding with a quick trip into Salzburg. Then it is north to the amazing old city of Regensburg, and the historic Danube river and associated forests. On this trip we will travel further north into the vast forests of Thuringia with some stops at a Napoleon era fortress, medieval castle, and the ancient Castle Waitburg and the fantastic and historic city of Erfurt which escaped bombing during WWII and allows for exploration of 800 year old buildings, alleyways and Cathedrals. Many additional stops at local venues. We will travel with a charter bus and stay at comfortable local hotels. Most breakfasts and some dinners included.

Cost: approximately \$3500 per person and your own airfare (will depend on currency exchange and economic situation).

Maximum number of participants is 20 due to logistics, first come first serve and will require a \$200 nonrefundable deposit by September 12, 2021.

Contact Peter Kolb (406-243-4705) or Christina Oppgard (406-243-2773) for questions or to reserve a spot.



# 2021 Calendar of Workshops and Events

Workshop/Events	Date	Location	Information
Forest Stewardship for Loggers	April 13-15	Kalispell	<a href="https://www.logging.org/contact">https://www.logging.org/contact</a>
Forest Stewardship	May 6-7 & 14	Frenchtown	Full, waitlist
Forest Stewardship	June 3-4 & 11	Bozeman	Full, waitlist
Forest Stewardship	July 15-16 & 23	Kalispell	Full, waitlist
Forest Stewardship	August 5-6 & 13	Helena	Full, waitlist
To be put on the wait list for Frenchtown, Bozeman, Kalispell, or Helena please go to: <a href="https://montana.qualtrics.com/jfe/form/SV_0Jm8RPVq4WDOhts">https://montana.qualtrics.com/jfe/form/SV_0Jm8RPVq4WDOhts</a>			
Forest Stewardship	September 9-10 & 17	Billings	
Forestry Mini-College	March 8-11 & 15-17	Online	
MT Natural Resource Youth Camp	July 18-23	Lubrecht	Deadline: June 18th
Germany Forest, Culture and History Study Tour	May 15-29, 2022	Bavaria and Thuringen, Germany	Reserve a spot by September 12, 2021
Reserve a spot at: <a href="https://montana.qualtrics.com/jfe/form/SV_7OKGrbWSnoK8SzP">https://montana.qualtrics.com/jfe/form/SV_7OKGrbWSnoK8SzP</a>			
Project Learning Tree	See online calendar for event schedule		

## Other Workshops and Events

MT Forest Landowners Conference	April 22-23, 2021	Online	<a href="https://www.foreststewardshipfoundation.org">https://www.foreststewardshipfoundation.org</a>
Flathead Conservation District webinar series for landowners	February and March	Online	<a href="https://flatheadcd.org/">https://flatheadcd.org/</a>

Registration information: <http://forestry.msuextension.org/calendar.html#mfsp>

## We would like your Feedback

If you like/dislike certain things about this newsletter or have ideas for future topics.  
Please send us your thoughts!

MSU Extension Forestry • W.A. Franke College of Forestry and Conservation  
32 Campus Drive • Missoula, MT 59812-0606  
Email: [extensionforestry@montana.edu](mailto:extensionforestry@montana.edu)

1. **Prairie Rattlesnake: *Crotalus viridis*** - These venomous snakes are most easily distinguished from similar looking bullsnakes by their triangular head and the rattle at the end of their tail. They range in length from 12 to 60 inches. The background color above varies from pale green to brown with a series of brown or black blotches the length of the body. They can be found above 7000 ft elevation but their presence depends on the availability of a den within 2-3 miles in which they can overwinter. They do not naturally occur in NW Montana past the areas surrounding Flathead lake.
2. **Gophersnake or bullsnake: *Pituophis catenifer sayi*** - is a large non-venomous and fairly active, preying on rodents, lizards, other snakes, insects and small birds. Fairly common across the valley bottoms across Montana but uncommon at mid to higher elevations in the mountains. These 3-5 ft snakes (sometimes up to 7 feet long) can be startling to encounter because they are very active and can appear aggressive—and will bite but only in defense. Sometimes they slither in on themselves, rubbing their scales and give off a rattle like sound and can be confused with a rattle snake. They are considered non dangerous and highly beneficial for rodent control.
3. **Northern Rubber Boa: *Charina bottae*** - non-venomous and mostly nocturnal reaching 12-24 inches in length—these mild mannered snakes are predators of insects, small rodents, lizards and other snakes. Very fine scaled they feel rubbery, hence the name, and can be found in talus slopes and forest understories at almost any elevation. When handled they tend to defecate on themselves as a deterrent.
4. **Common garter snake: *Thamnophis sirtalis*** - often mispronounced “gardner” there are 3 non-venomous subspecies that range in size 16-42 inches and are found across most of Montana. They have stripes that range in colors from yellow to black , orange and brown. Probably the most commonly found snake they can range across all elevations and prefer moist meadows and riparian areas. They can be fairly active daytime hunters of amphibians, slugs, and small lizards, rodents and even birds. If handled they can bite (though only large ones can cause small cuts on the skin) and defecate on themselves.
5. **North American Racer: *Coluber constrictor*** - also called the black or blue racer, this non-venomous snake exists in 11 different subspecies across North America and reaches lengths of 20-65 inches. It gets its name from the speed with which it slithers through its grassy and shrubland habitat. Uncommon in western Montana it is found in hotter, drier and grassy forest types where it hunts insects rodents, lizards and small birds.
6. **Western skink: *Eumeces skiltonianus*** - is a most easily distinguished from other lizards by their shiny smooth scales and relatively small limbs. Their bodies measure about 4-8 inches long with similar length tails. Skinks only occur in western Montana and most of Idaho at all elevations as a common but secretive critter. They spend much of their day basking in the sun and their diet ranges widely, including spiders and beetles. Western skinks will bite if grasped and will flee if they feel threatened.
7. **Western toad or boreal toad: *Anaxyrus boreas*** - is a large toad species, between 4 and 9 inches long, and common across most of western Montana. Although this species commonly ranges across dryland forests at all elevations, it is an amphibian and commonly stays within 1-2 miles of water, where it breeds in small ponds and streams. It will eat most insects, small amphibians, lizards and rodents. Its population is currently in decline because of fungal pathogen *Batrachochytrium dendrobatidis* . It is speculated that this disease was introduced with the import of African frogs.
8. **Northern Alligator Lizard: *Elgaria coerulea*** - this secretive lizard reaches 4-6 inches in body length with a similar length tail, that it can shed as a defense mechanism. Its range is restricted to Northwestern Montana as far south as Ravalli county on sun flecked forest habitat across most elevations. You may hear it scurrying through the forest floor leaves and needles before you see it. It feeds on invertebrates including spiders, ticks, slugs, centipedes and small insects.

# What's rustling in the forest understory?





MSU Extension Forestry  
W.A. Franke College of Forestry and Conservation  
32 Campus Drive  
Missoula, MT 59812-0606

NON-PROFIT ORG  
U.S. POSTAGE  
PAID  
MISSOULA, MT  
59812  
PERMIT NO. 100