



Partners News

October 2016

Protecting your wooded land for the future is essential to clean water, clean air, wildlife habitat, sustainable wood supply...all things that are necessary to society and health, and that are gone forever if the land is developed.

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PIF's Website:

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PIF Board

Joe Hovel
Jim Joyce
Joe Koehler
Charlie Mitchell
Margo Popovich
John Schwarzmann
Rod Sharka
Richard Steffes

WELCOME NEW PIF MEMBER(S)

JOHN FETZER
DAN POTRYKUS

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ALL ARE WELCOME!

2016 ANNUAL MEETING & GATHERING PARTNERS IN FORESTRY

Saturday November 5, 2016

Come by noon, lunch will be served at 12:30 PM

Location: Big Bear Hideaway in Boulder Junction WI

(Note) If there is sufficient interest, we would like to offer an optional morning forest tour on a parcel of NHAL State Forest that PIF was instrumental in protecting. If you are interested in a short morning tour, please respond to Joe and we will organize the details. Suggest we car pool from Boulder Junction at app. 9:45 and return by noon.

Following lunch Gathering Waters will present PIF the Rod Nilsestuen Award for working lands conservation.

Highlights: PIF treasurer Rod Sharka will present a slide show with photos of conservation properties PIF is involved in. Award winning brewer Bob Moody will once again bring some of his special craft brews in support of conservation.

The property rights program will begin with Roy D'Antonio. Roy has over 2 decades experience in real estate sales, is a forest land investor-owner-manager and is owner-manager of Associated and Guardian Title Companies. Roy will talk about how title insurance relates to our property rights.

The second speaker will be James Botsford, talking about his experiences with Eminent Domain and bringing up concerns of Wisconsin laws in relation to our property rights.

The meeting will then shift to an open discussion, question and answer session of our panel and the audience. Any land, forestry or conservation questions or comments are welcome. The panel will consist of James, Roy and include the wide experience of the PIF Board, including Dick Steffes, who has over 40 years experience in conservation real estate which included a 39 year career with WDNR and 4 years since retirement as American Acquisitions LLC. PIF VP John Schwarzmann, who also serves as Forest Supervisor for BCPL, has a long career in conservation forestry and management issues will offer his personal knowledge. Joe Hovel has 45 years as a forest owner-manager and has worked with other land owners on numerous property issues.

Charge of \$15 per person to cover food and drink. Please respond by October 29 to logcabin@nnex.net, or call 715-479-8528. Please let us know if the morning forest tour is of interest to you.

PIF Note: In searching through the archives concerning past 'property rights' discussions, the following opinion piece by Joe Hovel was first printed in Partners News in spring of 2005. These may be relevant points for our November 2016 gathering.

The Ultimate Invasive Predator

On these pages, PIF has shown much interest in controlling invasive predators. As the trend of parcelization of forest lands has become increasing wide spread, I have come to realize from my conversations with other woodland owners that the most threatening invasive is not the gypsy moth, garlic mustard, or the like. It is the developers who are after your land or property rights, with the hope of large profits on your investment or assets!

This is taking place in many different ways, but I would like to caution here of being approached for an access easement. Landowners are being contacted by agents, often not stating who they represent, and are being asked to grant an easement for ingress and egress to a neighboring property. My advice to landowners interested in sustainable forestry is to not consent to an unlimited permanent easement of access across your property. Learn a complete understanding of what you give up.

After having said that, I do not wish to suggest that we not be good neighbors. You have many options for helping neighbors access their lands without losing *control* of your own property. You can grant permission for an assigned time, or an affidavit of permissive use that can be withdrawn at will if you feel your agreement is abused, and record such a document. You can give a key to a gate, simply requiring occasional return of the key, or change the lock periodically, thus giving a new key. You can charge a \$1 annual user fee. You remain in *control*.

You can grant a limited easement for a defined need that you approve of; for example you can grant an easement to John and Jane Doe for forest management or for one family recreation, but not access to a future subdivision. If you grant an easement, you can dictate the terms to your comfort, that way a future *overburdening* claim could be clear.

Several years ago, an elderly neighbor of ours granted an easement after she was approached by an agent who told her the access would serve a single landowner for their 'nature preserve'. Today that twenty foot easement is used by owners of three smaller properties. The neighbor's family objected by impeding access, were sued and lost in court as the judge, while admitting possible fraud, stated in his ruling "she was stupid". Our neighbor received no compensation for giving up her property rights, and the land developer profited several hundred thousand dollars.

What I write here is not to be taken as legal advice, but a warning to other landowners. If I am further designated as a foe of reckless development, I gladly accept that.

The fact is that in signing an easement, the grantor, the hosting landowner, becomes the *subservient* party and gives up the *dominant* estate of the easement area. Potential lose of a large property right but still liable for all the real estate taxes. If you are compensated with a one-time sum, you must be comfortable with that amount and realize that a 'perpetual easement' affects all heirs and assigns forever. Any buyer or successor in title must live with the agreement, affecting both the grantor and the grantee.

PARTNERS IN FORESTRY KNOWS THE VALUE OF PARTNERSHIPS

With this issue of Partner's News, members are receiving two excellent handouts. The booklet 'How to Identify, Prevent and Control Oak Wilt', as well as much of the information in the red oak feature, is provided by the USFS State and Private Forestry. Oak Wilt is now a serious threat even in the far north. The more we learn about Oak Wilt and managing oak, the more successful we can be in avoiding threats like this. PIF VP John Schwarzmann is your partner in this process, as you read his recommendations on regenerating oak. Red Oak is a very important species in our area, it is our shared responsibility to keep it on the landscape.

Some months ago a loyal member suggested we do more on basic tree identification. Thus we have been trying to not only help you identify our important trees, but learn them as well. In recent issues we have covered red pine, white pine, hemlock, basswood and now red oak. In this process of learning more on our forest trees, we recognize another valuable partner. Thanks to WDNR Division of Forestry for providing the 'Forest Trees of Wisconsin, How to Know Them' handout. This is another great little field book, to add to your collection of important information you have gained from your partnership with PIF.

This extra postage could have been out of our meager budget, had it not been for our valuable partnership with the UW Center for Cooperatives. Their grant to us in 2014 and again this year has made our partnerships more viable. We appreciate the faith they have placed in our educational and conservation efforts.

This is your COOP, your partnership, tell us what you need, give us something to share with your partners. This regular newsletter, the website and all the content for the same is a benefit from your partners. No one collects any salary from this organization, our partnership with you is very valuable to us all.

FUTURE ARTICLES

Future stories we are working on and hoping to share with you soon!

- Roy D' Antonio of Associated Title on the things to look for in title issues when buying or selling a real estate holding
- Dustin Bronson on woody biomass.
- Information on the Managed Forest Law, pros and cons and what DNR Foresters can and cannot do for the landowner
- Timber Theft by Paul Hetzler
- Updates on big trees, White Pine and more

If you have questions that you would like to see addressed in the newsletter, suggestions for, or have articles for, future newsletters, please contact us at partnersinforesstry@gmail.com or by mail:

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MY SUMMER IN THE NHAL, WORKING FOR LUMBERJACK RC&D,

SPECIAL REPORT TO PARTNERS IN FORESTRY, By Lea Daley



Lea talks about leatherwood

Leatherwood (*Dirca palustris*) is a great indicator plant on drier sites. Leatherwood grows pretty much exclusively on midrange, mesic sites, but it will grow on dry-mesic, fairly low nutrient areas as well which makes it useful for distinguishing between the very dry, sandy sites and the dry-mesic areas. Some other plants that are typically common on dry-mesic plots are maple leaved viburnum (*Viburnum acerifolium*), barren strawberry (*Waldstenia fragaroides*.) and lady fern (*Athyrium filix-femina*.)

When I was searching for summer jobs this spring, my standards were fairly low. If I was qualified and it was loosely relevant to my studies, it was on the list. After reading the post for Habitat Typer at Lumberjack RC&D, I was excited and hopeful. Identifying plants, collecting data, and hiking around the woods? It sounded like the perfect summer job for me. I applied, and a few weeks later I was hired.

My basic duties are very simple. I go to different parts of the Northern Highland State Forest in Vilas County, record the small ground plants present and take note of the trees, then classify the forest type based on what I found using Kotar's system of forest classification (links below.) My job is pretty easy as long as I know how to use a compass and remember the names of plants, but the purpose of the data I collect is much more involved than that. This information is incredibly valuable for foresters looking to properly manage forest lands. When

the northwoods were totally logged out years ago, stands were not necessarily replanted to represent the community growing there prior, so forest managers cannot for sure say which trees will grow best on an area just by looking at the current cover type. Poorly-informed decisions regarding ecosystem management can have big implications economically; for example, aspen fails poorly on the driest, sandiest sites, so it would be more economically favorable to focus on a species of pine on those sites, and focus on regenerating aspen elsewhere on an area with more moisture and higher nutrient content. Of course, ecological considerations can be and should be just as important as economic ones. If a forester would like to create more jack pine stands for the purpose of wild life habitat it would be beneficial for them to know where those dry, sandy sites are located as opposed to richer soil types that are better for species like red or sugar maple, birch, etc.

The Kotar system applies to the entire state of Wisconsin, and the forests across the state are incredibly varied and diverse. Even just in Vilas County, for instance, I have encountered *at least* 10 different tree cover compositions; each area I have had the privilege of experiencing has possessed its own kind of beauty. Breathtaking, tall and straight red and white pines, the bright green canopies of sugar maple, fields of aspen “quaking” for as far as the eye can see, and the eerie blue-green mixture of tamarack and spruce are just the tip of the iceberg when it comes to the beautiful forests here in Vilas. When forest land is lumped together for the purpose of ownership, it is easy to imagine hundreds of acres that look exactly the same. You find that is not the case after looking closer and seeing that pine forest can change quickly into mixed hardwoods in about 200 feet. If you look even closer than the tree species you can find that even a stand of red pine that stretches for miles has variation in moisture, topography, understory, and herbaceous plants. This is the entire premise of my job. The data that I collect is undeniably useful for exposing inherent dissimilarities, but after touring the forest every day for over two months I just find it incredibly interesting. I always enjoyed identifying plants just for the sake of knowing, but with this new context and purpose I enjoy it more.

It has really made me appreciate that a forest is not just about the trees. Forests are many different kingdoms of life intermingling to create a unique ecosystem, and there are many kinds of forests even within the northwoods. A lot of the variation is from the composition of smaller plants; to put that in perspective, my data sheets have about 30 trees on them (and I never have marked more than 15 of them) but they have probably five times as many shrubs and herbaceous plants and it is not an exhaustive list. Each plant is different; each combination of plants can be different forest type. Knowing each plant allows me to know a

little bit more about the forest of which they are a part as well. With that knowledge, I could tell you a little bit about the nutrient and moisture regimes, I could tell you what other plants you might find if you looked, I could even give you an idea of how the over story species would change over time if humans stopped actively managing the area. Honestly, it is possible for me to write pages on how interesting it is to know that plants together can describe different habitats, but then I would be forgetting about everything else.

Because a forest isn't a forest even just because of the plant life, as I mentioned earlier. I have seen many different animals, fungi, and lichens in addition to all of the plants. I do not know much about them, the fungi and lichens in particular, but I do see them and I know that they are part of that world just as much as the trees and herbs. It makes me want to learn more about them. After reveling in just how amazing and diverse the forest is, I realize how *changing* the forest affects so much more than the trees, the plants, and the economic prospects of that land. There are so many organisms cohabitating that it is truly short-sighted to imagine that this is only about the trees. Indeed forests change all the time naturally, such is life; however, making decisions regarding changes that humans want to make requires consideration of all the lives at stake... Including the small plants, fungi, lichens, animals, and even the bacteria. All of those organisms have a place and purpose in the forest; a balance of the interactions is what makes a forest healthy and beautiful for us to enjoy.

I have always considered myself a person who cares about the environment, but now I think I am that person more. Simply for the reason that I have spent this summer getting to know the land more intimately that I had before. It might be impossible for me to explain all of the revelations I've experienced while walking around looking for trailing arbutus

and twinflower, but certainly I can describe the feeling I get when I walk into the woods: familiar and at home.

Lea is studying Botany and Environmental Studies at the University of Wisconsin-Madison; she will be graduating this fall (December 2016). It was great to have her in the northwoods this past summer.

Links to information about Kotars:

<http://dnr.wi.gov/topic/ForestManagement/documents/24315/12.pdf>

<https://www.na.fs.fed.us/spfo/pubs/misc/ecoforest/forsite.htm>

Lea summarizes the site we visited together

The site we visited would likely be classified as “AVVb,” meaning that the hallmark plants of the area would be maple species, maple leaved viburnum, and blueberries. These areas are considered dry-mesic and can support a few different management options. Pine species grow well on these plots, and oak species generally can hold their own against maple species which is different than other mesic sites. The understory of these areas are very diverse, including hazels, viburnum, ferns, and wild sarsaparilla.

Lesson from Lea on Hazel/Witch Hazel

Many species of hazel are native to northern Wisconsin. American Hazel (*Corylus americana*) and beaked hazel (*Corylus cornuta*) are closely related but fairly easy to tell apart. American hazel has hairy stems and the nuts have a plain fringe while beaked hazel has a leafy tube along the end of the nuts and no hair on the stems. Witch hazel (*Hammamelis virginiana*) is also fairly common on wetter, richer sites, but is distinguishable from the other hazels by the stark differences in buds. In the fall, it is even easier to tell apart because witch hazel is an autumn flowering plant, so the shrubs will feature small yellow flowers. Witch hazel is a bit more difficult to tell apart from speckled alder (*Alnus rugosa*), but generally alder only grows on very, very wet sites. True hazels have a large range as far as soil conditions and are ubiquitous through Vilas County. Witch Hazel (and alder) are pickier about where they grow, making them excellent indicator plants for habitat classification.



Have you checked out PIF’s website? www.partnersinforestry.com

The website is for members to expose your business, service or tree farm, share thoughts, ideas, articles, photos, and links.

This is your COOP, we need your input as much or more than your dues.

DEER SERIOUSLY THREATENING NORTHWOODS OAK

This following story by Patrick Durkin was printed in the Green Bay Press Gazette

For all the accusations we hear about too many wolves and careless deer management in northern Wisconsin, many areas still have enough whitetails to jeopardize the Northwoods' once-robust oak stands.

In fact, some foresters think it's time to simply cave into hunters' demands for more deer and quit trying to manage forests for this lucrative hardwood, which woodland owners have long cherished. They say if you have mature oaks and abundant deer, realize that whitetails can prevent the oaks from regenerating. Whether you cut them for lumber or watch them die of old age, they might be the last of their species.

That was the message heard in late July from two "oak huggers" who addressed the Wisconsin Outdoor Communicators Association's annual conference in Eagle River. Dave Clausen of Amery, a former Natural Resources Board chairman; and Mike Amman, the forester for Bayfield County's Forestry and Parks Department, concede they're minority voices in Wisconsin's long-running deer debates. Both serve on their respective County Deer Advisory Councils, and both were outvoted this spring by fellow CDAC members who want more deer in Polk and Bayfield counties.

Still, Clausen and Amman stand their ground, citing scientific evidence that deer often make it impossible to regenerate oaks, even in areas with wolves and harsh, deer-killing winters.

Amman is responsible for Bayfield County's 169,400 acres of county forest, which is open to public hunting. Clausen owns and manages about 450 acres of woodlands in Polk County, and 10 people besides him hunt it. Even with antlerless tags and crop-damage tags they can't kill enough deer to grow oaks.

Amman said Bayfield County's county-owned forests hold 14,867 acres of oak, of which 80 percent is 86 years or older. To regenerate oak, forestry textbooks recommend large-scale logging followed by prescribed burns. That process jump-starts young oaks, which soon cover the forest floor.

Unfortunately, the region's deer herd has been overpopulated for much of the past 30 years, so traditional oak-growing systems simply produce deer food, not trees. Amman said after harvesting the oaks in one 35-acre test parcel in 2001 and burning it in 2005, the patch grew thick with oak saplings by 2008.

And deer loved it. By 2013, after eight growing seasons, 90 percent of the 3,798 young, heavily browsed oaks stood only 1 foot or less tall, and 10 percent were between 1 and 2 feet tall. None stood 2.1 feet or taller. Normally, red oak in that region grow 1-2 feet annually, and stand taller than men by their sixth growing season.

Instead, those sites grow thick stands of sage and bracken ferns. The ferns thickly cover these sites in summer, but leave no food or cover after dying in fall.

What can be done to spare oaks? Well, 8-foot fencing costs about \$442 per acre. And if you want to surround each seedling or sapling in a 5-foot tube until it grows beyond the deer's reach, it costs about \$300 per 100 tubes, not including time or labor.

Clausen knows those challenges. He installed wire enclosures around 40 of his young oaks this year, and plans to protect another 100 by spring. Still, that's like fighting a wildfire with a \$50 squirt gun. He showed a photo of a lone oak he planted in 1990-91 with 50,000 other oak seedlings. That tree, which he calls "Lucky," stands about 25 feet tall and is the planting's only survivor.

Browsing deer stunted most of those young oaks, which eventually were shaded out by pines planted at the same time. "The only thing that works is to cut a stunted oak at ground level and fence it off," Clausen said. "Stunted oaks have tremendous root systems and produce remarkable growth if you protect their tops, but that's impractical and too expensive when you're trying to grow 50,000 trees."

Amman and Clausen don't expect Wisconsin's current deer-management program to help, although some folks try. The state's Deer Species Advisory Committee, for example, includes mostly Department of Natural Resources biologists.

When they recommended antlerless quotas this spring in 28 Northwoods counties, they agreed only Iron and Forest counties couldn't support hunting for does and fawns. The committee said seven counties – Ashland, Bayfield, Douglas, Florence, Oneida, Sawyer and Vilas – should have antlerless quotas ranging from 200-630, but the hunter-run CDAC committees in those counties rejected their advice and voted for zero. The CDACs in six other counties also voted for lower quotas than biologists recommended: Langlade, Lincoln, Marathon, Marinette, Oconto and Rusk.

When the final statewide CDAC recommendations went to the seven-citizen Natural Resources Board for approval in May, no one mentioned the science committee's recommendations. Even so, Clausen keeps arguing his case, but doubts anything will change until farming and forestry interests pressure legislators to restore effective deer-management strategies.

"I sit on Polk County's CDAC, and I'm under no illusion that we're managing deer," Clausen said. "We could issue unlimited bonus tags and still not kill sufficient deer to reach our goal. With the current season structure and hunter attitudes, we've lost the ability to control the herd."

In Bayfield County, the CDAC committee supported Amman's idea to enroll 10,000 acres of county forest in the state's new Deer Management Assistance Program to get some antlerless hunting. The county's forestry committee rejected the plan.

Amman is frustrated but not surprised. "They only hear from hunters who say there's no deer," Amman said. "They overrule our paid staff of foresters, even though we're presenting all this evidence of a problem undercutting the oak's sustainability. We have an entire industry built on the flow of timber, but before long we'll have little oak to sell."

Clausen isn't surprised either.

"The statewide post-hunt deer population in 2015 was nearly 1.2 million deer, which is nearly twice the sound goal for winter," he said. "That was also above the post-hunt 2014 herd by 6 percent in the northern forest, 17 percent in the central forest, 6 percent in the central farmlands, and 11 percent in the southern farmland. When this (DNR) administration said they were not going to consider numbers in setting deer policy, they were serious."

Patrick Durkin is a freelance writer who covers outdoors for USA TODAY NETWORK-Wisconsin. Email him at patrickdurkin56@gmail.com.

DEER AND REGENERATING OAK

By Joe Koehler

This article is intended as a follow up of the recent article sent to Partners in Forestry by Northwood Alliance. In his Green Bay Press Gazette story, Patrick Durkin, has an expose by Dave Clausen and Mike Amman regarding over browsing of deer on oak regeneration stands in

Bayfield County and Polk County. I have attached pictures of an example of over browsing, the same issue happening on our property in central WI. One of the pictures is an oak the same age as the other ones but is not over browsed. After reading the article, I made a point of walking all of our property that I've done oak regeneration cuts on and realized it is a bigger problem than I initially perceived.

The trees in the pictures are an example of new oaks that came up following an oak clear cut in

2007. There are only a handful of trees from a twenty acre cut that have grown the way a red oak should grow when not getting browsed every year. Another side effect as a result of this is the intermittent white pines scattered throughout the cut area have now become the dominant species in that area. From a personal perspective this isn't necessarily a bad thing because I happen to love white pine. However the long term consequence is that thirty years from now that area will be large mature white pines instead of the oak, and deer prefer oak over pine.

What the hunters need to understand is when they pressure the DNR to increase the deer population in areas that were traditionally dominated by oak, they are shooting themselves in the foot. My kids and grandkids will not be harvesting the quality oaks that I was fortunate to have when I bought this property and because of the over browsing the deer will be moving into other areas as the white pine take over.

This was my first year as a member of CDAC for Waushara County and I have to admit I did more listening and not much talking as I didn't know what to expect. It was no surprise the only people in the room that supported my concerns were the DNR foresters. I can assure you from this point forward I will be pushing more aggressively for fewer deer in our area. I will also be willing to take anyone who doesn't agree with me for a hike to show them the evidence. On an average night I can count from 15 to 30 deer coming out of one corner of my property. As nice as it is too watch them it would be even better if my grandchildren can see a few less deer standing under high grade mature red oak trees.

As a side note, my wife and I bought the first twelve acres of what eventually became 120 from in 1991 and I have been very grateful to have PIF mentor me over the years and teach me to appreciate the woods more than I thought possible. I believe it is crucial for all of us landowners to do our part to educate neighbors and the public about the balance needed to maintain enough deer so generations can continue to hunt but also control the herds so our next generation of oaks can be as beautiful as they were in the past. All evidence shows that with less deer we have higher quality deer and bigger bucks to hunt.



This tree was able to do rather well, as very few others in this 10 year old oak regeneration



These 10 year old oak are only shrub size, having suffered from continual deer browse

The following information on red oak was obtained from several sources, with our thanks to USDA FS State and Private Forestry, WDNR Division of Forestry and PIF VP John Schwarzmann.

Northern Red Oak

Northern red oak (*Quercus rubra*), also known as common red oak, eastern red oak, mountain red oak, and gray oak, is widespread in the East and Central U.S. and grows on a variety of soils and topography, often forming pure stands. Moderate to fast growing, this tree is one of the most important lumber species of oak, as well a popular shade tree with good form and dense foliage.

Northern red oak is the only native oak extending northeast to Nova Scotia. It grows from Nova Scotia and New Brunswick westward in Ontario to Minnesota, South to eastern Nebraska and Oklahoma; east to Arkansas, southern Alabama, Georgia, and North Carolina. Loners are found in Louisiana and Mississippi.

In the wide area over which northern red oak grows, mean annual precipitation varies from about 30 inches in the Northwest to about 80 inches in the southern Appalachians. Annual snowfall ranges from a trace in southern Alabama to 100 inches or more in the Northern States and Canada. Mean annual temperature is about 40° F in the northern part of the range and 60° F in the extreme southern part. The frost-free period averages 100 days in the North and 220 days in the South.

In the north, northern red oak grows best on cool moist soils. Elsewhere it grows best on warm, moist soils. Favorable soils are derived from glacial material, residual sandstones, shale, limestone, gneisses, schists, and granites. They vary from clay to loamy sands and some have a high content of rock fragments. Northern red oak grows best on deep, well drained loam to silty, clay loam soils.

Although northern red oak is found in all topographic positions, it always grows best on lower and middle slopes with northerly or easterly aspects, in coves and deep ravines, and on well-drained valley floors. It grows at elevations up to 3,500 ft in West Virginia and up to 5,500 ft in the southern Appalachians.

Northern Red Oak is the forest cover type that includes pure stands of this tree or stands in which it is predominant. The species is a major component of White Pine-Northern Red Oak-Red Maple in the Northern Forest Region, and it is a principal species in White Oak-Black Oak-Northern Red Oak in the Central Forest Region. Northern red oak is listed as an associated species in several other forest types.

Shrubs common in forest stands containing northern red oak include, mountain-laurel, rosebay rhododendron, witch-hazel (*Hamamelis virginiana*), beaked hazel (*Corylus cornuta*) and spice bush. The most common vines are Virginia creeper.

Northern red oak is monoecious. The staminate flowers are borne in catkins that develop from leaf axils of the previous year and emerge before or at the same time as the current leaves in April or May. The pistillate flowers are solitary or occur in two- to many-flowered spikes that develop in the axils of the current year's leaves. The fruit is an acorn or nut that occurs singly or in clusters of from two to five, is partially enclosed by a scaly cup, and matures in 2 years. Northern red oak acorns are brown when mature and ripen from late August to late October, depending on geographic location. In forest stands northern red oak can begin to bear fruit at about age 30, but usually does not produce seeds abundantly until age 50 or more. Good to excellent seed crops are produced at irregular intervals, usually every 2 to 5 years.

Acorn production is highly variable among trees even in good seed years. Some trees are always poor producers while others are always good producers. Crown size seems to be the most important tree characteristic affecting acorn production. Dominant or co-dominant trees with large, uncrowded crowns produce more acorns than trees with small, restricted crowns. Even in good years only about 1 percent of the acorns become available for regenerating northern red oak, and as many as 500 or more acorns may be required to produce one 1-year-old seedling. Many acorns are consumed by insects, squirrels, small rodents, deer, and turkey and other birds. They can eat or damage more than 80 percent of the acorn crop in most

years and virtually 100 percent of the crop in very poor seed years. The large acorns are generally dispersed over only short distances. Gravity and the caching activities of squirrels and mice are the primary means of dispersal.

Northern red oak seedlings that are established naturally or by planting at the time an old stand is clearcut, regardless of how large the cut area, do not grow fast enough to compete with the vigorous woody sprouts and other vegetation. *The species will be present in new reproduction stands in proportion to the amount of advance reproduction present before complete overstory removal. (see the story on red oak regeneration immediately following)* To compete successfully in new stands, stems of northern red oak advance reproduction must be large and have well-established root systems. Thus, achieving successful northern red oak reproduction depends on creating conditions necessary for establishing seedlings and for their survival and growth. Northern red oak acorn germination is hypogeal, in that it occurs during the spring following seedfall. Best germination occurs when the acorns are in contact with or buried in mineral soil and covered by a thin layer of leaf litter. Acorns on top of the leaf litter or mixed with litter generally dry excessively during early spring and lose their viability before temperatures are favorable for germination.

Although available soil moisture can be a critical factor affecting first year survival of northern red oak seedlings, it is usually adequate at the time acorns germinate. Germination is followed by vigorous and rapid taproot development, and if the taproot is able to penetrate the soil, seedlings survive considerable moisture stress later in the growing season. Northern red oak seedlings are less drought tolerant than white or black oak seedlings, however. Light intensity appears to be the most critical factor affecting not only first year survival, but also survival and growth in subsequent years. Northern red oak reaches maximum photosynthesis at about 30 percent of the light intensity in the open. Light intensity under forest stands is often much lower, however, at about 6 in above the ground, where the new seedlings are competing. Light intensity at this level has been documented to be 10 percent or less of that in the open, a level too low to allow seedlings to survive and grow.

Once established under a forest stand, northern red oak seedlings seldom remain true seedlings for more than a few years. Conditions such as fire, poor light, poor moisture conditions, or animal activity kill the tops, but not the roots. One or more dormant buds near the root collar then produce new sprouts. This dieback and resprouting may occur several times; the result is a crooked, flat-topped, or forked stem. Such stems have root systems that may be from 10 to 15 years older than the tops. Northern red oak shoot growth is episodic. When moisture, light, and temperature conditions are favorable, multiple shoot growth flushes will occur in the same growing season. The first flush is generally the longest and each flush is followed by a distinctive rest period.

Growth of northern red oak advance reproduction, seedlings, and sprouts is slow and generally restricted to one growth flush under undisturbed or lightly disturbed forest stands; at best it averages only a few centimeters annually. Northern red oak sprouts readily. More than 95 percent of the northern red oaks in new production stands are sprouts, either from advance reproduction or from stumps of cut trees. New sprouts from advance reproduction arise when old stems are damaged during logging. Height growth of new sprouts is related to the size of the old, damaged stem; the larger the old stem, the faster the new sprout will grow. New sprouts can grow rapidly and are often straight and well formed. Northern red oak stumps sprout more frequently than black oak or white oak stumps. Sprouting frequency is related to parent tree size with more small stumps sprouting than large ones. Large stumps tend to produce more sprouts than small ones but by about age 20 to 25 the number of living sprouts per stump averages four or five regardless of parent tree or stump size. Northern red oak stump sprouts grow rapidly, averaging about 61 cm (24 in) or more annually for about 30 years. These stump sprouts can be a valuable component of new reproduction stands particularly if they originate at or near the ground line. Sprouts of low origin are much less likely to develop decay than sprouts that originate high on the stump, but they tend to develop severe crook or sweep at the base. Early clump thinning may be desirable to improve potential quality although it is not needed to maintain good growth.

Mature northern red oaks are usually from 65 to 98 ft tall 24 to 36 inches dbh in undisturbed stands, on good sites. Forest-grown trees develop a tall, straight columnar bole and large crowns. Open grown trees tend to have short boles and spreading crowns. Northern red oak is classed as intermediate in shade tolerance. It is less tolerant than some of its associates such as sugar maple, beech *and* basswood. Northern red oak responds well to release if the released trees are in the codominant or above average intermediate crown classes. The best response to thinning or release is obtained if the thinning or release is made before an even-aged stand containing northern red oak is 30 years old. Trees in well-stocked stands 30 years old and older generally have small, restricted crowns and are unable to make efficient use of the growing space provided by thinning or release. Epicormic branching can be prolific on northern red oak following heavy thinning in stands older than about 30 years. Trees around the perimeter of openings created by harvesting may also develop many epicormic branches, because the boles of northern red oak in fully stocked stands contain numerous dormant buds. When the boles are suddenly exposed to greatly increased light, these buds begin to grow.

Northern red oak hybridizes readily with other species in the subgenus. Northern red oak also hybridizes with blackjack oak and with northern pin oak. *(note from Joe: Back in 1971, as a very young logger, I visited Mr. Feltz at Feltz Lumber in Stevens Point, to sell them oak logs. He asked where the site was, and topography of the site. I learned then that these different versions of red oak similarities have an awful lot to do with site specifics. As we learned, the true red oak may be best on the north and east slopes, where our pin oak-black oak types on the west and south slopes. An interesting anomaly is how sometimes the poorer quality oaks can achieve massive size on these poor sites.)*

There are several serious diseases that affect our oak. With the print version of this newsletter, you will see a USDA FS brochure on oak wilt, which has recently even become a threat in the far north. Please see the electronic version here. http://na.fs.fed.us/pubs/howtos/ht_oakwilt/identify_prevent_and_control_oak_wilt_print.pdf



Red Oak veneer and saw logs being scaled as they are loaded on a truck, from a PIF members land in central Wisconsin in September 2016. The practice is one stage of a shelter wood harvest, the site had a pre harvest scarification completed just prior, to allow soil to better contact and germinate acorns. The hope is for the limby debris to deter the deer for several years so the oak regeneration can get established. It is also advised to have the stump height as low as practical, as the red oak stump sprouts grow healthier from lower stumps. This site grew very good red oak on the east and north slopes, however with a pin oak appearance on south and west slopes.

Photo contributed by Mark Hovel



A rather unusual clump of four red oak, presumably from old stump regeneration. The large stem with the burl measures 28" diameter at a foot above the burl. The right stem is an impressive 23" dbh, the back right is 18" dbh, the back left at 14" dbh. This clump grew outward to provide space for the large crowns, typical in red oak. This was on an otherwise sugar maple, basswood site, with tremendous leatherwood below. Though not a lot of red oak here, there was also several others in this stand which exceeded 24" dbh, with veneer quality. Northern Vilas County.

The same burl from the other side.



Photo contributed by Rachel Hovel



LET'S REGENERATE OUR RED OAK

by John Schwarzmann

Regenerating red oak is very challenging because it's a species adapted to multiple low intensity disturbances for successful regeneration conditions. Historically, red oak thrived in places that experienced frequent ground fires that eliminated competing vegetation. Red oak seedlings direct much of their early growth to roots so that even if the stem of a seedling was killed by fire, it would quickly resprout from the roots and have a growing advantage over other trees and bushes that do not allocate as much growth to the root system. Since frequent ground fires are no longer allowed to burn over the landscape, red oak is now frequently at a disadvantage relative to other competitors that are not as well adapted to fire. In the absence of fire, land managers resort to a series of practices that attempt to mimic fire in order to regenerate red oak. These practices include a series of low to moderate intensity timber harvests including direct control of competing vegetation with mechanical and/or chemical means.

Another key factor to consider in carrying out attempts to regenerate red oak is the type of soil and associated moisture levels. On loamy soils that hold higher levels of moisture in comparison to sandy soils, the level of competing vegetation is normally much higher. It will be much more difficult to regenerate red oak on loamy soils but if it does get established, subsequent growth and timber quality is often excellent.

Loamy -mesic sites

On these sites, red oak seedlings appear sporadically. After a good acorn crop, seedlings appear but they often get shaded out and die after several years from competing vegetation that is more shade tolerant. Foresters have to time their harvests at times when seedlings are present. Initial timber cuts will only establish other tree species if several hundred seedlings per acre of red oak are not present.

Normally, red oak regeneration can be accomplished with a series of three timber harvests and two episodes of competition control. The first harvest

should concentrate upon removing saplings that create low shade and overstory trees such as red maple that are fierce competitors. The goal will be to leave about 60 percent of the canopy. This light level should stimulate red oak seedling growth relative to full

canopy closure but also provide enough shade to keep competing trees and shrubs from capturing the site. Red oaks are particularly sensitive to low shade so it is very important to remove the saplings even though they don't have any timber value.

Four to six years after the harvest, the understory will consist of red oak seedlings 3-5 feet high and many hundreds of seedlings of competing species. These species are normally red maple, sugar maple, ironwood, black cherry and white ash. If competition control is not carried out, these species will likely outgrow the oak and take over the site. At this time, any woody plant within 7 feet of a red oak should be cut with a brush saw preferably during the growing season, but in August so that if oaks do accidentally get injured, it won't be likely to spread oak wilt disease. It would be more effective to treat the red maple and ironwood stumps with an herbicide such as Garlon to prevent resprouting, as they are vigorous.

It will take four to six years after the competition control practice for the oaks to respond to the better growing conditions with fast height growth that will help them out compete other trees. Once the oaks are growing quickly with 18 to 30 inches of annual height growth, it will be time to plan the second timber harvest and second round of competition control. The second timber harvest should once again concentrate upon removing seed producing trees of shade tolerant species such as red maple. This harvest should leave less canopy than the first harvest, 40% compared to 60% because young red oak trees require more light as they reach the sapling stage of growth when they get to be 6 to 10 feet high and about an inch in diameter. Leaving more canopy will only encourage the shade tolerant species to capture the site over red oak.

We are pleased to present the following recommendations by PIF VP John Schwarzmann, on Red Oak regeneration. The following are John's personal recommendations and do not represent his employer, the Board of Commissioners of Public Land, where John serves as Forest Supervisor.

Several years after the harvest repeat another round of competition control in late summer. Again cut all woody vegetation within 7 feet of your oak saplings and if the first round of competition control did not treat red maple and ironwood with a herbicide it would increase the effectiveness of the treatment. Herbicide application is accomplished by carefully swabbing or spraying only the cut stump so that the herbicide is very targeted and is unlikely to cause problems to other non target trees or to negatively affect the environment.

At this stage you should have a minimum of 300 red oak saplings per acre to justify the costs of the competition control. Once your saplings reach 10 to 15 feet in height and 1 to 1 1/2 inches in diameter it will be time to implement the third and final timber harvest. The third harvest should remove most of the remaining canopy trees leaving about 5-12 mature oak seed trees and other good wildlife trees. Failure to implement this final cut will mean that your previous efforts will likely not come to fruition. Red oak saplings need nearly full sunlight to outgrow their competition. It is also very important not to wait too long. If red oak saplings reach 2 to 3 inches in diameter, they will be less flexible and will be much more likely to be damaged during the timber harvests.

Some managers wait to implement their second round of competition control after the third timber harvest, but it will be more difficult to implement due to the heavy slash.

Regenerating on Sandy ground.

The steps to regenerate red oak on more Sandy ground are similar to the ones outlined above, however, the likelihood of success is often higher due to less dense competing vegetation. In addition, in contrast to loamy soils where oak seedlings appear sporadically, oak regeneration accumulates over time following every good acorn crop because some seedlings survive competition each time. Frequently, there are more red oak seedlings per acre on sandy ground than loamy soils when the oak regeneration sequence is started. Finally deer browsing can be less intense on Sandy ground perhaps owing to a palatable difference between the soil types.

Costs for the competition control can run about 70 to 100 dollars per episode or 140 to 200 for the entire process. These costs can vary depending upon your treatment area. Small areas under 25 acres in size will normally cost more.

We had a lot of comments about the Patrick Durkin story we had forwarded to the email list in late August (refer to the story on page 8 of this newsletter). Folks agreed that regenerating our oak stands is a serious problem with high deer numbers. It appears that deer numbers less than 10/sq. mile allow a good start to forest regeneration and possibly even some under-story plants which are otherwise uncommon. Numbers over 15/sq. mile lead to a very real challenge with forest health. Let us know your experience. The Durkin story was <http://www.greenbaypressgazette.com/story/sports/outdoors/2016/08/19/deer-seriously-threatening-northwoods-oak/88642358/>

A news report from September 16, 2016 stated that the three cities still in the running for the possible moving of the WDNR Division of Forestry to the north were Wausau, Rhinelander and Hayward. The report also stated that the move would cost in the millions of dollars annually.

PIF INTERVIEW WITH: JAMES BOTSFORD

Joe had a short chat with Wausau area attorney James Botsford about the property rights topic we will cover at the November 5th meeting. We share that with you here.

PIF: You folks were sued in North Dakota over your family refusal to allow Enbridge to cross your land. I sympathize with landowners concerned about their property rights, as our land is a timeless investment. What was the proposal you refused to allow?

JB: Enbridge wanted a 99 year easement across our property. It contained no requirement that they do anything with it, it also permitted them to put whatever they wanted in the easement (eg Alberta tar sands). It gave them the right to sell the easement to any other entity from anywhere in the world for any purpose. We objected to what we perceived as an abuse of Eminent Domain, a condemnation of our private property by a foreign corporation for their profit purposes.

We also objected to materially participating in the process of putting extra toxic carbon in the atmosphere from this very dirty oil.

PIF: You were the only hold out in this proposed line? Would this proposal take oil from the Bakken fields to Duluth-Superior to be refined?

JB: The proposed pipeline was the Sandpiper, and it would take fracked oil from the Bakken oil fields of western North Dakota to Superior, Wisconsin. Of the 800 property owners along the North Dakota portion of the proposed route, my wife Krista and I were the only ones who refused to take their money and grant them an easement. So they sued us.

PIF: Would you care to elaborate on your reasons?

JB: Our primary motivation centered on issues around the factors we call Climate Change. We find the science compelling. We feel a sense of responsibility for a more sustainable future. We aren't zealots, we drive cars and tractors, but when Big Oil asks you to join them in putting more carbon in the atmosphere, and offers to pay you to be complicit...well, that's when we felt we needed to take a principled stand, so we did.

PIF: My brother Steve had issues with this Company in Jefferson County, WI a number of years ago, and he is still outraged by the way they were treated after many initial promises. In his neighborhood property rights were in shambles. Did you find them respectful?

JB: Enbridge is a soulless beast. They come across as smooth and fair in the beginning, but that is not who they are. They don't care about you, your property, your use of or wishes for your land. They have a bottomless pit of resources and they play hardball.

PIF: Most importantly in this discussion, your comment to me about Wisconsin property rights being the interest you have in participating in this meeting. Of course we want to hear your story and your phenomenal success in the North Dakota Supreme Court, but I am aroused now. Why should people in Wisconsin and the UP care about this case? Is there anything in Wisconsin law to make us more concerned now?

JB: Although it is not generally known, in 2015 Enbridge lawyers worked quietly with the Wisconsin legislative leaders and slipped into law an amendment to the Wisconsin law on Eminent Domain. It was buried in the budget bill. It now permits a "business entity" to take private property through eminent domain. Enbridge is gearing up to expand their easements in Wisconsin. Check out 80 Feet Is Enough on the web, or WEAT (Wisconsin Easement Action Team) or the Sierra Club link on enbridgesuedus.com. These are sources for information about Enbridge's existing lines and future plan in Wisconsin and the surrounding area.

To the surprise of many, we won our case in North Dakota! On September 13th Enbridge threw in the towel. A week before we were scheduled to have Oral Arguments in the North Dakota Supreme Court, Enbridge filed a Stipulation with the Court in which they gave up all interests in our land and agreed to pay over \$82,000 for our attorney fees, which we incurred defending ourselves against their lawsuit. It was a total victory for us in this case, which occupied three and a half years of our time. We were very fortunate. Circumstances aligned favorably for us so we were able to prevail. It was not a pleasant experience...except for the ending.

PIF: Thank you James, we congratulate Krista and you in your success and look forward to hearing more about all this on November 5. Especially noting with all the alleged recent anti conservation legislation in the name of property rights, I think we best learn more about Eminent Domain in Wisconsin.



An Enbridge pipeline in Wisconsin. After weeks of unsuccessful attempts to horizontal drill under the Allen Creek in Jefferson County the construction was forced to work off of mats in the wetlands. Quite an impact, damming, digging and preparing to bury the pipe which carries tar sands oil from Alberta to refineries in Indiana and Illinois. Although Wisconsin does not have an oil reserve per say, we use plenty of it and the development impacts our environment tremendously with pipelines and, of course, Frac Sand mining. Perhaps the oil does cost far more than what we pay at the pump. See past Partners News for more on these issues. Photo by Steve Hovel, March 2008.

We feel vindicated and hopeful. We hope this significant victory is a small step on the big road to environmental sanity and responsibility. We hope to help reverse the slide into climate degradation.

We also hope this significant victory helps to rein in the abuse of the power of Eminent Domain. That governmental power should not be delegated to corporations or be used for economic gain. We hope our case encourages others to stand up for their principles.

Thank you all again.

*Sincerely,
James and Krista
Botsford*

Photos in the two fall color articles contributed by Margo Popovich



We bring you two seasonal and very timely education pieces from our 'Partner' at Cornell Cooperative Extension. Paul has become a very valuable asset to Partners News and his writing is much appreciated by us all. We will learn how close the natural chemicals are to the phyto-nutrients in our garden veggies.

THE FALL COLOR CONSPIRACY

by Paul Hetzler, Cornell Cooperative Extension

The sunny days and cool nights we've had recently are creating an especially intense "art show" across our hardwood forests. We're fortunate in the northeastern U.S. is one of the few places on the Planet Earth where trees produce such a phantasmagoria of color. You'd have to go to northern China or Japan to see anything close to what we have here.

The autumn foliage in the northland is approaching peak color, and it's time once again to explore just how this explosion of pigment came to be. Very few people alive today remember, but years ago we only had orange fall color—thanks to carotenoids in the leaves—with no yellows or reds, which are caused by xanthophylls and anthocyanins, respectively.

Then in the 1930s the Hoover Administration rolled out new leaf-color enhancement legislation to boost tourism in the northeast as a response to the Great Depression. It was called the Hoover Omnibus Anthocyanin and Xanthophyll bill, or HOAX.

OK, it's unlikely it happened that way, but hey, I wasn't alive then, so who knows? We know more about fall color today than when I was a kid, but we still don't understand it all.

Most of us were taught in school that during the growing season, dark green chlorophyll masks the lighter yellow and orange compounds that naturally occur in leaves. Each fall, trees actively seal the vascular connections between twigs and leaves with a waxy abscission layer. This kills off chlorophyll and reveals yellow and orange.

Every tree species has its own paint palette. Birches turn brilliant yellow; serviceberry and many poplars often give us a mix of oranges and yellow. But whence come red leaves? This is the mystery. We know that relatively few tree species create red fall colors. Red and sugar maples are renowned for their ruddy foliage. Some oak species produce a deep scarlet, and our native white ash can make an intense red-purple hue.

The chemicals responsible for the red and purple range are called anthocyanins. These are large, complex organic molecules that take a lot of energy to create. Many plants invest in them in springtime to protect their tender emerging leaves from UV damage. Once the foliage hardens off, the plant stops making this "expensive" compound, and the anthocyanins break down. That early-season outlay makes sense, but what about in autumn?

Chlorophyll is more vulnerable to UV damage at cold temperatures, and you may read that anthocyanin is produced in the fall to protect chlorophyll from UV rays. Sorry, but I don't buy that.

Renowned as frugal and pragmatic creatures, trees don't expend energy without a dang good reason. It seems far-fetched they'd use precious stored energy to protect dying chlorophyll at the same time they're busy making the abscission layers that are killing said chlorophyll. If the "fall suntan lotion" explanation is correct, maples would turn red at

roughly the same time, with all leaves coloring evenly through the crown, and in all weather conditions.

One thought is that it's a strategy to change soil conditions under its drip line to favor its species. Certain natural chemicals (including anthocyanins) made by plants can inhibit the growth, or the seed germination, of other species. This is known as allelopathy. Perhaps maples and oaks are trying to limit competition from their neighbors. The problem is that anthocyanins are weakly allelopathic. Also, maple seeds are intended to disperse on the wind; acorns via animals. Leaves fall close to the parent tree, where they don't want loads of their progeny.

Someone told me that one of the most important phrases for an educator to learn is "I don't know." Well, I don't know why foliage turns red in addition to yellow and orange each fall. But whether the reason is a conspiracy or just a mystery, I'm sure glad it does.



THAT OLD LINE ON WHY LEAVES CHANGE COLOR

by Paul Hetzler
Cornell Cooperative Extension

As a wee lad I was told a story wherein the bright summer sun would bleach pigment from clothes hung on the line, and save up the colors to paint on autumn leaves. Thinking back on that yarn it occurs to me that solar dryers (a.k.a. laundry lines) and fall leaf color change are similar in how they operate. They're both elegant and cost-free, but their performance depends on the weather.

The same clear-sky conditions that produce dry, fresh-smelling (and just a teensy bit faded) laundry also make for the best leaf color. While the former process is well-understood, the latter is a story fraught with murder and intrigue, and requires some explanation.

Chlorophyll, the green molecule at the center of the photosynthesis miracle, is what makes the world go 'round. Some say money is, but they need a reality, um, check. Without chlorophyll the sole life on Earth would be bacteria, whereas without money we'd merely have to adjust to a barter system. (Given that chlorophyll and currency are both green, it's easy to understand the mistake.)

Green gives way to fall colors, though, when trees start killing their own chlorophyll, revealing yellow xanthophylls and orange carotenoids that were in the leaves all along. How could a tree be so heartless as to slay its chlorophyll? Aside from the obvious—it doesn't have a heart muscle—the answer is to keep from drying to a crisp in the winter.

Each leaf is jacked into the tree's circulatory system: water and nutrients enter, sugars exit. In autumn these connections have to be sealed or the open vascular tissue would allow moisture to seep out and pathogens to get in. When the days shorten to a certain point, trees start to make a waxy plug, or abscission layer, between leaf and twig, thus choking

chlorophyll and rolling out the new color scheme.

Yellow and orange, as we learned in high-school Biology, are hidden under green, but whence comes red? This is where the mystery begins. We know that warm sunny days and cool nights result in more red color, and that relatively few tree species produce red fall color.

In case anyone asks you, which I realize is unlikely, you can tell them the chemicals responsible for the red and purple range are called anthocyanins. These large, complex molecules take a lot of energy to create, and many plants invest in them in springtime to protect young tender leaves from UV radiation, which can damage chlorophyll at low temperatures. After a leaf hardens off, anthocyanins break down and the plant stops making them.

Like medical doctors, horticulturists sometimes find it hard to make their mouths form the phrase "I don't know." This temporary and selective facial paralysis has afflicted me far too often, and to my shame I've pitched a reasonable but untested reply. Many authorities have said that trees make anthocyanins in the fall to protect leaves from the sun. With practice, some of them have even been able to say it without giggling. This explanation is far too simplistic and full of problems.

Renowned as frugal and pragmatic creatures, trees don't spend savings without a dang good reason. It seems far-fetched that trees would use precious energy to protect dying chlorophyll at the same time they're busy making the abscission layers that are killing said chlorophyll. If the "fall suntan lotion" explanation is correct, maples should turn red at roughly the same time, with leaves coloring uniformly through the crown, and in any weather conditions (except freezing, which puts an abrupt end to color change).

If you call me up to inquire why some trees use red and purple on their autumn leaves, I'll admit that I don't really—well, actually, it depends on the day. I may just tell you the story about faded laundry on the line.

Enjoy the beautiful fall colors

