# Partners News

September/October 2019

*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 Board

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

**Have you paid your PIF dues?**

## Inside this issue:

Partners in Forestry started over 17 years ago with a very reasonable dues rate for members at only $25. Back in those days nothing was certain as to how often we could even put out a newsletter, much less accomplish all the great conservation efforts we have compiled.

Many of you already have given more than the $25 and/or have supported our conservation projects through Northwoods Alliance, and we much appreciate that. To combat rising expenses and last year's loss, our policy will now be that dues will be $25 minimum. If you can afford more please do, or support our conservation efforts or be more involved. Keep in mind, no one earns any salary from this organization, it is only expenses we wish to keep at bay.

Thank you.

**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.

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***PIF note: I have always despised the term 'I told ya so', but that is all I could think of when we received this on Sept. 23, after talking about the careless regards to oak wilt in the summer issue. Ironically the tree was dying about the same time our August issue went out!***

**ALERT FROM FOREST HEALTH SPECIALIST LINDA WILLIAMS**

**Subject: Oak wilt in NW corner of Town of Conover near County S & Rummels Rd**

Hi folks

A tree on the northern edge of the Town of Conover (Rummels Rd, just to the east of County S) has tested positive for oak wilt.

This tree has been badly damaged by the road widening project and I wasn't entirely sure if it was oak wilt or just physical damage that killed it, but the tests were positive for oak wilt.

This tree is less than ¼ mile from County Forest land.

Our oak wilt map should be updated in the next couple weeks to reflect this new find.

Please share this info with partners.
Linda

***PIF Note: And on October 9th the news came out that oak wilt is now confirmed in Forest County. The spread of this disease seems predictable, just a few years ago there was none in Northern Wisconsin, now the presence is common.***

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***PIF note from Joe: For years I have subscribed to the Northern Logger magazine, the late editor was an old friend of mine, and it is a great magazine. It was obvious to me that the new editor will keep on the tradition when I saw this column in the most recent issue.***
***I contacted Eileen at the N.L. and Marianne and suggested a collaboration to include woodland owners as well. So, here is your opportunity to suggest a few things about Ethics in forest land management. We welcome this column and thank the author and the N.L.***

## THE FOREST ETHICIST

### Crossing the Lead

By Marianne Patinelli-Dubay

*Our new columnist, Marianne Patinelli-Dubay, leads the Environmental Philosophy program at SUNY-ESF's Newcomb Campus on the Huntington Wildlife Forest. Marianne's work at ESF is focused on developing educational programs in ethics, applied directly to forestry and land management professions. Every aspect of this work is in service to healthy forests and the communities that they sustain.*

Every day, loggers encounter ethical choices. A man or woman working in the woods has to make quick calculations about how to go about their work—navigating everyday questions about honesty, economics, professional relationships, and more. It's not always clear how to make the "right decision" in every situation. Often, after one path is taken, something remains; some question or bit of unsettled business keeps you awake. That nagging feeling usually comes in the form of a question, and this question naturally arises when there is a gap between the way things are and the way they ought to be.

This column is dedicated to that gap, to the practical realities and everyday challenges of thinking and acting responsibly in the logging profession. The title of this column borrows an old logging phrase that describes felling a tree across the established lead of falling direction. I chose it because the image it brings to mind is fitting, given that sometimes doing the right thing means running counter to the established order.

Imagine you want to make a sustainable harvest despite a landowner's preference to liquidate the timber because you know making a short-sighted decision means negatively affecting the resource and potentially your reputation for years to come. Or maybe you stop work after days of rain despite instructions to push through because experience tells you to expect water quality issues and legal consequences if you underestimate your impact on the site. Or, say you've entered into an agreement with a landowner, but unforeseen circumstances demand you make a more aggressive cut. Perhaps, in this bind, you can even justify taking extra loads of unmarked pulpwood or a few additional sawlogs when faced with urgent equipment repairs.

How do you work through these problems? You might imagine a philosopher would be the last person to turn to for practical guidance on these matters, but after several years spent helping foresters and loggers untangle the sometimes obvious, sometimes hidden ethical implications of situations like these, I know a little about how to dig in. So here, each month, we will use your questions as a way of entering a range of scenarios you find yourselves in on the job. We'll address everything from weighing the professional consequences of admitting you've accidentally cut over a property line, to sorting through the personal consequences if you don't.

Together we will take up situations like the ones at the top of this column that illustrate how, and how often, a logger is in a position that requires an ethical response compelled by circumstances beyond his control (think unstable markets, need of additional revenue when faced with unexpected equipment repairs, and delays

caused by inclement weather). In instances like these, we will consider where the line is between right-doing and wrong-doing. What if what seems wrong is also legal? If the bind we're in involves a choice between two undesirable options, are we better off asking which move is more correct than another? How we answer these questions has real consequences because behavior, character, and reputation go hand in hand. In the business of logging, all of these things, from how we act to how we are seen by others, matter a great deal.

The ethical move—doing the right thing—is easy when "right" is clearly defined, when landowners, mills, foresters and other loggers agree about what the right action *is* and when we're not left on our own to hold to the correct and unpopular position. Often, though, doing the right thing also means doing the difficult thing. It means standing alone and holding your ground. It means being prepared to explain yourself.

The question of whether or not something is ethical or right is always a layered one. For example, in the case of difficult conditions, we might ask whether determining if an action is right or wrong is dependent on the circumstances that compel them. What if your need for revenue is not equipment related, but instead involves affording medical attention for a family member? Does the kind of need matter in how we determine what action is permissible or forgivable? Is something less wrong if your behavior is in response to dire personal versus financial need, or is something either wrong or right regardless of the circumstances that surround it?

And because right-doing isn't always a clear either/or determination, often we are thinking through shades of gray, such as when your motivation for doing something is self-serving *and* your outcome turns out to be in service to a larger good. In this case, self-interest can become right-doing, but it begs the question of whether intention matters if the good outcome is only a coincidence of acting with other priorities in mind.

Each month, in response to your write-in questions, I'll offer some ethical perspectives that will help us all to think through these complexities. This insight will be less a matter of what to do, and more a matter of how to understand and evaluate the place where you find yourself.

Treating a person or a situation ethically is a matter of fitting the idea of right-doing (what *should* I do?) alongside the right action (what *will* I do?). My aim in this column is to work through real questions in order to see how closely we can pair "right thinking" with "right doing" in a given predicament and to help you develop confidence that your actions are aligned with your sense of personal virtue and professional integrity. I hope this turns into a lively conversation where you become comfortable with ethics as a practice and as a practical tool.

*Please send your questions and comments for upcoming columns to Marianne Patinelli-Dubay at mpatinelli@esf.edu, by mail to SUNY-ESF's Newcomb Campus, 6312 State Route 28N, Newcomb, NY 12852, or by FAX at 518-582-2181. With thanks to Mike Federice, Forester at SUNY-ESF's Northern Properties, for*

**Marianne Patinelli-Dubay**

**I have been logging for over 30 years, I started with my father in high school and have since taken over the family business. I typically work within 20 miles of home. I feel reputation is everything here in the small towns I work in. I recently got a call from my neighbor up the road who owns a couple hundred acres. I have worked on his property several times over the years and have a good relationship with him. He called because he is close to losing his property to back taxes and needs some income right away. He was hoping I could do some**

**logging to produce enough money for him to hold on to the property. The only area left on the property that has enough big trees for a worthwhile harvest is very wet. I cut there last 20 years ago during a very cold winter, about the only time you can get in there. He said that he wasn't worried about mud and that he just needed the money. The area is in view of a town road and next to a stream that people from town fish and swim in. Cutting this job during the summer would cause water quality issues and muddy trails, something I don't want to be part of my reputation. I also wouldn't want him to lose the property, it has been in his family for over 75 years and I have been hunting and snowmobiling there since I was kid, and now my kids do the same**.

How can you help your neighbor without doing harm to your reputation and the surrounding communities? How can you be loyal when the cost of that loyalty is more than you are prepared to pay? Looked at one way, this is a simple case of opposing dynamics: care versus harm, and it can be frustrating to find yourself in a back and forth between two incompatible alternatives. Fortunately, ethics is rarely a simple case of either/or and there are several ways to frame and enter into this dilemma that can create an opportunity for an ethical resolution. Let's walk through this together to see what might be possible.

If making the cut puts sediment in the stream, then the law works to your advantage by providing a hard-stop. Here you're able to quickly employ what is known as a *justice* approach which triggers a delay while you encourage the landowner to think through other options. Using your strongest argument first (the law in this case) buys you some time to shift the conversation away from acting too quickly, in favor of a more prudent or farsighted solution. Since the more sensible decision to wait on the cut won't satisfy your neighbor's immediate financial need, you will do well to rely on this easy roadblock at the outset. Once you agree on a delay, then you can begin a conversation to find a creative solution together that might address his hardship over time.

Encouraging the landowner to take a step back creates an opening for you to introduce other hidden or long-term benefits that will result from abiding by the law. For example, waiting for suitable conditions aligns with a consideration of the rights of multiple others or what is known as a *utilitarian* approach. Given his financial dilemma the landowner is not likely to delay based initially or solely on this argument. However once you're both in agreement on an alternative solution, then you might talk about how following the regulations helps the landowner to serve a larger good while at the same time safeguarding his sense of personal virtue.

With this conversation now underway, you can shift from a regulatory approach (justice/law) to a relational one (fairness/care). For example, your primary concern seems to be for the shared wellbeing of the landowner and his neighbors who fish and swim in the potentially impacted stream. This suggests that employing a personal approach or what is often called *care* ethics might be useful. This particular method emphasizes the relationships between the involved parties in order to be sure that your decision honors the bonds within the community. Acknowledging the relationship history that you initially described between yourself and your neighbor, suggests that this might be an important path to follow in attempting to resolve this situation. In keeping with that, you might talk about your concern for the landowner's circumstances and share the nature of your own reservations, particularly how doing this work might impact your professional reputation or your own personal situation.

It's important also to notice that the source of your struggle relates to *virtue* or to the question*, how can I resolve this situation while honoring my best self?* Adhering to virtue ethics helps to keep your actions consistent with your moral or ethical compass. Failing to ask the virtue question is often the origin of regret that keeps us up at night. You might introduce your personal reservations to your neighbor in this language and think together about creative solutions that would address the situation, short of going ahead with the cut in less than ideal conditions. Remember that you have already resolved that regulations prohibit the job, so here you are honoring your neighbor's integrity and helping him to see larger benefits to a creative resolution.

Negotiating an ethical resolution to this difficult situation is a matter of holding your neighborly obligation together with a responsibility to yourself. It means helping the landowner to see that a short-term advantage denies his obligation to the community and ultimately casts doubt on his own moral bearing. My aim here has been to outline one way that you might draw the discussion between you and the landowner forward so that you aren't left simply unable to help, and he doesn't feel as if your reluctance signifies a lack of care. Understanding how to help the landowner to think beyond what the law will allow, and to consider that he isn't alone in finding alternatives, upholds the quality of his character while honoring your friendship and a shared membership in the community.

*Please send your questions and comments for upcoming columns to: Marianne Patinelli-Dubay at* mpatinelli@esf.edu, *by mail to SUNY-ESF's Newcomb Campus, 6312 State Route 28N, Newcomb, NY 12852 or by FAX at 518-582-2181. With thanks to Mike Federice, Forester at SUNY-ESF's Northern Properties, for lending his professional expertise to this column.*

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## MARK YOUR CALENDARS

Bob Simeone to speak in Eagle River on November 15, 2019.

Bob was one of the founding members of Partners in Forestry. To learn about his work over the years in South America, attend this talk. Sponsored by Northwoods Land Trust and Trees for Tomorrow!

**Issues in the Sustainable Management of Temperate and Tropical Forests**
Join Robert as he describes one forester's experience in confronting global natural forest losses and the emergence of new concepts in Sustainable Forest Management. His 1-hour long PowerPoint will be on Friday, **November 15 from 6:30-7:30pm** at Trees for Tomorrow (519 E. Sheridan St., Eagle River, WI).

Beginning with Peace Corps/Paraguay in the late 70's, and later as an international forestry consultant, Robert has spent the last 35 years traipsing through the forests of South America and the Northwoods of Wisconsin. His decades of work with indigenous communities in the Amazonian regions of Bolivia, Peru and Ecuador led him to become one of the six founders of the Forest Stewardship Council (www.fsc.org). His talk includes a brief history of forest science, global forest trends today, conservation strategies to save the forest, wilderness and the indigenous mind, and new forestry within an ecological context.

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# HEAVY METAL IN THE WOODS

Hans Schmitt, Schmitt Forestry

Over the course of my career one of the things I often hear is “I don’t want that big equipment in my woods”. While it’s an understandable sentiment, the days of heavy horses with spiked shoes pulling down a tote road are gone. To that end, this months topic is a discussion of logging equipment. Hopefully having a better understanding of logging equipment used today will help alleviate some of the anxiety.

First up is cutting tools. While their use has declined in past years, the chainsaw is still an integral part of most, if not all, logging operations. While hand cutting has been largely relegated to felling trees too big for machines to handle, there are still a few small operations who only do hand felling of timber. When it comes to cutting logs, a good man with a chainsaw is worth his weight in gold. They are able to get the best look at the tree to size it up for maximizing grade and typically cause less damage to the log in terms of stress cracks and fiber pull. Hand cutting is dangerous, hard work with a lower production rate.

Feller-bunchers and hot saws (basically the same machine) were popular 20-30 years ago and some are still in use today. They are smaller machines, either wheeled or track mounted, with a small hydraulic head consisting of a grapple and saw mechanism. Due to the small size of the machine, the saw head is closely held to the machine for stability. This means the machine has to drive up to each tree to be harvested. The machine would then grab the tree with the grapple as it was sawed off, then laid into position on the ground, usually in bunches, hence the name. This system works quite well with small diameter trees and a grapple skidder pulling to a slasher. The downside to this system is the need to drive up to every tree and it could only handle smaller trees. Furthermore, it is incapable of secondary manufacture as it only cuts and bunches the trees.

The limitations of the feller-buncher gave way to the processor, also referred to as “cut to length” systems. The processor is a much larger machine armed with felling heads similar to the feller-butcher, but because of its greater size and increased stability the head is attached to a long hydraulic arm. Processors can be either wheeled or track mounted. Their main advantages are the ability to reach out to a tree for harvest and providing for secondary manufacture. Some machines have the capability to reach out more than 20 feet to cut a tree. Once the tree is cut it is pulled back to the machine and run through heavy metal rollers on the saw head which cuts the product to the desired length. Virtually any length of product can be sawn from the tree. Often times the operator will process and pile the product alongside the machine and lay the slash directly in front of the machine. This practice creates a mat, upon which, both the machine and forwarder can operate and minimize soil compaction and rutting.

Equipment used to move wood from the stump to the landing is divided into 2 categories; skidders and forwarders. Skidders do just that, they drag wood to the landing. There are 2 types, cable and grapple skidders. Cable skidders, also called pole skidders, have a winch mounted on the back of an articulated 4 wheeled machine. The winch has a main line, usually 100 feet or so, which has movable attachments called bells on it. The operator will pull the mainline to the cut trees upon which he has hooked chokers. The chokers are then hooked into the bells. This system allows the skidder to pull several trees at once, first gathering them up to the skidder and then to the landing. The advantages of the cable skidder is the ability to gather trees from some distance away and work in difficult terrain or soil conditions. The disadvantage is that it is a slower, labor intensive process.

A double bunk forwarder working on an Enterprise Forest Products job. © Schmitt Photography

Grapple skidders are wheeled machines with a short arm and grapple (like a crab claw) on the back. The machine backs up to either a single large tree or bunches of smaller trees and picks them up and drags them to the landing. This system can be quite efficient when working with a machine capable of bunching the trees.

Forwarders are also referred to as short-wooders and are essentially little log trucks that run around in the woods and pick up wood for delivery to the landing. While these machines come in a variety of sizes and styles, they are generally wheeled and articulated. They can have from 4 to 8 wheels. The 6 and 8 wheel machines are referred to as double bunks. They can carry a larger payload and are lighter on the land because of the extra wheels. These machines can also be "tracked-up" with tracks being placed around the rear two wheels to garner even more float when working on soft ground. Once the product is picked up and delivered to the landing, the operator sorts the wood into the various products and decks them in separate piles. Their main advantage is their payload capacity, meaning greater efficiency and fewer trips through the woods. In addition, their ability to sort and stack products facilitates the trucking side of the operation.

The aforementioned "slasher" is a large, hydraulically operated, cross-cut saw mounted on a log truck chassis. The slasher is positioned next to a pile of tree length wood. It uses a log truck clam to pick up either single large trees or bunches of smaller trees and set them on the truck bed against a stopper to ensure proper length. The saw is then lowered perpendicular to the length of the trees to saw them off. The sawn product is then removed and sorted, as with the forwarder, into separate decks. The remaining unsawed wood is pulled forward and the process repeated. Most slashers have stoppers which can either

be moved or dropped to allow for the processing of random length products. The advantage of the slasher is the ability to move and service multiple jobs or landings. Slashers require a larger landing space. Some folks don't mind this as they convert the landing into a food plot until the next harvest.

As with any tool, it's only as good as the operator. I have seen huge equipment (a 740 grapple skidder….that's BIG! ) work in marked hardwood and to this day it's one of the finest logging jobs I've ever seen. The guy was fun to watch. He planned his trails and drags very well and operated the machine with precision. On the other side of the coin, I've had to dismiss operators who couldn't move 10 feet without smashing something. I've also heard folks say to beware of a crew who's using old, beat up equipment as it's a sign of a shoddy operation. Maybe yes….maybe no. Sometimes it means that operator and his "tired iron" have been married for 20 plus years. They know their machines inside and out, their capacity and limitations, and do outstanding work. Bottom line, don't let the equipment scare you, just make sure you have a good operator with clear directions.

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*PIF note: This one could be a long ways away currently, and hopefully will stay along ways away, but beech is common on our eastern service area so please take note. As always a big thanks to Paul for keeping these concern in the forefront.*

# TREE SNEEZES

Paul Hetzler, ISA Certified Arborist

In the early 19th century, a Prussian diplomat asserted that "when France sneezes, the whole of Europe catches a cold." Things changed, obviously. For a long while it has been an American financial sneeze able to make the world sick. Even though China's economy is projected to soon zip past ours, other countries still put hankies to their faces when the USA coughs.

Canada has been covering up for some time now, but not for the usual reasons. Regardless of trade policy over the past 150 years, the US has exported tree diseases to Canada at a steady pace. To be fair, most weren't ours to begin with, but we've shipped them Dutch elm disease, chestnut blight, butternut canker, and now (probably) oak wilt.

And we've been generous to a fault with invasive forest pests, breaking the ice quite early in the relationship with gypsy moths. A few decades ago, the "Big 3" automakers sold our auto-parts jobs to the Chinese, who repaid us well. Like a twisted version of Cracker-Jack, boxes of cheap Chinese auto parts arrived in Detroit with free prizes inside: gleaming emerald ash borers and Asian longhorned beetles. Of course we shared.

Just recently, however, Canada sneezed out a new invasive tree scourge, and American foresters should grab some Kleenex. The beech-leaf miner (*Orchestes fagi*), native to Europe, was first identified in North America in 2012 near Halifax, Nova Scotia. Biologists think it probably arrived around 2007, but as with many invasive pests, it took a few years for the problem to become evident. The beech-leaf miner feeds on all species of *Fagus*, including exotic landscape trees, but the American beech, a native forest species whose nuts provide food for a wide range of wildlife, is the greatest concern.

The larvae of this weevil devour soft tissues between the upper and lower surface of the leaf, "mining" tunnels which expand to encompass much of the leaf. Natural Resources Canada states that "Early results indicate American beech are dying after successive years of defoliation by the weevil. In Europe, the adults feed on a variety of alternate hosts, including cherry and apple, this has not yet been observed in Nova Scotia."

The white larvae have a black head, and are less than a half-millimeter at first. When full-size (just prior to pupation), larvae are about 5 mm long. Adults are around 2.5 mm long, black with minute golden hairs, and rather beefy back legs. According to invasiveinsects.ca, "the weevil larvae leaves a

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characteristic mine pattern useful for identifying its presence. A narrow linear mine begins from the mid-rib of the leaf to the margin where there is a blotch mine [large dead area]. The leaves may turn brown around the edges and wilt."

So far, the affected region is relatively small, but as scientists from Natural Resources Canada note, "Where the weevil has been established for 5 to 10 years, beech mortality increased from 18% in 2014 to 88% in 2015."

Forest Entomologist Mark Whitmore, Director of the Whitmore Lab at Cornell University, brought this to my attention in September 2019 after checking on hemlock woolly adelgid (another American gift) infestations in Nova Scotia. In an email he wrote "Beech leaf miner is on nobody's radar [in the US] at the moment. I'm bringing it up with the US Forest Service, and hopefully more states will begin to look for it. I was very alarmed when I visited a couple weeks ago. It's a big deal, spreading rapidly in Nova Scotia with mortality."

Chemical treatments can help save specimen trees, but are not practical in a forest setting. Jon Sweeney, a research scientist with the Canadian Forest Service, says "We're looking at biological control…a safe parasitic wasp or two that maybe [will] provide a long-term solution."

At this time, the most important thing anyone can do is to not move firewood. Beech-leaf miner adults overwinter under bud scales and bark, so bringing a souvenir piece of bark or twig home from vacation could be very significant. Also, cover your mouth with the crook of your elbow when sneezing, even if you're alone in the woods. You never know what scourge you might help prevent.

*Paul Hetzler has been an International Society of Arboriculture Certified Arborist since 1996, and is a member of the Society of American Foresters and the Canadian Institute of Forestry.*

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Stay informed at www.partnersinforestry.com where Jim is continually adding content. For example:

The Wildlife society talk on Chronic Wasting Disease can be found at

https://tws.sclivelearningcenter.com/MVSite/MVVideo.aspx?SessionID=239550&presentationID=122838

Governor's Council on Forestry: 2017-2018 Report on WI Forests

https://councilonforestry.wi.gov/Documents/Publications/CoF_BiennialReport_2017-2018_final.pdf

**FUTURE ARTICLES**

We always enjoy member feed back. Let us hear from you!

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 partnersinforestry@gmail.com or by mail:

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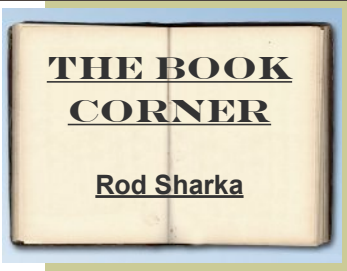


For this issue of Partners News, may I recommend the following book for your reading pleasure:

*The Secret Wisdom of Nature* by Peter Wohlleben, author of The Hidden Life of Trees that I reviewed in the February, 2017 issue of Partners News.

Nature is full of surprises: deciduous trees affect the rotation of the Earth, cranes sabotage the production of Iberian ham, and coniferous forests can make it rain. But what are the processes that drive these incredible phenomena? And why do that matter?

Master storyteller and international sensation Peter Wohlleben completes *The Mysteries of Nature* trilogy with *The Secret Wisdom of Nature*, a thought-provoking exploration of the vast natural systems that make life on Earth possible. Taking us on a tour of an almost unfathomable world, Wohlleben describes the fascinating interplay between animals and plants and how they influence, support, and communicate with each other. Introducing us to the latest scientific discoveries and recounting his own insights from decades of observing nature, the world's most famous forester shows us how to recapture our sense of awe so we can see the environment around us with completely new eyes.

Wohlleben, a German forester, spent 20 years working for the Forestry Commission in Germany before leaving to put his ideas about ecology into practice. Today, he runs a forest academy and an environmentally friendly woodland in Germany where he is working for the return of primeval forests.

True, Wohlleben's writings focus mainly on his observations in Germany, but he also sites many other parallel examples in North America and elsewhere. As he often points out, the specific examples of plant and animal relationships may be unique, but the general principles of ecology are universal with similar examples found in any region of the world. And Wohlleben has a knack for explaining these principles in a fascinating, non-technical way that holds the reader's attention. Ecology is a complicated, intricate concept in nature. John Muir once said that "everything in the universe is connected". Using very specific examples, Wohlleben illustrates how everything in nature is interconnected and in balance, and how our human actions are throwing that balance out of whack.

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*Another story to answer the question WHY in land conservation!*

# Connecting fragmented pieces of habitat can help endangered species recover

From the journal Science and reported on Wis. Public Radio

Nearly two decades of research has shown that using land corridors to connect patches of habitat can help restore biodiversity. The study published in the journal Science showed 14 percent more plant species in habitats that were connected than those that were isolated.
Researchers measured 239 plant species over 18 years as part of a habitat experiment at the Savannah River Site in South Carolina, said the study's lead author Ellen Damschen, an integrative biology professor at the University of Wisconsin-Madison. "When individual species are found in a connected habitat patch, they have a 5 percent higher likelihood of being able to arrive in that patch or colonize it," she said. "And, they have a 2 percent lower likelihood of going extinct."

The corridors allow greater movement among a variety of organisms and at higher rates in connected habitats. Damschen likened the annual increase in species to interest on an investment that compounds over time. "I think that connections are definitely something that should be considered and that the sooner we start on making those connections, the greater the payoff will be in the end," she said. The study is evidence that land corridors are one conservation tool that can be used to improve the odds of species survival in light of shrinking habitats worldwide.

A United Nations report released earlier this year found more than a half million of the world's 5.9 million terrestrial species have insufficient habitat for long-term survival without restoration. Experts determined around 1 million animal and plant species are at risk of becoming extinct within decades.
The study area contained longleaf pine savanna that is similar to tall grass prairie and oak savanna that historically dominated southern Wisconsin.

"This habitat is more endangered than tropical rainforests so conserving the remaining habitat and increasing the habitat and improving corridors between remaining habitat patches is really critical," said Ryan O'Connor, a conservation biologist with the Wisconsin Department of Natural Resources.

Many species rely on tall prairie grass and oak savanna, including Wisconsin's mascot and state animal, the American badger. The habitats also support game species like ruffed grouse, wild turkey and wood ducks. More than 99 percent of Wisconsin's prairie and savanna habitat has been lost over 200 years due mostly to fire suppression and agricultural use, O'Connor said.

# IT'S ALL ABOUT HABITAT

With all of our talk and action about land conservation, we of course mention numerous reasons to protect land, including wildlife. A recent study published in the Journal Science was alarming to ornithologists and conservationists when it exposed the massive decline in bird numbers almost across the board. The exception is ducks and geese. The reason is simple, organizations such as Duck's Unlimited have embarked on a large- scale conservation effort to maintain habitat through wetland protection, conservation easements and encouraging legislation. This should be an example of what needs to be done to save other species from decline.

While habitat loss of grass and forest is the main reason cited in this study, and habitat remains the key word here, it is not the only reason. Also mentioned were pesticides (especially neonicotinoids which kill birds and insects), climate change, feral (and domestic) cats, cell phone towers, electric generating windmills and power line and collision with buildings.

Warblers have been hit very hard, and as we have reported in the past, the spruce grouse is threatened as the boreal forest subsides. Our success in the Upper Wisconsin River Legacy Forest touts this incredible species. Overall woodland birds in Wisconsin have fared much better than average according to a report on Wisconsin Public Radio.

We can all do our part by maintaining our woodland habitat for wildlife and supporting conservation projects that PIF and Northwoods Alliance are deeply involved in. In last years bio blitz at Wildcat Falls over 40 bird species were identified. Our goal is to keep them all thriving. Fundraising is ongoing to match the USFS grant, and your help is much appreciated. In our year end Partners News we hope to report further on the level of success and need in this effort. See either website or contact us for detailed information, questions or comments, as we certainly need your help to achieve a Wildcat Falls Community Forest.

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***Note from Joe:***
***Looking outside of our region, at the great scope of things, there are many threats to our environment.*** *After hearing a story on NPR on October 5th 2019, stating that climate change is affecting the Arctic at three times the rate of global average, I thought of my daughter Rachel's similar accounts from the Northwest Territories where she conducts fishery research with the natives in the summer. The Arctic is undergoing comparatively rapid change, and now according to these following links from Old Crow in the Yukon, the natives are speaking up.*
https://www.cbc.ca/news/canada/north/old-crow-climate-change-emergency-1.5144010

**And yet another story with photos on the Arctic warming!**
https://www.vice.com/en_ca/article/wjwp5q/my-community-is-warming-three-times-faster-than-the-rest-of-the-world

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## FALL HABITAT TIPS FROM CAROLINE AT MYLANDPLAN.ORG

Depending on where you live, summer is winding down and you might be thinking about preparing your gardens and your land for a long winter's rest. But this year, think about leaving things a bit "messy" to provide habitat for wildlife throughout the fall season.

Seedheads left on dried flowering plants are a bird's paradise. Numerous North American song birds eat seeds–finches, sparrows, chickadees, buntings, jays, nuthatches, blackbirds, grosbeaks, etc. One stop in a messy garden packed with dead, seed-filled, native flowers equals a smörgåsbord for resident and migratory birds.

Some native flowers that provide an abundance of seeds in the fall and winter are goldenrod (*Solidago*), asters (*Asteraceae*), cone flowers (*Echinacea*), sunflowers (*Helianthus*), *Coreopsis*, and Black-eyed Susan (*Rudbeckia*).

You might want to leave those fallen branches on your land and consider using them to create a brush pile. These cozy structures provide great hiding places for rabbits and small birds.

So take a break from raking, sit back and enjoy the fall colors!

May the Fall be with You!
Caroline
MyLandPlan.org Manager
American Forest Foundation

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## LET'S TALK HAZELNUTS IN PEANUT COUNTRY, NO IN WISCONSIN

By Brad Niemcek

I grow hazelnuts in peanut country. That's not literally true, of course. Wisconsin is a long way from the peanut country of Georgia and other states along the nation's southern rim. No, I'm talking about the nuts people eat, not what they grow.

And, yes, I know that peanuts are not really nuts in the biological sense. They are classified nuts in a marketing sense. Peanuts are the clear leader in the U.S. as a nut snack, a position they hold nowhere else in the world.

Hazelnuts languish near the bottom of the top ten in lists of American's nuts of choice. Hazelnuts, aka filberts or cobnuts, are much better loved in other places. Yet, there's no denying that they are popular here, especially as an ingredient in chocolate confections. Nutella© is the proof of that. Researchers have found that hazelnuts are the third most popular "flavor" companion with chocolate in North America, after caramel and almonds. They are number one in Europe and the Middle East.

As you can tell by now, I am a marketing guy, not a grower guy. I spend way more time every day thinking about marketing hazelnuts than I do about growing them. But I am a grower as well, albeit at the hobbyist level, with about 350 bushes. I am also one of the founders of the American Hazelnut Company, an enterprise created by growers to market what we/they grow.

Hazelnuts are an exciting emerging crop in the Upper Midwest. To clarify, "emerging" means we aren't there yet as a viable agricultural crop. But we're working on it. Some of us like to speculate that hazelnuts are "the next cranberry," in terms of agri-financial clout.

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It's worth noting that If hazelnuts ever get to that exalted status, it will do so without damaging anything. Midwest hazels don't pollute, they don't drain our aquifers, they don't require planting every Spring. In fact, they are excellent at treating the soil gently. And they are healthful and they taste good.

So, as we march toward a future "America's hazel-land," what could possibly go wrong? Well, even though wild hazelnuts are grown in this region for hundreds of years, no plant is completely immune from an angry Mother Nature. And, even under the best of circumstances, a perennial crop like hazelnuts takes time and money to develop.

The biggest challenge for growers is the work required to transform clustered nuts on a bush into a marketable product or product-ingredient. If you know anything about soybeans, you get the idea. A hazelnut "industry" will need some of the same kind of research, investment and time that over several decades transformed the simple soya plant into a global agricultural phenomenon. Well, perhaps that will never need happen. But, again, you get the idea.

In fact, research into the development of a "better" hazelnut plant, one that produces larger, sweeter and more nuts, has been going on for years. And in the Midwest, a lot of research has focused on the develop a hazelnut plant that produces nuts despite our harsh winters and which resist a problem seen around the world, a stem fungus called European Filbert Blight. The result is, generally speaking, a variety of hybrid plants. The wild hazelnut plans flourishing here for centuries has been a good start, crossed with classic European-based varietals.

Today, there are a number of sources for hardy hybrid bare-root seedlings. And research continues on work to produce plants through clonal propagation.

Interested in learning more about growing hazelnuts in the Upper Midwest? The best place to start is the website of the Upper Midwest Hazelnut Initiative, https://www.midwesthazelnuts.org/

While all kinds of field-level research work goes on to produce the idea high-yielding bush for growers, the American Hazelnut Company is working diligently introducing its hazelnut products to consumers. The company sells fresh hazelnuts, hazelnut oil and hazelnut flour through retail outlets in Minnesota, Wisconsin and Illinois, at https://www.americanhazelnutcompany.com/retail-stores.html and directly to consumers nationwide, via its website: https://www.americanhazelnutcompany.com/store/c1/Featured_Products.html

I can be contacted at bradniemcek@gmail.com

***PIF note:*** *As we have mentioned previously, hazels are promoted by the Arbor Day Foundation for many of the same reasons Brad talks about here. For more on hazel growing, Brad and a PIF member in SW Wisconsin please see https://wxow.com/news/top-stories/2019/09/16/hazelnut-crops-yielding-profits-in-a-dismal-time-for-dairy-farmers/*

*We are still trying to learn the connection between AHC and some friends in Ashland Wis. Perhaps our forester friend member from Washburn will respond!*

*Please tell us about your non timber crops, your experiences and frustrations as well as any advice which may help others interested in a similar venture.*

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**As a service to PIF members, contact Joe for special pricing in your needs for:**

| | | |
|---|---|---|
| **Napoleon wood stoves** | **Wood finishes and preservatives** | **Garden and tree amendments** |
| **Grass seed for trails** | **Tool handles, replacement handles** | |

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# EDUCATION ON THE PILGRIM RIVER

*Students from the School of Forest Resources and Environmental Science at Michigan Tech have begun collecting data on the Heritage and Headwater Tracts as part of their senior "capstone" projects. These properties are in the Forest Legacy Program, and are a big part of the larger Pilgrim River Conservation Project. The students will be collecting a variety of data related to timber volume, species composition, presence of invasive species, stream habitat, and wetlands ecology. Over the next year, the students will be developing resource assessment reports and forest management plans that can be used to guide future management activities on the property. We hope to give readers a wrap up when the project is completed!*


Education on the Pilgrim River Forest. In harmony with the Forest Legacy Program and as yet another display of the value of the LWCF to communities, Michigan Technological University students are entering their final year conducting their capstone projects on the Pilgrim Forest. On the Heritage tract these 4 boys are part of a forestry team and these 3 gals are the prettier part of the team conducting ecology related documentation on the Headwaters Tract, and in the river itself.

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## Home Sweet Homing

Paul Hetzler, ISA Certified Arborist

Many of us have emerged from a mall or concert (especially a concert) to discover our vehicle had apparently become unmoored and drifted away in the parking-lot sea of cars. “Losing” one’s parked car is such a common problem that there are now apps to help reunite vehicles with their respective owners. So it may come as a surprise to hear that science has proven we have some natural homing abilities.

The mechanisms are not entirely understood as yet, but one thing which may help humans to navigate is metal in our heads. That’s right – move over, Magneto. Some folks have more brain- iron than others, and most of us know at least one person we suspect of having far too much rust between their ears. The truth is, we all have ferrous-rich cells located in our cerebellums and brain stems which can help us orient to North.

Animals, of course, are much better at non-GPS navigation than humans. When we talk about critters which can expertly find their way around, the homing pigeon probably comes to mind. Homers have an uncanny ability to accurately find their way back to their owners even when taken more than a thousand miles away. In New Zealand, a Pigeongram service ran from 1898 to 1908, complete with special stamps, and homing pigeons were vital leading up to the Normandy invasion, because radio silence was important.

Bird navigation has been well-studied, but much is still unknown. Although birds use a variety of mechanisms to find their way around the planet, such as landmark recognition and solar orientation, sensitivity to Earth’s magnetic field is critical. Many bird species migrate only at night, so landmarks and solar position can’t help.

Luckily for us, Earth is a kind of induced magnet thanks to its rotating outer core of molten iron. If it weren’t a giant magnet, we’d all be fried by solar radiation. Recently it has come to light that animals employ a protein molecule called a cryptochrome to sense the planetary magnetic field. This involves being attuned to blue light wavelengths, those between 400 and 480 nanometers. A corollary to this fact is that cryptochromes only function during the day. So what about those night owls?

Birds, it turns out, are serious metal-heads, having (as one researcher elegantly put it) “iron- containing sensory dendrites in the inner dermal lining of the upper beak.” There you have it, clear as a bell. Ferrous-rich nerve cells were detected first in homing pigeons, but all bird species are thought to have them. Long-distance migrants need these most, but even poultry and resident birds are known to be endowed with an inner compass. In a research paper published in the journal PLOS One in February 2012, principal author G. Falkenberg writes “Our data suggest that this complex dendritic system in the beak is a common feature of birds, and that it may form an essential sensory basis for the evolution of at least certain types of magnetic field guided behavior.”

Heavy metal is not just for the birds. Bacteria, slugs, amphibians and loads more species are unconscious collectors of iron as well. A recently published study on human responses to magnetic fields found most subjects reacted to lab-generated magnetic fields. Based on brain scans, subjects could even detect when the polarity was reversed as part of the study. In the March 18, 2019 issue of the journal eNeuro, lead author Connie Wang writes “We report here a strong, specific human brain response to ecologically-relevant rotations of Earth-strength magnetic fields. Ferromagnetism...provides a basis to start the behavioral exploration of human magnetoreception.”

What really caught my attention is a new study out of South Korea. In a paper published in PLOS One in April 2019, Kwon-Seok Chae et al. found that, even blindfolded and wearing ear plugs, male subjects who had fasted for an entire day seemed to orient themselves in a direction they keenly correlated with food. That I can believe.

*Paul Hetzler wanted to be a bear when he grew up, but failed the audition. Having gotten over most of his self-pity concerning that unfortunate event, he writes about nature. Even bears, once in a while. His book “Shady Characters: Plant Vampires, Caterpillar Soup, Leprechaun Trees and Other Hilarities of the Natural World,” is available on amazon.com*



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# TREECONOMICS 101: COLOR-CODED PROSPERITY

Paul Hetzler, ISA Certified Arborist

Deciduous trees, lakeside ice-cream stands, and marinas all close down each autumn for the same reason: as daylight dwindles and cold creeps in, their outfits become less and less profitable. At a certain point it makes sense to batten the hatches until the following spring.

Some enterprising holdouts stay open longer; perhaps they have a cost advantage others do not, or have less competition. A few are the opposite, closing shop at the first hint of fall. Those are likely the ventures which barely scrape by at the height of summer. I'm talking about trees here, of course. Trees whose leaves show color ahead of their same-species peers are doing so because they are barely breaking even.

The solar-powered sugar factories we call trees are good savers, and meticulous in their accounting. As a rule they do not live beyond their means. In addition to sunlight, they require carbon dioxide, a good supply of water and nutrients, and their roots need to breathe easily. The latter point is critical.

Each spring, a deciduous tree takes money out of the bank – starches out of trunk and root tissue – and invests in a solar array, known as leaves. After paying for its annual complement of leaves, its costs include nighttime respiration, and as-needed maintenance like the synthesis of antimicrobial compounds in response to injury. Its income is sugars; its savings account, starches.

As summer wanes, longer nights drive up costs (respiration), while shorter days bring down income, eventually forcing hardwood trees close for the season. However, if a tree's root zone is compacted, root respiration is hampered, and roots can't do their job. Its sugar factory will be less efficient compared to others of its species, and less profitable overall. Soils laden with deicing salt, and mechanical damage will also compromise root function.

Yard and street trees experience very high soil temperatures, restricted root zones, and intense competition from lawns. Trees with waterfront homes have other challenges: fluctuating water levels tax their root systems, and those soils tend to be nutrient-poor. Such trees will reach the break-even point earlier than robust trees, and they will color first.

Early color is a reliable sign of tree stress, but palette gives information as well. We know that orange (carotenes) and yellow (xanthophylls) are already present within the leaves, masked by green chlorophyll. Trees begin to make a waxy compound to block off water and nutrients to their leaves, equivalent to winterizing a camp – it protects the plumbing. As leaves are thus choked off, chlorophyll dies, revealing yellow and orange.

The red-purple range (anthocyanins), though, is a different story. Red pigments are manufactured in the fall by some species, maples in particular, at significant cost. Science has yet to come up with a truly plausible explanation for this. The point about red is that a maple showing lots of it is in good enough health to "waste" energy making anthocyanins. Last year in the Ottawa Valley and beyond, sugar maples were yellow only, the first time in living memory that has happened. Soft (red) maples had plenty of red, but hard maples were devoid of it. This is an indication that as a species they are facing tremendous chronic stress.

If one of your yard trees has leaves that are turning color and dropping early, you can be sure it's in decline, and it would be good to hire a Certified Arborist to evaluate it. If your favorite cottage-country ice cream stand closes early, that might spell trouble for the owners, but they could be just tired.

*Paul Hetzler has been an ISA-Certified Arborist since 1996, and is a member of ISA-Ontario, and the Society of American Foresters. His book "Shady Characters: Plant Vampires, Caterpillar Soup, Leprechaun Trees and Other Hilarities of the Natural World," is available on amazon.com*



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