



# Partners News

March 2010

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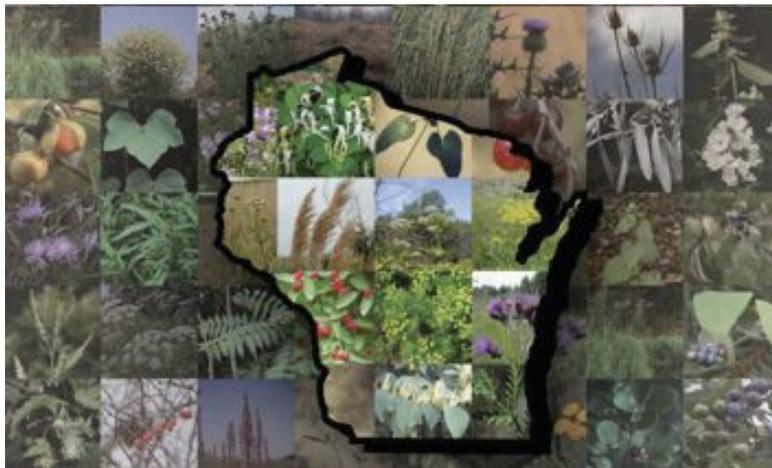
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## INVASIVE PLANTS IN WISCONSIN



Edited by: Thomas Boos, Kelly Kearns, Courtney LeClair,  
Brendon Panke, Bryn Scriver, & Bernadette Williams  
(The following comments by Rod Sharka)

With the development of the Wisconsin Invasive Species Identification, Classification and Control Rule – NR 40, Wisconsin has, for the first time, a legal list of invasive plant species. In light of this, the Wisconsin DNR is in the process of publishing a *Field Guide to Terrestrial Invasive Plants in Wisconsin*. This 125 page, full color field guide contains basic information about the identification, NR 40 classification, and control methods of 60 species of invasive plants that are addressed in NR 40. Also featured in this guide are some species that are not regulated under NR 40 as of September 2009 for various reasons. They were included because they have been observed to be invasive in parts of Wisconsin or in other regions of the U.S. that are similar to Wisconsin in climate and habitat type.

Feeling that control of the spread of invasive species is an important issue we as responsible land stewards have an obligation to promote, your Partners In Forestry board has ordered a quantity of these field guides to distribute to PIF members. We had hoped to have

provided them to you by now, but the DNR staff has experienced numerous delays in final editing and printing. All PIF members will receive a hard copy of this field guide as soon as they are available. In the mean time, we are providing you with a digital copy of the guide on the CD enclosed with this newsletter that you may view on your computer. The guide on the CD is in pdf format and should auto-play when inserted in the CD/DVD player in your computer. When the Field Guide icon appears on your screen, just double click on it to open the document. Again, in the event that you are not able to view the information on the CD, you will receive a hard copy of the guide as soon as the DNR releases them.

It is our hope that you will review this important information and be on the lookout for these plant species, report their location, and do what you can to control their spread. If we all do our part, perhaps we can prevent these invaders from overrunning our northern forests and other ecosystems as they have in so many other areas of the country.

## What is the Cause of Spruce Decline in Northern Wisconsin?

From a report from: US Forest Service Scientists in 2004

JOSEPH G. O'BRIEN  
Plant Pathologist

STEVEN A. KATOVICH  
Forest Entomologist



Photo by Mark Hovel

Spruce decline has been advancing in Northcentral Wisconsin since about 1988, with symptoms progressing from the ground up, and from the inside of the crown outward. Symptoms included very poor live crown ratios and loss of needles throughout the crown, but significantly worse on the lower portions of the crown. The lower two-thirds or more of the branches of most or all of the trees in these plantations were dead, even though many of them received adequate sunlight to support a much more typical white spruce crown. Further, branches that did support live foliage often did not retain the normal complement of 5-7 years of green needles, and

many branches appeared to be supporting the current year's growth of needles only.

As a part of this investigation, increment cores were taken from dominant or co-dominant trees in the affected areas. A single core was obtained at the first site, and two cores were taken at each of the other two sites. The cores were returned to the laboratory, stained with phloroglucinol to facilitate measurement of the rings, and examined under a stereomicroscope to obtain tree growth data for the past thirty years. A summary of the growth of these five trees is depicted in Figure 1, and the individual plots are provided.

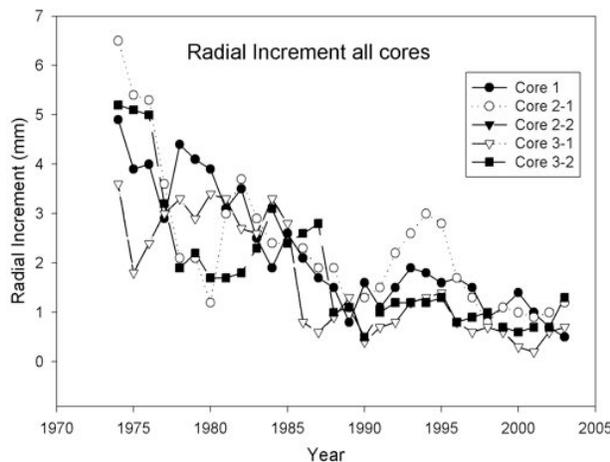


Figure 1. Radial growth of 5 years in declining spruce stands.

Radial growth of these five trees was 2-3 mm or more per year prior to the drought years of 1987-1988, and declined to 1-2 mm after that. Each of these stands was thinned one or more times during the time span depicted in Figure 1, but there is very little evidence of any growth stimulus in the remaining trees following any of the thinning procedures.

**“Pathological rotation age”** in forest plantations is defined as the point at which annual losses in woody tissues in a stand of trees due to decay and mortality exceed the total increment added each year by photosynthesis. Although the exact cause of the decline and mortality in these stands is not yet known, and precise measurements of mortality and increment growth have not been obtained, it is clear from our observations and the very limited growth shown in the tree ring analysis that the stands that we examined have effectively reached pathological rotation age for these sites, despite the fact that they are not particularly old for white spruce.

Decline syndromes are complex diseases caused by the interaction of many factors working together to cause branch and tree mortality in a stand. Many different models of decline have been promoted, but the predisposing/inciting/contributing factor model (represented above) seems to make the most sense for explaining

## Declines and Diebacks

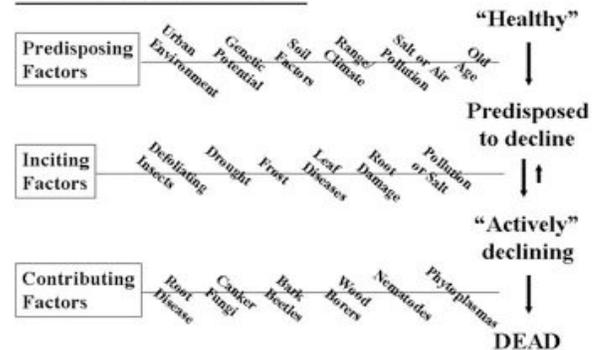


Figure 2. A model for explaining decline syndrome in trees.

much of the decline in trees that we see in the Eastern United States.

In this model, a tree becomes predisposed to decline when factors such as genetic potential or range and climate issues affect the physiology of the tree, transforming a healthy tree into one that is “stressed,” or predisposed to decline. Decline first becomes evident in such trees following an acute stress, such as a defoliation event, or a severe drought. At this point, branch mortality is usually evident in the crowns of affected trees. If the inciting stress is relieved, trees can sometimes recover, but in the presence of such agents as root rot fungi, bark beetles or wood borers, trees are likely to suffer significant mortality. Decline syndromes can be very difficult to characterize accurately, because of the complexity of the interactions of the factors involved. The decline and mortality of white spruce on the Chequamegon may yet prove to be caused by a primary agent such as a root rot pathogen or a fungus that invades and kills needles or twigs, but it is likely that the real cause of this mortality is the work of several agents working synergistically against these trees.

### **Predisposing factors:**

White spruce planted in northwestern Wisconsin is growing at the limit of, or outside its natural range. It is well known that trees growing at the

extremes of their natural ranges are often subject to diseases and insect attacks caused by organisms that would not normally be considered to be problems in the heart of the range of the tree species. The seed origin for these stands on the Chequamegon National Forest is not known with certainty. Trees grown from seed from a source significantly north of where the plantations were established may not be well adapted to the climate and daylight/darkness patterns of northwestern Wisconsin, which can also be a stress factor for plantation trees. Soil factors may also play a part in the predisposing of trees to decline, and examinations of the kinds of habitat types where the decline appears to be worst may help to explain why the decline is much more severe in some plantations than in others of similar age.

#### Inciting Factors:

Perhaps the most important of the predisposing factors affecting these stands is drought. There have been several moderate to severe droughts in Northwest Wisconsin since the mid 1970's, including a very severe drought in 1976, another in 1987-1989, and current drought conditions in northwestern Wisconsin. Statewide, moisture has been in deficit in 23 out of the past 32 growing season months (WI State Climatology Office web site <http://www.aos.wisc.edu/~sco/clim-history/division/index.html>). The tree ring radial increment summary (Figure 1) shows that trees in these stands have been growing at a rate of about 1mm in radius since the extreme drought of

1987-1988. The trees also apparently experienced a significant decline in annual increment following the drought of 1976, from which they never really recovered.

Six out of the past seven years have been drought years in NC Wisconsin. Twenty-three out of the past 32 growing season months (May – August) have been drought months.

#### Contributing Factors:

Trees stressed by drought are more susceptible to boring insect attack and root rot infections, and are less able to recover from defoliation than unstressed trees. Trees showing initial decline symptoms can be quickly killed when drought-stressed trees are attacked by opportunistic organisms such as the root rot pathogens *Armillaria* spp., *Phaeolus schweinitzii*, and *Inonotus tomentosus*, foliar pathogens such as *Rhizosphaera kalkoffii*, defoliating insects such as the spruce budworm (*Choristoneura fumiferana*), and beetles such as the spruce beetle (*Dendroctonus rufipennis*) or Ips (*Ips perturbatus*).

Spruce budworm defoliation was observed on our December visit and further defoliation from this insect is likely in 2004.

A wide variety of other root rot pathogens and wood-boring beetles also attack spruce of low vigor, and can contribute to mortality in stressed trees.

NC WI Monthly Precipitation amounts –Wisconsin State Climatology Office

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
<b>2003</b>	<b>0.45</b>	0.92	2.10	3.77	4.73	<b>3.14</b>	<b>2.95</b>	<b>2.17</b>	<b>2.87</b>	<b>1.62</b>	<b>2.14</b>	<b>1.29</b>	<b>28.15</b>
<b>2004</b>	<b>0.98</b>	1.95	2.95	2.72	5.06	<b>3.50</b>	<b>2.49</b>	<b>3.13</b>	<b>3.06</b>	4.25	<b>1.45</b>	1.75	33.29
<b>2005</b>	1.28	1.12	<b>1.21</b>	<b>1.65</b>	<b>2.33</b>	4.53	<b>2.86</b>	<b>1.95</b>	<b>3.65</b>	5.25	2.69	<b>1.25</b>	<b>29.77</b>
<b>2006</b>	1.32	<b>0.90</b>	2.09	<b>1.03</b>	3.96	<b>1.64</b>	4.89	4.81	<b>2.27</b>	<b>2.00</b>	<b>1.50</b>	2.11	<b>28.52</b>
<b>2007</b>	<b>1.13</b>	<b>0.68</b>	2.06	<b>2.18</b>	<b>2.98</b>	<b>2.92</b>	<b>2.57</b>	<b>2.89</b>	<b>3.63</b>	5.74	<b>0.64</b>	2.42	<b>29.84</b>
<b>2008</b>	<b>0.91</b>	0.99	<b>0.86</b>	4.22	3.41	<b>3.31</b>	<b>3.08</b>	<b>1.53</b>	<b>2.95</b>	<b>2.26</b>	<b>1.37</b>	2.12	<b>27.01</b>
<b>2009</b>	<b>0.63</b>	<b>0.88</b>	<b>1.31</b>	3.06	<b>2.34</b>	<b>2.63</b>	<b>2.08</b>	4.90	<b>0.77</b>	5.34	0.46	<b>1.02</b>	<b>25.42</b>
<b>AVE</b>	1.25	0.92	1.78	2.40	3.31	4.01	4.06	4.36	4.03	2.73	2.27	1.32	32.45

**An alternative hypothesis:**

In addition to all of these decline factors that could be affecting spruce plantations on the Chequamegon National Forest, a “new” disease has recently been identified in the state of Wisconsin. Called spruce needle drop or “SNEED” for short, the disease has recently been associated with an organism previously unknown in the United States. The fungus, identified from white and Colorado blue spruce in Wisconsin, was found to be *Setomelanomma holmii* in 2002. It has since been found in 21 counties throughout the state of Wisconsin. The only other report of this organism is from spruce trees in France, but it has been found in 21 counties throughout the state of Wisconsin. Although it is associated with declining and dying trees, rigorous tests of the pathogenicity of this organism have not yet been completed.

Samples of branches from the Chequamegon National Forest obtained in October of 2003 had sporocarps on the twigs that were very similar to those described for *S. holmii*, but the fungus normally sporulates in May and June, and only a couple of spores that resembled this fungus were found. Although involvement of *S. holmii* remains a possible main or contributing factor in the decline of white spruce on the Chequamegon National Forest, a definite diagnosis will have to be postponed until spring of 2004.

**Conclusions:**

White spruce are declining and dying in a number of plantations on the Chequamegon National Forest. The ultimate cause of the decline and mortality probably relates to drought stress dating back as far as 1976, and greatly exacerbated in the drought of 1987-1988. Current drought conditions are further stressing trees and creating conditions conducive to secondary organisms that are killing many trees. Whether the final cause of mortality in these plantations is caused by a complex of organisms and abiotic agents acting together, or by a single agent attacking these stress-weakened trees is still unknown. However, the plantations that we visited in October and December 2003, and probably others that are

exhibiting the same symptoms, have almost certainly reached pathological rotation on these sites, and will continue to experience mortality that exceeds incremental productivity. Thinning these plantations apparently has not helped the residual trees to recover, and may actually accelerate the decline process, by encouraging the build up of inoculum of root disease fungi, notably *Armillaria* spp.

The presence of spruce budworm defoliation in these plantations makes further mortality almost a certainty. Spruce budworm populations tend to persist, so it is likely that many trees will lose the



Photo by Mark Hovel

few new needles they produce in 2004. The ultimate disposition of these stands is a decision reserved to the staff of the Chequamegon National Forest. However, it is inevitable that these stands will continue to decline, and mortality will be very heavy over the next 1-3 years. No one who visits these stands would classify the plantations as “healthy,” and in our opinion, they have reached the stage where they should be salvaged in advance of any further mortality.

*This story was compiled and submitted by John Schwarzmann, PIF board member and Forest Supervisor for the Wisconsin Board of Commissioners of Public Lands.*

## Woody Biomass Harvesting Guidelines

by Don Peterson



When you ask a question about some aspect of forest management, nine out of ten times the answer is the same regardless of the question – “it depends.” Depends on what? Management goals for the property, soil type, slope, site capability, management history, or insect and disease threats, the list is virtually endless. As it should be. In forest management there usually is not a simple answer until you have accounted for a number of factors that could impact a management prescription either positively or negatively.

Woody biomass harvesting guidelines are no different, which is why both Michigan and Wisconsin have developed, or are in the process of developing, state specific guidelines. The respective forestry sections of both DNR’s formed committees to determine what should be in the guidelines, with topics such as what can be taken, what should be left, effect of extraction on soil nutrient levels, effect on wildlife and insects, and effect on water quality being discussed. The committees had stakeholders from a variety of agencies, associations, companies, and organizations who represented a broad range of views. The problem with developing guidelines for any forest practice, however, is that you really cannot tell what impact some practices will have for years afterwards; sometimes 20-50 years later. This uncertainty, coupled with the desire to prevent possible damage to the forest resource, is why most guidelines tend to be conservative until long-term effects/outcomes can be evaluated.

In the case of biomass extraction, there are some practices that occurred 40+ years ago (i.e. whole tree harvesting) that could be sourced and tested for long-term impacts; however, without any baseline documentation of the site, it is difficult to measure its effect on the specific site. There is also the argument that where major forest fires occur, there is often little to no woody material left on site. The counter to that is the ash is left for fertilizer after a forest fire.

Even though they are called “guidelines,” there will be considerable pressure on facilities that utilize woody biomass to assure concerned entities (from regulatory oversight commissions to environmental groups) that any woody biomass taken from the forest will be harvested per the recognized guidelines in that state or for that ownership. For loggers to document this on all ownerships where they harvest biomass could become quite cumbersome and time consuming. It is imperative that organizations remain engaged in being part of the interpretation and revisions of the biomass harvesting guidelines in both Michigan and Wisconsin. It is also critical for loggers, foresters, and landowners to question how these guidelines should be interpreted or ask for clarification when needed.

Guidelines or policies can quickly take on a life of their own if they are not questioned and proven to accomplish what they were intended to accomplish.

For more information on this topic Don can be reached at [rsslc@sbcglobal.net](mailto:rsslc@sbcglobal.net)

A list of biomass conversion facilities in Wis. and Michigan can be found at [http://www.fsa.usda.gov/Internet/FSA\\_File/bcapfacilitieslist.pdf](http://www.fsa.usda.gov/Internet/FSA_File/bcapfacilitieslist.pdf)

Photos contributed by Margo Popovich

## Chain Saw Maintenance

by Clyde Samsel

I have repaired chain saws for over 20 years and have found a few things that may be helpful to frustrated users. Chain saws require maintenance. The chain needs to be sharpened each time you fill the tank with gasoline containing mix oil. A dull chain leads to many problems. You don't get much wood cut; you get tired trying to get something done and that can lead to getting hurt. Plus your saw may stop running because it has over heated.

When a frustrated customer comes into my shop, often very angry; he has pulled and pulled on his saw; his arm hurts and it won't start. I will take the saw and pull it over to see if it has compression. If it doesn't have compression, I remove the muffler to see if the piston is scored.

If it is, the repair is costly. If the saw is old, it usually is not worth the expense.

Otherwise, with compression, I start at the back of the saw and do the following five checks before I try to start it.

1. Fuel Filter
2. Air Filter
3. Spark Plug and Compression
4. Muffler Screen
5. Screws and nuts

### The Fuel Tank

With the cap off, I remove the fuel filter. If it is brown, replace it. I smell the gasoline and check for mix oil (usually a blue green color). If it smells like mineral spirits (paint thinner) it is very



**Partners in Forestry Workshop, August 2007**  
**Bob Dunbar on chain saw.**

old and often the saw will not start. If the gasoline is a light yellow, it may be raw gasoline without mix oil. This leads to a seized up engine. It was good the saw did not start.

After checking the fuel filter and fuel, I then pressure test the fuel line. If it holds pressure, the fuel line has no holes and the carburetor metering valve is good. If the fuel line does not hold pressure, it probably has a hole and needs to be replaced.

Most chainsaw users do not have a pressure tester. If gasoline leaks out when the saw is on its side, it is probably a bad fuel line.

#### **Air Filter**

Air filters get dirty and cause the saw to lose power and run rich. This can lead to carbon buildup in the engine and cause the flame arrestor screen in the muffler to become plugged. Most air filters can be cleaned with warm soapy water and dried over night. In the shop I use compressed air carefully so I don't blow any holes in the filter. Air filters on some saws need to be cleaned by brushing each time you fill the tank with gasoline.

Other saws with centrifugal air cleaning systems (Swedish saws) can run up to 40 hours without cleaning (if the chain is kept sharp).

#### **Spark Plug**

With the plug removed, I check the following:

1. Black plug – saw may be running rich. If it has carbon buildup, replace it.
2. Brown - normal
3. White – saw may running lean (or it is a new plug).

With the plug out I check for a spark. If there is no spark, a new ignition coil is usually required. Many of current chain saw brands have a life time guarantee on coils.

I then screw a pressure gage into the cylinder and get an accurate compression pressure. Once in while I find a saw that appears to have adequate compression when pulling on the cord but is actually low (less than 120 psi). I like to see 140 psi or more. Hard starting begins to occur at less than 130 psi. Over time saws develop lower and lower compression as the ring in the piston wears.

#### **Muffler**

With a flash light, I check the flame arrestor screen. If dirty, I remove the screen from the muffler, and burn carbon off with a torch.

#### **Screws and nuts**

I make sure all screws, particularly the muffler screws, are tight. I will also check the condition of the bar and chain.

Then with fresh gasoline (premium, non ethanol with mix oil), I try starting the saw. With ignition, compression and fresh fuel, the saw will usually start. I then adjust the carburetor. With a new spark plug and fuel filter the bill is usually about \$21 and back in the hands of the customer in about 15 minutes.

In summary, the five checks will uncover many startup problems. Many of the steps described above can be done by the user, but it is still good practice to have your chain saw checked over by a servicing dealer each year. In the meantime keep the saw clean and the chain sharp.

Clyde and his family operate Samsel Ltd. near Hancock, Wisconsin and are Husqvarna dealers.

They can be reached at:

**Phone:** (715)-249-5602

**E-mail:** [samsel@uniontel.net](mailto:samsel@uniontel.net)

<http://www.samselsawmill.com>

## NEW MEMBERS WELCOME

E.G. Nadeau of Cooperative Development Service  
 Dave Speirs of Land Vest  
 Mark McGuire Family

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### From the Director: Joe's Comments

Forest Health: In this day of consistent drought these two words cannot seem to escape my thoughts. Thanks to Rod Sharka and John Schwarzmann for bringing the valuable information in this issue to the forefront, and especially for keeping abreast of these very crucial topics. Rod has been following the terrestrial invasive species as they evolve and John's career as a forester has been invaluable to our board. Clyde Samsel has a great feature here on chain saw maintenance, what an important topic for any of us who use saws. I have appreciated Clyde's old school common sense ever since we became acquainted less than a year ago. Give him a call when you need a chain saw. With the ongoing dynamics of the woody bio mass discussion, we appreciate Don Peterson's article.

In the last issue we touched on "local economies" as we have for years. One member, wishing to remain anonymous, responded as such...

"Since our corporate dominant supreme court had the audacity to further hamper individual rights by the 5-4 decision in Citizens United v. Federal Election Commission the flood gates are open for corporate money to wither the last stand of individual freedom and local control. This system of law presumes that corporations possess constitutional protection and rights which they routinely wield to overturn laws and protections of local government. We are concerned about local economies and local control, and as was recently displayed in New Hampshire the local government was brought to their knees when a large corporation forced sewage sludge in to their community. The local community resisted, but were sued for millions plus attorney fees and lost business costs! What small town can fight this? It is only a matter of time, 'coming to a local forestry or farm community near you.' Factory farms are in the same story. And the SUPREMES say that corporate first amendment rights are dominant to the rights of 'we the people.' Thanks to PIF for bringing this issue to the forefront, we 'the people' need to be aware and vigilant of corporate 'personhood' which will eventually take the last of our rights and leave an uninhabitable environment.

I am happy to hear this member sound off. State corporate codes commonly authorize permanent corporate lives and render immunization from liability to its officers. In order for us to achieve sustainable communities, we must achieve the authority to govern ourselves, and that requires a people's movement in order to enact change. That is exactly what PIF pursued in achieving the Local Lumber Use Law.

What have you got to say friends? Let us hear from you! This is your cooperative; every one who has contributed knows that. We need everyone to be involved in this 'people's movement.' We need your dues, but more importantly we need your involvement.

Joe





#### ITEMS FOR SALE:

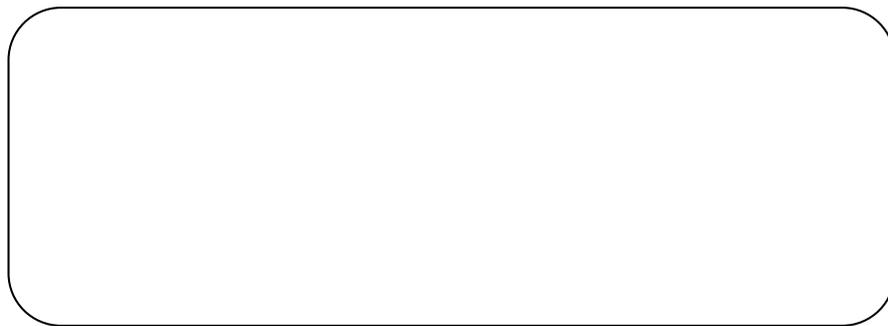
If you plan to be planting trees in the spring, PIF has been working with Lodholz Nurseries in Tomahawk. Contact John Schwarzmann at [jschwarzmann@charter.net](mailto:jschwarzmann@charter.net) for details. With enough interest, PIF may be coordinating a group pickup of trees.

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

- Napoleon wood stoves
- wood finishes and preservatives
- garden and tree amendments
- grass seed for trails



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*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.*