



Partners News

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HAPPY NEW YEAR

A FEW WORDS FROM JOE:

At the end of one year and the beginning of the next, we at the PIF Board wish everyone the best for 2014. 2013 brought some further improvements in timber values, with hard wood logs and red pine bolts bringing premium stumpage prices. This makes one cognizant as to planning your harvests appropriately.

I have had members say they appreciate the Timber Management Field Book which we had supplied, but that many are more interested in how to make sense of it. This is a very valuable guide, so in order to fully utilize it, I have enlisted a friend from the Forest Stewardship Committee to write regular columns on basic landowner forestry. John Duplissis has impressive credentials from UWSP instructing landowner programs and we all will enjoy his bit of humor in his writing. John wants questions from members, about which to write his column, and I supplied the first question asking him about basal area. Important to know, as we are to use basal area as one tool to determine at what point our stands need a thinning. We need questions from you for upcoming columns, what do you want to learn more about? Is it more on timber measuring, is it further education on the complicated invasive threat? Let us know.

After reading John's education, and reading up on the threat of worms from Rod, I hope you will truly enjoy the interview I conducted with Dick Steffes. Almost 40 years of land conservation are summarized here, as Dick takes a glance back at his career in WDNR real estate. I gained tremendous respect for Dick during our mutual time on the Forest Stewardship Committee and during my extensive negotiations with him preceding our land sale to the Northern Highland State Forest, and I very much appreciate his efforts to share these stories with us. My first thought was to split the long interview between two issues, but I could not let it go and did not want you to wait either. Dick is available to us, so please let me know if you have any questions for him.

Check out the PIF website for updates on the Wildcat Falls litigation, which could be decided in the upcoming weeks. A big thank you to Jim Joyce for a top notch website, Margo for great newsletters, and to our board who regularly contributes, and especially to our new contributions by Dick and John.

IT'S ALL ABOUT BASAL

John G. DuPlissis
Extension Forestry Specialist
University of Wisconsin- Stevens Point

Every profession has a certain amount of technical jargon and forestry is no different. One term that foresters use too often and explain too little is "Basal Area." Frankly, basal area is cool! It is a wonderful mathematical equation that, when combined with

species appropriate stocking charts, can tell you when a stand is optimally using all site resources and when you should harvest to maintain the highest levels of fiber production!

At this point imagine your favorite professional forester smiling and nodding their head while crickets are chirping in the background... it is at this point that most woodland owners smile and nod their heads and think to themselves "huh" and/or wonder if they shouldn't find a new forester to help them manage their lands.

So what is "basal area" anyway? Simply put it is the cross-sectional area of all trees on one acre of land measured at breast height. Okay, I hear crickets chirping again... Sorry! That is the technically correct answer. When your forester tells you that your stand currently has 160 ft² of basal area per acre it means that if you measure the diameter at breast height of every tree on one acre of land the total cross-sectional area would be 160 ft² (back to imaging your forester smiling). If you can remember your

earliest geometry lessons the area of a circle is calculated using the formula $\pi * R^2$ if a tree is 12 inches in diameter then its cross-sectional area is .79 ft² and if you have 160 ft² of basal area per acre and the average diameter of trees in your stand is 12 inches then you have approximately 200 trees per acre.

I know... More crickets chirping...

Here is why I find this so cool; if an acre of land is 43,560 ft² and a stand has 160 ft² basal are per acre then it means that your forest is mostly air; 43,560 – 160 or 43,400 ft² of open space. Cool right?

Okay, so that is the technically correct answer but what does it mean aside from the fact that my forest is mostly open space. Remember I said earlier that basal area is a wonderful mathematical equation that, when combined with species appropriate stocking charts, can tell you when a stand is optimally using all site resources? The number itself is somewhat meaningless but when used with a "stocking chart" it can tell you whether the trees on an acre of land are fully utilizing site resources.

Nothing is ever easy... So, what is a stocking chart? Stocking charts are a somewhat elegant way of looking at growth and yield models. Back in the 30', 40's and 50's when the science of forestry was still developing; researchers with the US Forest Service and universities created mathematical

models to estimate average annual growth and yield for most of the economically important forest types. These mathematical models were developed by measuring the actual growth of trees and measuring the impact of specific forest management techniques on growth. The data they collected was used to develop models to estimate, you guessed it, the average annual growth on an acre of land and potential yields. However, taking these models one step further if you could model growth and yield you could also model conditions where tree growth accelerated or declined. Stocking charts provide a simple reference that uses average stand diameter, stand basal area and the number of trees per acre to determine if there are too few, too many or just enough trees per acre to fully utilize site resources. This is why basal area is an important measure for foresters because it is used to estimate whether a stand is growing optimally or whether some type of management practice is needed to maintain your forest stand in an optimal growing condition.

So, what basal number is thick enough to require thinning? It depends on the species and the average diameter of the trees in the stand. Answering a question with a question is highly unsatisfying for everyone but it really is about balancing competition for site resources against maximizing growth and that is going to change as your trees mature and grow. If you are

interested in seeing what a stocking chart for the woods on your property looks like WoodlandStewardship.org http://woodlandstewardship.org/?page_id=1317 has stocking charts for most of the economically important species in the lake states. Take a look and see if you can determine if your woodlands are under-stocked, fully stocked, or over-stocked.

At this point I think it is reasonable to ask why not just count the number of trees per acre, measure and calculate the average stand diameter and estimate the stand basal area? Actually, you can do that and it would work just as well. Almost... Foresters inventory timber stands by measuring randomly located sample points and collecting the data that is most relevant to the landowner's goals. There are two methods to collect this data; fixed radius plots and variable radius plots. Fixed radius plots count the number of trees per acre. Variable radius plots measure Basal Area. One of the reasons that foresters prefer to use variable radius plots is because it directly measures basal area and the other is that it is generally easier to collect data using variable radius plots than fixed radius plots. Why am I telling you this? Because it helps to answer a couple of other burning questions. Variable radius plots are called that because a tree's diameter at breast height determines whether it is measured or not. We use a ratio of 1:33 in the lake states; a 12-inch diameter tree has to be within 33 ft. of

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the center of the sample point to be recorded, thus variable radius sampling; the diameter of the tree and its distance from plot center determines whether it is measured or not. In most cases, this is a simpler and faster way to inventory a forest and we can easily estimate the number of trees per acre from this data.

Another question is whether basal area is as accurate for sawtimber size trees as it is for smaller trees? Actually, no it is not. Variable radius sampling tends to under-sample smaller diameter trees. Because the diameter of the tree determines whether a tree is sampled or not and because the ratio is fixed smaller diameter trees must be closer to the plot center to be measured. This isn't a problem in young even-aged stands (pine plantation or aspen clear-cuts) but can be a problem in uneven-aged northern hardwood stands where smaller trees are scattered or may occur in pockets and may be missed. Generally this isn't an issue, but it is one that your forester should be aware of and select an appropriate method when planning an inventory of your woodlands.

If a stand has a higher basal area that means it is denser (more trees per acre); does basal account for height? The short answer is no, it doesn't. The long answer is yes it does. Bet you didn't see that one coming... Going all

the way back to the beginning basal area is the cumulative cross-sectional area of every tree on one acre of land so height doesn't figure into the equation at all. However, basal area is one way to measure or assess the competition between trees and in that way it does account for height. Think of it this way... the trees in an unthinned pine plantation will grow tall and spindly but their diameter growth is fairly stagnant. Using a the appropriate stocking chart you can determine if there are too few, too many or just enough trees per acre to fully utilize site resources. If there are too many trees, so many in fact that they are crowding each other, and the overall growth and health of your woodlands is declining this will show-up on the stocking chart as being overstocked; which is another way of saying in need of some sort of management practice to return your woodlands to health and vigor. So basal areas doesn't measure height but the data can be used in conjunction with a stocking chart to determine if competition between the trees for sunlight, i.e. height growth, has become so extreme that overall health and vigor are suffering.

So that is basal area in a nutshell. The math and geometry aren't all that complicated. Most folks are familiar with or have seen their forester use a prism or cruising stick that is calibrated to a 1:33 ratio to measure basal area and now that you know the math you

can go out and measure the basal area of your woods; or you can just buy a prism or cruising stick. It is how basal area is used in conjunction with a stocking chart to guide management that is really important. Having said that; I would encourage anyone who is interested to take a walk through the Argonne Experimental Forest just south of Three Lakes on highway 32. The Argonne was one of the locations where experiments were done to evaluate the impacts of forest management activities on growth and

yield and this data was used to create growth and yield models for most northern hardwood timber types in Wisconsin and it was these models and these experiments that gave us the stocking charts we use to guide management. There is a very nice interpretive trail that takes about two hours to walk. It is a great way to put a face on the math. You can learn more about the Argonne at <http://www.nrs.fs.fed.us/ef/locations/wi/argonne/>



John DuPlissis is an Extension Forestry Specialist and Professor of Forestry in the College of Natural Resources (CNR) at the University of Wisconsin - Stevens Point (UWSP). John will tell you that he has the best job in the world because he gets to work with woodland owners and woodland owner organizations as part of his responsibilities include managing Wisconsin's Woodland Leadership Institute and Master Woodland Steward Program.



*"Snowflakes are one of nature's most fragile things, but look at what they can do when they stick together."
~ Unknown*

GOT WORMS?

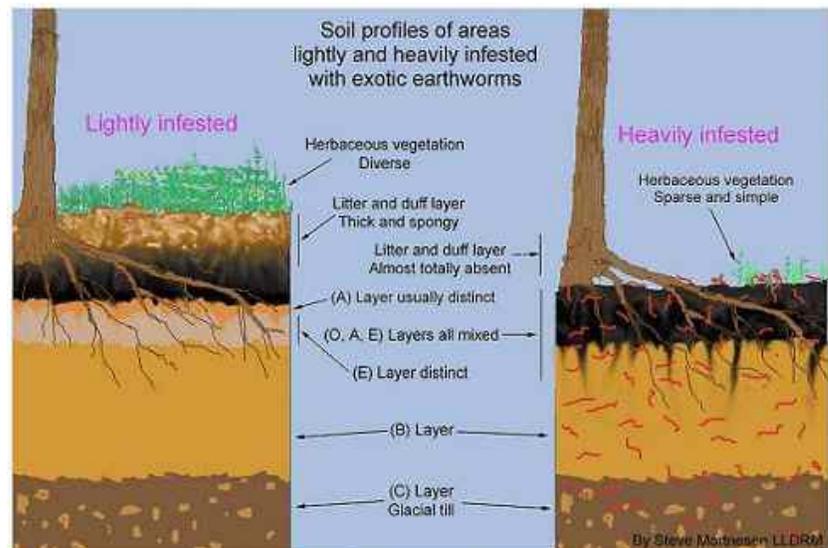
By Rod Sharka

Although this might not be the most logical time of year to be thinking about earthworms, I would like all PIF members to be thinking ahead toward spring. As you hopefully have learned by now, there are no native earthworms in Wisconsin. Any native earthworms that may have existed throughout the Midwest were wiped out during the last ice age. “But wait,” you say. “Whenever I dig in my garden or woods, I find all kinds of worms.” Correct! But those worms are not native. They, like the vast majority of other invasive species, were imported from Europe and Asia and have only been in Wisconsin since European settlement. What about those “Canadian Crawlers”? Yep. European in origin originally. The bad news, these invasive earthworms (and crawlers are the worst) are one of the most serious threats to general forest health that we face.



Because our northern forests have been evolving in the absence of worms for 10,000 years or more, they have become adapted to depending on a thick, slowly decomposing duff layer composed of several years' worth of accumulating deciduous leaves. In the absence of worms, this leaf litter is decomposed slowly over several years by the action of bacteria and fungi. Its presence provides a natural mulch that helps retain moisture, keeps the soil cool during hot summer days, prevents erosion, and provides a slow, steady release of plant nutrients. It also provides insulation that prevents rapid temperature changes in soil all year long. Many native plant and animal species, including the majority of our beloved spring wildflowers as well as the trees themselves, are dependent on this mulch and the mycorrhizal fungi that it contains for their existence.

The introduction of a variety of species of earthworms into our environment over the last century has had an enormous impact on forest ecology. Earthworms are classified as detritivores. That is, they make their living by eating dead, organic matter. And, they are very good at it. It normally takes approximately 5 years for the normal decomposition of leaves in worm free northern hardwood forests. This allows for the accumulation of a healthy duff layer of decaying leaves. However, once earthworms become introduced into an area, they reproduce rapidly, consume this duff layer in short order and are capable of eating an entire year's crop of fallen leaves in just one year. The end result? A duff layer is not allowed to form, the soil structure is compacted and changed, and the plants and animals that are dependent on this duff layer are left high and dry. Research has shown that like farmland, a worm infested forest may contain up to 1.75 million earthworms per acre, and each worm will consume up to 10 pounds of organic material per year.



The good news is that not all northern forests are infested by all species of European earthworms. Since earthworms do not spread very fast on their own (research has shown that earthworms move very slowly on their own, less than one half mile per 100 years), people (the primary vectors) can prevent their spread. Avoid dumping unused fishing bait on land or water. This is the primary origin of nightcrawlers, angle worms, and red worms that are prevalent near lake shores, boat landings, and fishing resorts. Additionally, earthworms can unintentionally be moved by any activity that moves soil. Earthworms and their egg cases can be transported in compost or in root balls of landscaping plants. Also, any vehicle treads that pick up and carry soil, such as road building equipment, logging equipment, and recreational vehicle tires, can move earthworms.

You can also help to document the spread and abundance of earthworms on our forested lands and preserve our natural areas. As you know, Partners in Forestry is a participating member of the Wisconsin Headwaters Invasives Partnership (WHIP). I would like to announce that WHIP has received a modest, two year grant from the WDNR to help survey woodlands in Vilas and Oneida Counties for the presence or absence of earthworms. So far, we have been working on state public lands, but I suspect that some of our privately owned woodlands may be earthworm free. I am asking for your help to identify these areas so that we can develop a better picture of how extensive the earthworm problem is and how much of our woodland communities are still earthworm free. If you suspect that you or someone you know owns or knows of any natural woodlands in Vilas or Oneida Counties, managed or otherwise, I would very much like to hear from you. WHIP would like permission to visit these sites and, using formal, environmentally friendly, non-disruptive surveying protocols, document officially whether the site is earthworm free. Please contact me at resharka@gmail.com or call 715-547-6493.

If interested in further information about the invasive earthworm problem, I would encourage you to explore the website: www.greatlakeswormwatch.org. Unfortunately, there isn't much one can do about woodlands that are already infested, but by identifying the location of worm-free woods and through education, perhaps we can keep those woodlands worm-free for a long time.

**Have you checked out
PIF's website?**

www.partnersinforesstry.com

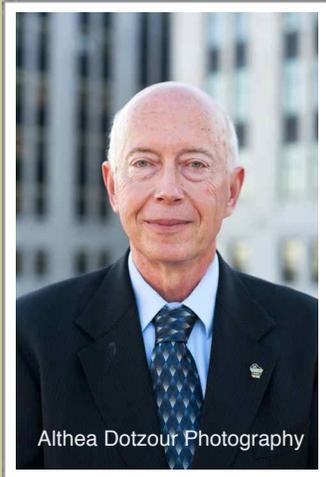
The website is for members to expose your business, service or tree farm, share thoughts, ideas, articles, photos, and links.

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

Note from Joe: I am very pleased to bring forward this interview covering the career of Dick Steffes. After nearly 40 years in WDNR real estate, Dick has an abundance of knowledge and foresight into protection of Wisconsin forest lands as well as numerous other public values and benefits associated with land conservation. For years I have admired Dick's candid negotiating skills and his deep knowledge of real estate issues, and how he has benefited the people of Wisconsin.

Recently Dick was recognized as "policy maker of the year" by Gathering Waters Conservancy to round off his list of accomplishments in his career. And, if any one asks if he is still active in land conservation after retirement, Dick has started American Acquisition Services LLC to work in support of public fee title and easement transactions.

FORTY YEARS OF WISCONSIN LAND PROTECTION:



SPECIAL PIF INTERVIEW WITH DICK STEFFES

PIF: You have recently completed a long career with WDNR, with your name being synonymous with some of the most worthy land protection projects in Wisconsin history.

Please tell us a little history of your education and the length of your career with the department.

Was your whole career in real estate?

What were some of the roles you fulfilled in real estate?

1. I started with the DNR in February 1974 and retired in December 2012. I was 24 when I started and almost all my colleagues were in their late 50's and 60's and with decades of conservation work behind them. I had to endure, repeatedly, their stories from the 1950's and 60's. When I retired, I left a group of co-workers, quite a bit younger, who were quite polite about my stories of land deals from the 1970's and 80's. I'm hopeful that this story telling helped bridge generations of folks with a strong conservation ethic.

Coming from a farm background and influenced by a dad and grandfather who loved the outdoors, I learned early on the value of the land, both worked and natural land. I received education at the UW-Madison in physical and social sciences. After a period of trying several different jobs I settled in at WDNR real estate. The work had intrinsic value to me; it had tangible results and never seemed quite done.

Filling in during vacancies, I did most of the duties in the real estate program over the years. This helped quite a bit later in recruiting and hiring new staff. It increased my credibility, but I probably came off as a "know it all." It was great to see the WDNR staff grow in their careers and to see their amazing accomplishments. Many of the old timers were very sophisticated real estate practitioners and the younger ones match their dedication and offer new skills like GIS capacity and land title expertise.

I had the opportunity to work with the Administrations of eight different Governors and eight different DNR Secretaries as well as many landowners and private sector real estate professionals. The Natural Resources Board members have always been

very special to me. They are conservation minded individuals willing to give time and sometimes great effort for the benefit of the state and the environment. Their service, which is unpaid, demonstrates very important conservation leadership. I was lucky to have met and interacted with conservation giants like Paul Olson, John Lawton and Herb Behnke. I worked with some others, but won't mention them, as they are still active and not yet done contributing.

While my career had the normal tedium, stress and challenges, I was very fortunate with opportunities to contribute to Wisconsin's land conservation. I enjoyed working with the other staff, the landowners and the officials and enjoyed the challenge of discovering what ideas would work with the different folks involved.

PIF: Though we had some phone conversations earlier, I know you best from our mutual time on the Forest Stewardship Committee. In short order I will ask you about some of the northern forest projects so dear to us both, but first, please briefly tell us the scope of your down state work. Any thing is fair game but what comes to my mind follows.

Acquisition for parks?

Public hunting and fishing areas?

Trail easements?

2. Statutes, budgets, and Board and administrative direction frame WDNR land acquisition. There is a robust staff-level dialogue on which projects and parcels are worthy and there is considerable advocacy by citizens. Part of our challenge was taking in all these views and directions and then focusing on the real world issues: real estate practice, availability of important tracts of land, price, title, and tenure.

WDNR has many dozens of longstanding conservation projects; some established 100 years or more ago. These projects are in various states of completion. Thank goodness for the land acquisition work done years ago which give us the acreages of the Kettle Moraine State Forest, the Parks system, our wonderful northern State Forests and the other great older state projects.

The main fee title programs for WDNR land protection are Fisheries, Wildlife, Forestry, Parks (and Trails) and Natural Areas. Earlier in my career, our operation focused on incremental blocking in these established projects. We sought the key parcels needed for campgrounds, or improved access, but were happy to pick up what could be called Tier 2 parcels that added acreage for fish and wildlife habitat and public use. There were a lot of transactions, 250 or more a year, and the average size was smaller, with 40 acres typical. Over time, these helped build great projects in many locations in the state. Some project names that come to mind are the Tiffany Wildlife in Trempealeau County, Mekan River Fishery Area in Waushara County and Devil's Lake State Park in Sauk County. The Department also did many purchases for the northern forest projects such as the Brule River, Flambeau River and Northern Highland-American Legion State Forests.

Regarding the State Wildlife Areas, the acquisition efforts often centered on a core area of wetland surrounded by a narrow fringe of upland. French Creek Wildlife Area in Marquette and Columbia Counties is an example and there are several others, with Horicon Marsh probably being the largest. I think wildlife managers who came along later, in the 90's and beyond, wanted to do more for nesting

habitat for waterfowl, pheasants and non game species – songbirds. WDNR then started a number of new projects such as the Southwest Grasslands, Western Prairie & Glacial Habitat Restoration Areas. Among other counties, these include parts of Iowa, St. Croix and Fond du Lac. State ownership in these projects, by design, is more fragmented in order to integrate bird nesting cover interspersed with agricultural fields.

The unavoidable result of this new strategy for wildlife was conflict with the farm community. WDNR land acquisition of upland acres in southern, eastern & west central Wisconsin was perceived as direct competition for farmers who desired to expand their cropland base. I think the amount of cropland actually acquired by WDNR was modest but many agricultural folks were concerned about it and opposed state purchases. While the wildlife habitat goals made sense to increase bird populations, these types of land purchases were at times controversial at the local, Board and legislative levels.

While those fee title acquisitions mentioned above accounted for much of the cost and workload, WDNR staff, primarily in southwest Wisconsin, were busy developing narrow conservation projects along riparian strips of land. The Department used fish management easements, on trout and small mouth bass streams. These easements usually are 66 feet wide on each bank and include vegetative control, public access for fishing and the rights to install instream devices and riprapping of unstable stream banks. The Department also acquired more than a thousand miles of abandoned railroad corridors for recreation trails. I enjoyed working with the railroad company officials and believe it is important to preserve some of these corridors once the trains stop. The 80-mile Mountain Bay Trail, from Green Bay to Wausau, is typical of one through a mix of rural and urban landscapes, while the Hank Aaron Trail extension, from Brewer Stadium in Milwaukee to the Waukesha County line, is a heavily used urban trail. Most of the "Rails to Trails" projects done by the state connect communities by acquiring the corridors through the rural areas. Most of the "in-city" Rails to Trails projects were and continue to be accomplished by City and/or County government.

After 25 years of land acquisition work using the ORAP funding, things were winding down toward the end of the 1980s. There was little funding left and the sentiment was growing in DNR's leadership that land acquisition was in the rear view mirror. Then, in 1988, we learned the political value of hitting a "home run." While WDNR was doing solid and worthwhile work filling in existing projects, that work was well below the radar and hidden from public view. Support for public land acquisition was weakening; at least it appeared so to me. In 1988, the Department had the opportunity to buy much of the frontage of the Chippewa Flowage from Northern States Power Company. With its storied fishery, the permanent protection of the Chippewa Flowage was widely celebrated by the public and politicians of both parties. This purchase occurred near the end of the ORAP program (Outdoor Recreation Action Program) and future funding looked bleak. In fact, the WDNR sent the purchase proposal over to the legislature with only 2 of the required 7 million dollars accounted for. The Legislature saw the value of protecting the Flowage and within two days, provided the additional 5 million dollars for the transaction. I think the public support generated by the "Big

Chip" contributed to the bipartisan support for the Knowles-Nelson Stewardship Program which started a short time later, in 1990.

The Stewardship Program allowed the state to expand its land acquisition horizons beyond just filling in old projects, resulting in great new projects like the Dells of the Wisconsin River in 1994, the start of the Forest Legacy Program in 2001, significant additions to the Lower Wisconsin River, the Rainbow Flowage in Oneida County and many other important natural resource areas. Stewardship helped fund conservation related developments such as toilet – shower buildings at state parks. The Program now included grants to local government for local park projects, and an innovative new grant effort with nonprofit conservation groups. This energized the nonprofit conservation movement in Wisconsin, increasing private fund raising campaigns for the NCOs to provide the 50/50 Stewardship grant match requirement. Later, counties could apply for and receive Stewardship grants for additions to County Forests. Species-specific projects like the Buena Vista and the adjoining Central Wisconsin Grasslands aided the Greater Prairie Chicken. The WDNR set up new Natural and Wildlife Areas like the Lower Wolf River Bottoms Wildlife Area west of the Fox River Valley and the Paradise Valley Wildlife Area in the urban southeast. Rainbow Springs, Lowes Lake and Lapham Peak are three examples of 1,000 plus acre projects that are now permanently available for public enjoyment in the urban fringe of the southeast. Certainly these beautiful areas would be developed by now without the help of the Stewardship Program.

Most of my work in earlier years was for direct state purchases of land or easements. Later in my career, I and other WDNR staff worked much more with the non-profit organizations and County officials. It became clear that the state just could not, or would not, do it all alone.

I'd like to give an example of how a non-profit conservation organization helped the public with land acquisition. Several years ago, the last privately owned parcel of land on Amey Pond was offered to the Department. Appraised value was about \$35,000 and the landowner agreed to that price. Amey Pond is located just south of State Highway 21 in Adams County. Its outflow stream goes north to Mason Lake. About 25 years earlier, my friend and co-worker, Bob Bredemus, thought the Department should pick up some of the wetland waterfront on Amey Pond to protect northern pike and panfish spawning habitat. In following years we used both the fisheries and wildlife programs to acquire bits and pieces until just that last parcel remained private. In the meantime, the Department created a waterfowl refuge on Amey Pond, a rest area for ducks and geese hunted on Mason Lake and elsewhere.

Given this background, it was, well, a "no brainer" to buy that last parcel, a small, low cost and justified deal. Anyone in real estate just loves picking up that last piece of land needed for a project. The problem was, the fish program was low on funds and the wildlife program wanted available funding used for important new habitat restoration efforts, like grassland bird habitat. Of course, I went over people's heads but still could not prevail with administration that buying this small tract of land was a good thing to do. A new private owner could hunt at the edge of a designated waterfowl refuge and likely drive all the ducks and geese off this small area, negating its value as a refuge. I collaborated with another friend and

The Stewardship Program allowed the state to expand its land acquisition horizons beyond just filling in old projects,

There are about 50 of these NCOs in Wisconsin and their work is very important.

co-worker, Mark Martin, who promptly enlisted help from the Natural Heritage Land Trust. NHLT acquired that parcel with the help of a Stewardship grant and later donated the land to the department. So, basically, NHLT could complete an important conservation project while the Department failed to do so. There are about 50 of these NCOs in Wisconsin and their work is very important.

PIF: You brought many a project to numerous Natural Resource boards and to several different governors for consideration. Would you share some of the ups and downs of preparing a project for consideration?

Which administrations did you find the most enthusiastic for overall state involvement in land conservation?

Which political roadblocks were the most disruptive?

3. The first steps of the approval process work were to summarize the proposed transaction; assure it was funded; map the proposed acquisition; and provide justification in a stylized format designed to address all the questions we had been asked in the past.

The clock started ticking when an owner signed an option to purchase. While waiting for approvals, title work, environmental assessments and surveys, if needed, are done. The approval process, of course, is the end stage of considerable negotiation effort by WDNR field staff with the private landowners. I saw one such case with more than 40 years of negotiation records over three generations of a family ownership for a trout stream project in Waushara County.

The Real Estate section does a transaction summary for each fee title or easement purchase as well as a condensed version for conveyed easements on state land or for land dispute settlements. The approval level varies based on cost, with the larger transactions presented to the Natural Resources Board and/or the Joint Committee on Finance (16 member legislative budget body). All fee title transactions are presented to the Governor. Governors' staff varied quite a bit in how much or little detail they wanted to see and how intense their questions were. Some of Governor Thompson's staff were, one might say, detail oriented.

I presented items to the Board occasionally starting in the 80's and eventually presented almost all Board items for land transactions in the last 15 years or so. It was an honor to present to the Board; members had challenging questions and we always tried to be diligent with the answers. There was the occasional rejection, but by and large the Board showed great support for land protection. Some of the friction points were spending money on buildings which were to be removed with site restoration, high per acre values, purchase of cropland and sale of state land.

I consider Jim Doyle the Champion of Stewardship due to a reauthorization and some very serious legislative challenges to Stewardship under his watch. He clearly valued land protection and was a great supporter of the nonprofits as well as WDNR efforts. Tony Earl was a strong supporter of WDNR land acquisition both as Secretary and as Governor. However, Governor Earl was conservative when it came to available funding. Pat Lucy, the first Governor I worked under, wanted a majority membership in the Board back in 1974 (at that time the NRB still appointed the Department Secretary). That was sort of a tough year as Lucy put

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huge pressure on many parts of the agency, including real estate, until he got his majority and control. Later in his administration we had good success with transactions and WDNR also permanently improved quality of its work due to the scrutiny of Lucy's staff. Lee Sherman Dreyfus had a policy of requiring the state senators and representatives sign off in writing. Some of these officials supported the transactions behind the scenes but would not sign a letter constituents might later see. We lost a number of transactions in that administration. McCallum and Schriber were Governors for shorter periods but both were solid supporters and good to work with. Tommy Thompson initially was somewhat negative and never liked dollars spent on improvements. However, eventually Governor Thompson grew to appreciate both the real estate accomplishments and the public support that accompanied large transactions. He had no trepidation on size, as long as the price was reasonable. He likely holds the acreage record for acreage accomplishments with Doyle a close second.

I worked with the Walker administration for two years and his sign offs were quick once I could get the transaction to him. I think the understanding was that the WDNR's Secretary's office was the "gatekeeper." Standards for land purchases at DNR are very high and a fair amount of effort was involved in getting transactions through. To their considerable credit, WDNR Administration was very instrumental in keeping the Lyme Timber Forest Legacy easement on track at a critical juncture when legislative leaders questioned the overall cost. Governor Walker values Forest Legacy (working forest) easements and that is where land protection opportunities are most likely for WDNR in the next few years. Much of the fee title work will need to be done by the Nonprofit Conservation Organizations for habitat, the Cities and Counties for County Forest additions and local park projects. A number of northern counties are currently using the Stewardship Grant Program effectively for County Forest additions.

There was a period in 2002 and 2003 where leadership and some members in the Assembly opposed Stewardship transactions. Several transactions were held up in the Joint Committee on Finance with the average of nine months delay before scheduling a hearing. Almost all were eventually approved until a May 2003 hearing where three were rejected, one item was approved (a package of seven different abandoned railroad corridors for trail conversion which had strong snowmobile club support) and one was deferred. Shortly after that the Joint Committee lost its review role in a state budget line item veto.

The Joint Committee has a passive review role again for transactions in excess of \$250,000. It is going smoothly, I think partly due to parameters set up in the review process and a more business-like approach compared to the 2003 committee. I think there also is more trust at the Committee in WDNR's internal safeguards and priority rankings for land deals than back in 2003 when the Assembly and Governor's office were dominated by different parties and had some different values.

Changes in the Stewardship law that just occurred after I retired limit land purchases outside of project boundaries. This makes for difficult negotiations if an owner has land both in and out of an established DNR project and who might refuse to divide his or her land. This new rule also might limit a NCO from

However, eventually Governor Thompson grew to appreciate both the real estate accomplishments and the public support that accompanied large transactions.

Governor Walker values Forest Legacy (working forest) easements and that is where land protection opportunities are most likely for WDNR in the next few years.

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transferring its ownership to WDNR if that land is not within an established state project boundary. Another change in the last budget was a new requirement that most of WDNR's land protection budget be used on easements with no more than a third of the funds to be used for fee title work. I'm hoping we can get back to more practical rules someday down the road.

I guess, bottom line, land protection in Wisconsin has its associated work and challenges. Practitioners need to focus on the final goal and take the other things in stride, making the best of the hand one is dealt. The real key is to have some stable, consistent funding to connect with landowners when they are ready to sell important tracts of land.

One last comment about the approval process – a huge impact on its success is provided by the conservation partners. Snowmobilers support new trails, anglers – boat landings, hunters – acreage in the south. The Nature Conservancy and The Conservation Fund, respectively, put in significant funding, negotiation talent and risk on the very large International Paper (2007) and Lyme – Wausau Paper (2012) easement deals. The Trust for Public Lands helped secure federal assistance for the WDNR's Forest Legacy Easement at the Chippewa Flowage on acreage important for many species of interior forest birds. Staff at WeEnergies in the 2010 land deal (protecting 11 miles of the Menominee River in Wisconsin and 10 miles in Michigan) and other conservation minded landowners make more of these great land protections happen. Advocacy with legislators have been essential from groups such as the Conservation Congress, the Wisconsin Wildlife Federation, Trout Unlimited, Pheasants Forever and many smaller non-profits. Members of these groups are driven by passion for conservation. When they talk, legislators, Board members and Governors listen. Stewardship likely would have been cut deeper in the last biennial budget without that great support.

PIF: It is over a decade now that the Forest Legacy Program has been viable in Wisconsin. Last year, in these pages, I reported on the impressive record of Wisconsin Forest Legacy projects, and in the past we have spent pages allowing our readers to understand working forest conservation easements.

Was your first work with forest Conservation Easements after Wisconsin adopted the Forest Legacy Program?

Were easements not used prior to public access for hunting and fishing?

Most of Wisconsin's corporate timberland is now in the hands of large scale investment groups, the Timber Investment Management Organizations and Real Estate Investment Trusts for example. You managed some very worthy deals with a variety of these groups. Please tell us a bit about the challenges of negotiating these large scale conservation deals with the big investor ownerships, which have taken over most of the corporate forest land in the country.

4. I was jealously, but ineffectively, watching what those folks were doing in Maine and Vermont. In 2001, State Forester at the time Gene Francisco presented a green sheet to the Natural Resources Board and the NRB voted to establish a Forest Legacy Program. Paul DeLong has been very supportive of these transactions since he took over as State Forester.

WDNR has many years of experience with easements, but they were very specific in terms of rights and generally protected smaller acreage. Hunting and fishing easements dated back to the early 1960's. The Wisconsin Conservation Commission (precursor of WDNR) acquired some wetland protection easements. Many of these types of easements are not being pursued now, other than the fish management easements mentioned earlier. It's pretty much impossible for example, to acquire public hunting rights today in the south, while that was a common type of easement in 1962. The WDNR has developed and uses some new easements for specific situations such as wetland mitigation. The Wisconsin Conservation Commission did acquire thousands of acres of hunting easements, mostly along the Wisconsin River in the southwest. These did not specifically prohibit development and allowed agricultural use as long as the land was open to the public for hunting. The Department learned some lessons from these old easements on how to better draft terms to avoid problems with future landowners. Highest and Best Use changed over the years from farming to residential development in some cases with the resulting conflicts between the private and public interests. Most of these problems have been resolved as cases arose. We learned to be very specific on rights needed, define these in the easement document (i.e., if new structures are allowed or not) then to appraise the rights acquired and compensate the landowner accordingly.

As a Department, we launched into efforts to acquire working forest or Forest Legacy Easements in 2001 with the first one in 2002. That one was 35,300 acres in four major blocks of industrial forest land, part of the former ownership of PCA, the mill in Tomahawk. Generally, tracts have to be of landscape-size to be considered by WDNR as a forest legacy project and unless it's an infill within other public ownership -- I agree with that approach. The legislature expects public hunting with those easements. We added trapping rights starting in 2009 with the Wisconsin Timber Associates easement in Forest County. The clear advantage in dealing with the large owners is that the MFL program generally duplicates the rights the WDNR is seeking. The difference, of course, is MFL has an end point when the contract period expires, while the easement is permanent.

Many of the Timber Management Investment (TIMO) and Real Estate Investment Trust (REIT) folks are willing to consider sale of these easements and this provides the opportunity for landscape scale protection for Wisconsin's forests. And the need is there. With virtually all of Wisconsin's industrial forest ownership changing hands in the past 15 years (some it 3 or 4 times) it's clearly an active real estate market. It seems like with each ownership change a few more land parcels are peeled off for development. Recently, I talked with one manager of many thousands of acres in another state who said he would not sell a forest legacy easement. He said cash flow was much better for his company marketing 40- to 80-acre cabin and hunting parcels. So that subdivision strategy is a reality for forest land not covered by an easement. Rather than being judgmental on what a corporate owner should or should not do, I think it makes more sense to acknowledge the rights of landownership. If we value large blocks of sustainably managed forest land, as a society, we need to pay for those land rights.

Actually, I really enjoy working with the "corporate types." They get right into elements of negotiations that exist solely for accomplishing the transaction. For

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As progressive and effective as Wisconsin's Forest Legacy Program has been, we need to recognize that the TIMOs and REITS have a fiduciary duty to their investors. Each time one of these large ownerships changes hands; a few more lakefront parcels are peeled off for development. We have seen this for years -- even pre-1999 when mills still

example, maps, price, terms, easement documents, timing, and funding sources - fun and relevant stuff. And since the acreages are large, so are the potential accomplishments. You asked what my favorite was of the large-scale easements. I lost a little skin on the highly competitive IP deal in northeast Wisconsin in 2006, but it was a great conservation accomplishment and memorable. Plum Creek has been wonderful to deal with on three very solid, important easements. The first one with Tomahawk Timberlands included a tremendous partial donation of value to go with \$5,000,000 in federal funding. Net cost to Wisconsin was \$62 per acre. But the favorite, hands down, was the Lyme Timber easement in northwest Wisconsin in 2011. To have failed with the previous landowner Wausau Paper Company, then to see that earlier work still yield benefits was great. The size and environmental values are outstanding. And the Lyme folks are truly a class act - simply wonderful business people with an environmental ethic. The Conservation Fund was critical in helping put that deal together and the state stepped up at the right time with Stewardship dollars. There is a phase two still pending for an easement on 22,000 acres adjoining the Brule River State Forest and it is very important for that second part of the easement deal to be completed.

PIF: We have talked between us of the pro and cons of fee public ownership vs. these Forest Legacy easements.

Would you have anything to add to help readers fully understand the advantages of one method over another?

It seems obvious the easement protects larger acreage for the price, but are there any drawbacks?

5. As progressive and effective as Wisconsin's Forest Legacy Program has been, we need to recognize that the TIMOs and REITS have a fiduciary duty to their investors. Each time one of these large ownerships changes hands; a few more lakefront parcels are peeled off for development. We have seen this for years -- even pre-1999 when mills still owned large land bases. While I was at WDNR, I sought a balance between fee title in-fills for old projects, working forest easements on large acreages with reasonable public access and last, the occasional large unique resource protection such as the Willow Flowage or the Rainbow Flowage. The large new protection projects are off the table now and the in-fill projects, while viable, are probably proceeding at a reduced volume due to budget reductions. So the easements as a land protection tool rises to the top.

Regarding the pros and cons of fee title ownership by government versus Forest Legacy easements, several things come to mind:

- Cost per acre: The easement cost generally runs 35-50% of the fee title value in northern Wisconsin. When comparing cost of an easement acre in Douglas County to a fee title acre in Ozaukee County, the easement cost would be way less than 10% of the fee title cost. Now that 35-50% doesn't hold up in the south. WDNR had federally funded forest legacy projects, at Baraboo Hills in Sauk County and Holy Hill in Washington County. Since the easements prohibited development on small private ownerships, easement costs per acre were very high compared to easements on large industrial forest ownerships. The size, Highest and Best Use and development potential are determining factors in that cost difference.
- Ongoing management costs: The underlying fee title ownership while encumbered by the easement remains with the TIMO, REIT or other industrial forest landowner.

They are responsible for management costs. This is very important due to state budget limits. WDNR's costs are large limited to easement monitoring and this is rolled into the minimal MFL oversight.

- Public access: Well, fee title is probably better for access. WDNR can't afford road maintenance on the easement lands so the landowner generally will not allow internal road use by the public. Public access is primarily limited to foot travel. When we negotiated these large easements, we'd aim to include public rights for snowmobile and ATV trails already included in the County network. So these stay open. We'd ensure access by public road on the perimeter. We'd generally secure public vehicle access on one main internal road, but as far as all the internal woods roads, no, that's at landowner discretion. The underlying owner also controls any activity not specifically written into the easement, such as camping or horseback riding. From the public management view, WDNR doesn't budget for policing the land, other than normal warden work, nor for road maintenance. And from the landowner's view, he can manage the timber resource in accord with MFL standards perhaps with slight tweaking by the easement terms.

Examples where fee title public ownership is better:

- County forest additions so the County receives timber sale revenue.
- Intensively managed WDNR projects (i.e., campgrounds and habitat management areas).
- Natural areas where land protection needs eliminate cash flow potential from the land such as preserving stands of old growth hemlocks.

The Forest Legacy Easement freezes the land in time, keeping it in sustainable forestry. This keeps the landscape of the north in the condition we love and attractive for tourism and the forest products industry. There is the added benefit of focusing local government's service costs to the "built up" parts of townships rather than throughout more remote timberland. Development can be a very good thing for jobs and enjoyment of a region but it makes more sense if there's an overall regional strategy.

One last issue that I've seen raised by 'naysayers' with both the large fee title deals like flowages owned by utilities and with Forest Legacy Easements is that corporate values, regulations and the Managed Forest Law should make it unnecessary for the public to buy these. I think this is a short sighted. One of the realities is that these large blocks exist in our time and if one theoretically roles forward in time, I don't believe these large blocks will remain together, in spite of MFL and government regulations. The key is for the public to get that permanent protection via permanent land rights and at a fair price. Because of MFL (withdrawal penalties), regulatory restrictions and, in cases or corporate official desires for protection, these major land protections can be done at greatly reduced prices. Think, for example, of the 6,000 acre Rainbow Flowage nested within the heart of the American Legion State Forest. There were protections on part of the acreage (just part, not all); the man I worked with a few years back, Bob Gall, was instructed by his Board to cash out. Bob desired to see as much of this land preserved as possible. The state acquired this key lakefront and backland within the State Forest at less than \$900 per acre, basically an entire large lake's shoreline. Bob convinced his Board to take the deal as he had achieved much higher per acre offers from private buyers on other land not needed by the WDNR.

There was only one shot at that deal. Likewise with the Forest Legacy Easements, if they make sense and are affordable, let's get them done.

PIF: None of these deals could have been possible without our Stewardship Fund, which has been used as a match for federal funding and a sole funding source for many beneficial projects in Wisconsin. The Stewardship Fund has been used to procure park land, public hunting and fishing grounds, trails for multiple use, working forest easements and fee forest lands, county forest acquisitions, non-profit land acquisitions.....the list goes on. Stewardship had been a favorite for reaching across political lines for years, but in more recent years there has plenty of negative rumbling about that.

How are we to make sense of all this?

Besides Forest Legacy, what other federal funding sources were you able to utilize to the states benefit?

Were there any other funding sources that were a big benefit to Wisconsin in your career?

6. The Knowles-Nelson Stewardship Program is the primary funding source for land protection in Wisconsin. The law authorizes sale of bonds that generate tax-exempt interest for investors. The proceeds of the bond sales are the funds used by WDNR, non-profit conservation organizations and local government for land protection, working forest easements and conservation-related development. The program started in 1990 and the bonding authority has been set up in 10-year increments. Wisconsin is in the third 10-year period. The bonds are paid off over 20-year periods with general-purpose revenue and forestry-segregated funds. So all Wisconsin taxpayers share in the cost of the Stewardship Program.

The Program had bipartisan support for many years. There were times when some elected officials opposed it; however, there was enough support both in the legislature and with the public for the Program to endure. Officials on both sides of the aisle, like Spencer Black and Dale Schultz, were strong advocates for land conservation and saw Stewardship as a necessary tool.

In the last state budget, the legislature made changes, reducing Stewardship and restricting activities. There is concern about the long-term cost. I did check with the Legislative Fiscal Bureau and learned DOT has more than 10 times the bonding funding of the Stewardship program. The same legislators who reduced Stewardship in the last state budget due to its cost voted to increase bonding levels for road building. I think these votes show it's more a question of what lawmakers feel is important for government to fund, rather than cost alone.

An obscure, sort of invisible budget action is the infamous earmark. The previous biennial budget saw a \$6 million transfer of Stewardship funding to dam repair. I mention this because earmarks reduce budgets intended for a specific purpose and can be done with virtually no public input during the budget process. We used to hold our collective breath in state government during budget times. At least now it's only until June 30 as opposed to the old days when budgets finally were done in October. The requirement in the current budget to sell 10,000 acres will be accomplished by WDNR and I think in a careful way. It will be at a price of lost opportunity to do other valuable work.

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There always have been some members of the legislature that opposed public land acquisition. I think the difference now is the lack of balance in the leadership. What saved Stewardship in this last budget was an upwelling of support from Counties and the Wisconsin County Forest Association, non-profits like Trout Unlimited, The Nature Conservancy, and others, the Conservation Congress and Wisconsin Wildlife Federation as well as many citizens. That support saved Stewardship from deeper cuts and showed the legislative leadership that the public values land conservation.

Regarding other funding sources for land protection, there are several federal programs that are key to the success of individual transactions. Federal Forest Legacy funding, for example, is very important in the approval process. We make the case to the approvers, the NRB, the Joint Committee on Finance and the Governor that someone besides WDNR thinks the proposal is important and demonstrates support with funding that reduces state cost. Other examples of federal grants are those for habitat protection for endangered species and conservation of coastal wetlands. All of these grants require state dollars as match; stewardship is virtually the only source for the state match and over the years accounted for about 90% of total available dollars.

Back in the 80's and earlier, there was a significant amount of cash, as opposed to bonding, in the acquisition budget, but those funds are now used for operations and I don't think we'll see these sources again for land or easement acquisition. If the legislative leaders continue to feel stewardship is too costly, they would do well to look at the Minnesota conservation fund (sales tax) and Colorado's wonderful program (lottery dollars). If Wisconsin were to switch over from the Stewardship bonding strategy to a cash funded program, perhaps this would stop the biennial changes we've seen the past few years.

Your question asked "how do we make sense of all this?" I'm not sure I have an answer. As I have mentioned above, there always has been that mix of sentiments among the lawmakers about public land and easement acquisition. The difference may be that the more conservative folks have strong majorities in state government so the normal discussions within each party, where moderates generally expressed support for Stewardship, that diversity of opinion has been held back. The key going forward is for the citizens and the advocating groups to get their views to the legislators, that they value land protection to maintain Wisconsin's forests and natural landscape.

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Photo by Bob Jauch

At the St. Croix Lake boat landing, reviewing the map of the Brule-St. Croix legacy project.

From left: Sean Ross (Lyme Timber Company), Dick Steffes (Wisconsin DNR Real Estate), Annie Maina (Steigerwaldt Land Service (SLS) Regional Forest Supervisor)

Extremes..... a little more from Joe:

As I write this on the afternoon of Jan. 6 the high temperature today was -16 F, with a - 30F predicted for tonight. This stresses the wood pile and creates lots of other concerns.

On the positive side we hope it helps control some invasive pests, a news report today said that -30 F kills 98% of the Emerald Ash borer larvae, and it has been 18 years apparently since we have experienced this cold extreme.

Last week I had a call from a friend in Estonia. Olev spent 3 years with our family, in the 1990's, as a trainee under the MAST program sponsored by the University of Minnesota with which I was a host instructor. I told Olev about our 5 recent weeks of very cold weather, expecting a similar report from him. He said that the Baltic States were experiencing unusual warmth, that it was almost 15 C that day with a warm rain, and that the trees had re budded in December after going dormant 2 months earlier.

Recently I read a story titled 'The Arctic Opens Up'. The story noted that predictions are for the Arctic to be routinely ice-free by 2020, and that the corporate world was anxious to be involved as it is estimated the Arctic holds the following resources:

- 90 billion barrels of undiscovered recoverable oil

- 8% of the world's wood reserves

- 1670 trillion cu. ft. of recoverable natural gas

- 44 billion barrels of recoverable LP gas

- 10% of the world's fishing catch

- 150 deposits of rare earth minerals including these percentages of the world's minerals:

 - 40% palladium, 20% diamonds, 15% platinum, 10% nickel, 11% cobalt, 8% zinc and 9% of the world's tungsten.

The story states that 3222 miles are saved by Northwest Passage vs. the Suez Canal, and that currently there are 84 days a year a fortified ship can pass the north route with 128 days predicted in 50 years.

Stay warm, I needed to write this now as I have a lot of wood to cut when it warms up.

WOOD CHART

SUBMITTED BY JOE HOVEL

With this old fashioned cold winter we are experiencing, PIF did a little research to try to make sense of efficient wood heating. Following is a chart which will demonstrate the sometimes drastic difference in firewood BTU, according to not only species, but also to moisture content. Simply, the dense heavy hardwoods are much better for heat, as we well know, but burning wood green makes no sense. But then again, it all burns and I am sure many of us are going to be caught a little short of fuel wood this year. The more dense woods take longer to dry also. This chart covers many species of wood common to this region, but also some that are not so common. Hickory, oak and sugar maple are great choices, and some may have ironwood or locust or even an old apple tree as excellent choices. It is not only the conifers that do not compare for fuel, as woods like cottonwood, basswood and willow are really lacking in BTU output. And there are all the in between species that are commonly used, some better than others.

Species	Dry is less than 20% MC		Recoverable Heat	Heat Value Green
	Density Dry (lb./ft ³)	Weight Dry (lb./cord)	Value dry cord (Millions BTU/cord)	(Millions BTU/cord)
Apple	48.7	4100	26.5	18.6
Aspen	27	2290	14.7	10.3
Balsam Fir	26.3	2240	14.3	10
Basswood	24.8	2110	13.5	9.5
Beech	44.2	3760	24	16.8
Black Ash	35.2	2990	19.1	13.4
Black Spruce	29.2	2480	15.9	11.1
Boxelder	32.9	2800	17.9	12.5
Butternut			15.4	
Cherry	36.7	3120	20	14
Cottonwood	24.8	2110	13.5	9.5
Elm	35.9	3050	19.5	13.7
Hemlock	29.2	2480	15.9	11.1
Hickory	50.9	4330	27.7	19.4
Ironwood			26	
Jack Pine	31.4	2670	17.1	12
Locust			27.3	
Paper Birch	37.4	3180	20.3	14.2
Red Maple	34.4	2920	18.7	13.1
Red Oak	44.2	3760	24	16.8
Red Pine	31.4	2670	17.1	12
Sugar Maple	44.3	3790	24.3	16.8
Tamarack	38.2	3250	20.8	14.6
White Ash	43.4	3690	23.6	16.5
White Oak	47.2	4010	25.7	18
White Pine	26.3	2240	14.3	10
White Spruce			16	
Willow			13.2	
Yellow Birch	43.4	3690	23.6	16.5

A sign with a white border and a yellow diamond in the center. The text inside the diamond reads "Have you paid your PIF dues?". The sign is pinned to a light green wall.

FUTURE ARTICLES

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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