

The WOODland Steward

Promoting the Wise Use of Indiana's Forest Resources

2013 Indiana Consulting Foresters Stumpage Timber Price Report

This stumpage report is provided annually and should be used in association with the Indiana Forest Products Price Report and Trend Analysis published in the Fall issue of the Woodland Steward Newsletter.

Stumpage prices were obtained via a survey to all known professional consulting foresters operating in Indiana. Reported prices are for sealed bid timber sales only (not negotiated sales) between a motivated timber seller and a licensed Indiana timber buyer. The data represents approximately 10 to 15 percent of the total volume of stumpage purchased during the periods from April 16, 2012 through April 15, 2013. This report has been published annually since 2001.

The results of this stumpage price survey are not meant as a guarantee that amounts offered for your timber will reflect the range in prices reported in this survey. The results simply provide an additional source of information to gauge market conditions.

WHAT ARE SEALED BID TIMBER SALES: The sealed bid timber sale process is for trees marked by a professional forester. The species, number of trees and volume in a sealed bid sale are determined prior to the notice of sale. A notice is sent to licensed timber buyers who then inspect the timber and offer a price for said trees at a predetermined time and place. Under conditions determined in the bid notice, the owner then accepts or rejects the bids.

Upon acceptance of the bids by the owner and the fee paid, the owner then conveys the right to cut the advertised trees to the purchaser. This is frequently referred to as a lump sum timber sale. More detailed information on this process is available in Purdue FNR publication 111 – “Marketing Timber” or FNR – 138 “How to get the Most from Your Timber Sale”. These publications and others are available on line at: <http://www.agcom.purdue.edu/agcom/Pubs/fnr.htm>

This report reflects “spot market” prices, not the average price paid by timber buyers. The bidding process used by consultants “spots” the maximum amount any buyer is willing to pay for a particular lot of timber at a particular time and place, not the average price paid for timber. High bids frequently reflect an urgent need for timber because of special orders for lumber or veneer, low log inventories at the buyer’s mill, poor logging conditions due to wet weather, or other special conditions. Consulting foresters also may advise the landowner

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Rod Williams

The stream-bottom habitat of hellbenders can be degraded by sediment from eroded banks and fields and destroyed when streams are dammed or dredged. See page 10 for more.

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visit us online at
www.inwoodlands.org

Calendar of Events

September 4

8:30am – 2:30pm

Natural Resource Enterprises Workshop

Ripley County

Contact 765-362-1194 x3, www.ag.purdue.edu/fnr/Pages/nre.aspx

September 5

8:30am – 2:30pm

Natural Resource Enterprises Workshop

Montgomery County

Contact 812-689-4107, www.ag.purdue.edu/fnr/Pages/nre.aspx

September 7

9am – 3:00pm

Brown County Nature Daze

Landowner Field Day

CYO Camp Rancho Framasa

Lunch Included

Register Online at: <http://bcnwp.org/>

September 26 – November 14

Wildlife Management for the Private Landowner Workshop

Thursday nights, 6:00 – 9:00 pm

West Lafayette, IN, Tippecanoe County

County

Contact: Rob Chapman, rnchapma@purdue.edu or 765-494-3583.

October 5

Walnut Council fall field day

Linton, Greene County

Call 765-583-3501 for details.

October 30-31

Cutter I and Cutter II chainsaw training

Jackson Washington State Forest

Call 800-640-4452 for more information.

November 1-2

Woodland Owner Conference and IFWOA annual meeting

Clifty Falls State Park, Madison

Friday tour of Vallonia nursery and field tour

Saturday indoor session

See www.ifwoa.org or call 765-583-3501 for more details.

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The opinions expressed by the authors do not necessarily reflect those of the Woodland Steward Institute. The objectives of the newsletter are to provide general and technical natural resource information to woodland owners of Indiana, improve information distribution and build support for responsible forest resource management.

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Online?**

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Invasive Vines in Indiana—Be On the Lookout!

Grapevines are native to Indiana woodlands, yet they are often controlled on lands managed for timber production to prevent the vines from shading out the trees' leaves, damaging branches, or bringing down trees. Grapes have benefits, as well, providing food and nesting material for many species of native wildlife. There are a growing number of invasive, non-native vines in Indiana, however, which have similar impacts on tree growth and survival, without the benefits of providing high-quality food for wildlife. Learning how to identify these invasive plant species will help you to control them early before they become a problem on your land.

Japanese honeysuckle (*Lonicera japonica*) is one of the most widespread invasive vines in the state, occurring in all Indiana counties. Widely planted for its pretty and fragrant flowers, this ornamental species has become a problematic pest. Research has shown that native trees have decreased growth when they are infested with Japanese honeysuckle, and young trees can be killed by girdling when honeysuckle vines twist tightly around their stems and trunks. Japanese honeysuckle has a competitive advantage over native plant species, because it is browsed less by deer and resprouts vigorously when browsed. It also holds its leaves longer than native plants giving it a longer growing season. Japanese honeysuckle can be identified by its opposite, oval leaves, fragrant pairs of white or yellow flowers, and purple to black berries.

Kudzu (*Pueraria montana* var. *lobata*), known as “The Vine That Ate the South”, has moved northward from the southern U.S. in recent years, and is now present in most counties in southern Indiana, as well as a few in the northern part of the state. Kudzu grows extremely quickly (as much 1 foot per day) and vigorously, forming a blanket over both trees and the ground. Dense kudzu thickets are difficult to control, so early detection of this species is critical. Kudzu leaves are composed of three leaflets that may be entire or lobed, with hairy leaf margins. Its flowers are purple, fragrant, and hang down in clusters. Kudzu fruits are brown, hairy pods.

Oriental or Asian bittersweet (*Celastrus orbiculatus*) was introduced as an ornamental plant and is still widely used in decorative fall wreaths because of its abundant, bright-colored fruits. This species has been reported in 44 counties throughout the state. Asian bittersweet is tolerant of a wide range of habitats, infesting forests, woodlands, fields, hedgerows, and coastal areas. It can be identified by its alternate, glossy leaves, which are round in shape with an abruptly pointing tip and shallow teeth along the leaf margins. The fruits are distinctive round capsules that are green in summer, and yellow to orange in fall. When they are mature, the capsules split open, revealing a red-orange fruit inside. American bittersweet, a native vine, is very similar in appearance to the invasive bittersweet, but can be distinguished by having flower and fruit clusters at the end of the vine, rather than all along the stem as on the invasive bittersweet. American bittersweet leaves are often longer and less rounded, as well. Make sure you correctly identify which bittersweet you have before beginning any control efforts.



Kate Howe, MPN

Japanese honeysuckle (*Lonicera japonica*) is one of the most widespread invasive vines in the state, occurring in all Indiana counties.



David J. Moorhead, University of Georgia, Bugwood.org

Kudzu (*Pueraria montana* var. *lobata*), known as “The Vine That Ate the South”, has moved northward from the southern U.S. in recent years, and is now present in most counties in southern Indiana.



Debbie Maurer, Lake County Forest Preserve District (IL)

Oriental or Asian bittersweet (*Celastrus orbiculatus*) was introduced as an ornamental plant and is still widely used in decorative fall wreaths.

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to adjust the species and quality of a harvest at a specific time due to current demand.

Hardwood lumber is sold in a highly competitive commodity market. Competition comes from mills within the state, region, and hardwood lumber producers in the Lake States, Northeast, South and Southeastern production areas. This market competition means that the cost of stumpage in other producing regions determines in part the amount Indiana mill and loggers can pay for stumpage. If all timber were sold on a bid basis the spot market would no longer exist and the average of the highest bid price offered would be lower than now observed. This explanation isn't meant to deter you from seeking the best available price. It's meant to explain the apparent discrepancy between the two price reporting systems.

CATEGORIES OF TIMBER REPORTED: The prices reported are broken into three sale types – high quality, average quality, and low quality. A high quality sale is one where more than 50 percent of the volume is #2 grade or better red oak, white oak, sugar maple, black cherry, or black walnut. The low quality sale has more than 70 percent of the volume in #3 “pallet” grade or is cottonwood, beech, elm, sycamore, hackberry, pin oak, aspen, black gum, black locust, honey locust, catalpa, or sweet gum. The average sale is a sale that is not a low quality sale or a high quality sale as defined above.

In the 2008 report some minor adjustments were made in the categories from previous surveys. White ash was previously included as a component of the high quality timber sales and hickory was previously in the low quality group. No additional changes in the groups have been made since, so the 2013 data should compare well with data collected from 2008 thru 2012.

SALE ACTIVITY UP FOR LOWER AND MEDIUM QUALITY SALES: In 2013, 289 sales (plus 13 negotiated sales with 1,308,470 board feet selling for a combined \$303,300) were reported compared to 290 sales (plus 13 negotiated sale) in 2012. The number of sales appears to be similar, however 3 firms (representing 34 sales in 2012) did not provide data this year due to time constraints, one new firm reported data (2 sales). There were 271 sales in 2011, 206 sales in 2010, 247 sales in 2009, and 283 in 2008 (pre-recession).

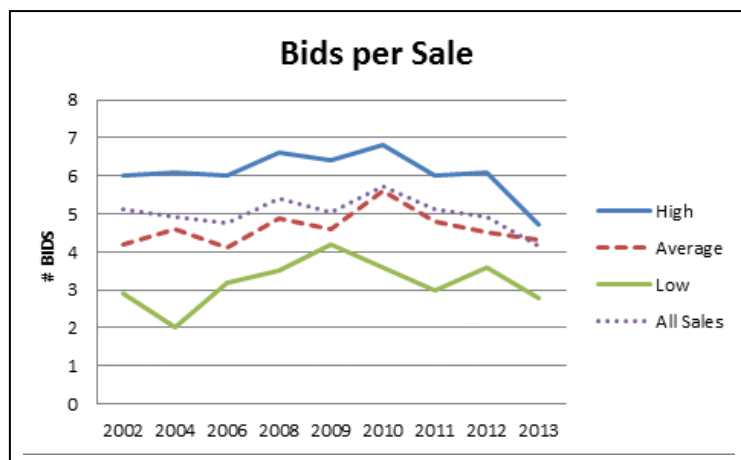


Figure 1 – Average number of bids per sale by sale quality and year.

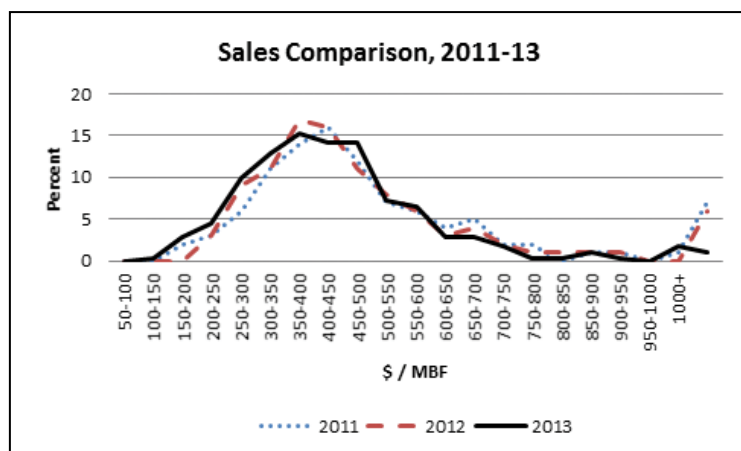


Figure 2 – Percentage of sales by price range (MBF), 2011-13. Note the low percentage of sales in 2013 for \$1000 MBF

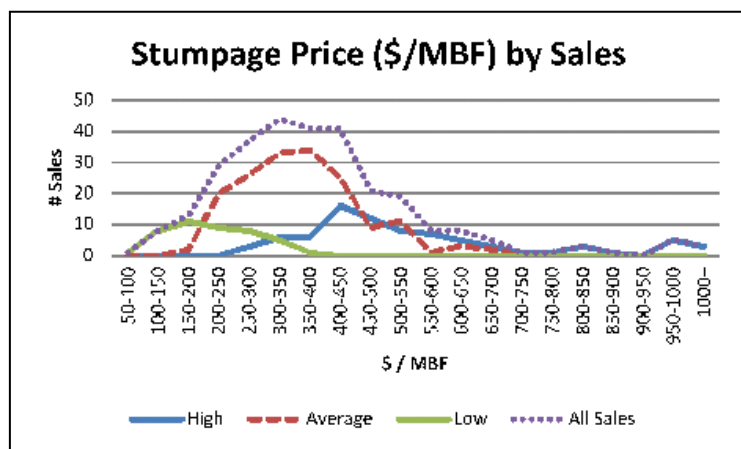


Figure 3 – Stumpage prices by number of sales for all sales and by sale quality and type, 2013.

Seventeen consulting firms (one firm split into two companies) reported data in 2013, compared to 18 firms in 2012, 17 firms in 2011, 21 firms in 2010, 16 firms in 2009 and 11 firms (representing 14 to 15 current firms) in 2008. Fourteen firms that reported in 2012 and 2011 showed a similar number of sales with an increase from 267 to 286 sales during the period. All consultants that reported had sales in this reporting period.

Sales by quality type for the 2013 period were 80 (101 in 2012) high quality sales, 166 (157 in 2012) medium quality, and 43 (32 in 2012) low quality sales.

BIDDING DECLINES: (Figure 1) In 2013, a total of 1,203 bids was received for an average of 4.16 bids per sale. The overall total is down from 2012 and 2011 when a total of 1,432 bids (2012) and 1,391 bids (2011) were submitted for the 290 and 271 bid sales or 4.94 bids per sale and 5.13 bids per sale, respectively. These totals are down from 2010 (5.7 bids per sale – the highest since the stumpage report began in 2000) and are significantly lower than averages from all sales since 2000 (5.14 bids per sale). The 2013 average of 4.16 of bids offered per sale includes 4.7 for high quality (6.1 in 2012 and 6.0 in 2011), 4.3 for medium quality (4.5 in 2012 and 4.8 in 2011), and 2.8 for low quality (3.6 in 2012 and 3.3 in 2011). The 11 year averages are 6.2, 4.7, and 3.2 bids per sale for the respective quality groups.

The number of bids for all sales is significantly lower during this reporting period. The reduction is likely due to an increase in the volume on the market, a higher number of lower and medium quality sales that typically draw less interest, and a decline in the number of sawmills and producers that did not survive the recession.

VOLUME OF LOW AND MEDIUM QUALITY SALES INCREASE: A total stumpage volume 28,650,085 board feet sold during this period is up from of 25,164,871 board feet sold last period and 24,367,251 board feet sold in 2011. All three years are up considerably from the 17,687,648 board reported during the 2010 reporting period and 19,256,439 board feet reported in 2009. The volume of timber reported is very similar to the volume of around 25 million board feet sold in 2008 and 2006 (pre-recession).

High quality sales totaled 8,725,647 board feet in 2013 is up slightly from 8,671,566 board feet reported in 2012 and 8,598,937 board feet reported in 2011 but

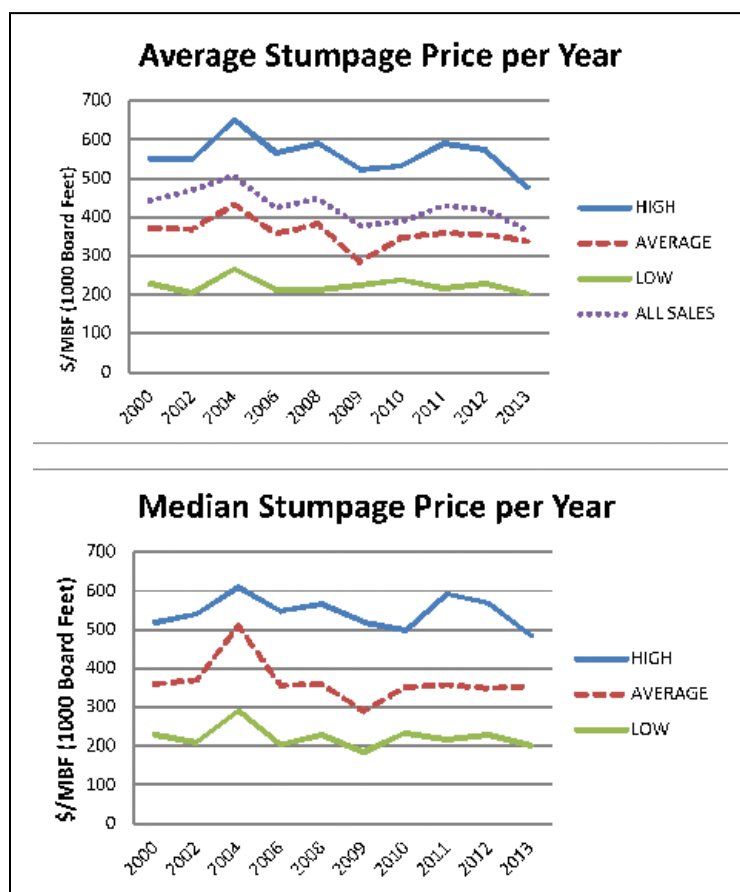


Figure 4 – Average (top) and mean (bottom) stumpage price by year.

still below the 10 million board feet levels of 2008 and 2006. This reduction is likely due to ash being shifted from the high value to medium value category in 2008. Medium quality sales totaled 16,811,195 board feet up from 14,428,279 board feet in 2012 and 14,077,574 reported in 2011 up from the 11 to 12 million board feet from 2010 thru 2006. Low quality sales increased to 3,113,243 board feet up considerably from 2,065,026 board feet in 2012 and 1,690,740 reported in 2011 but very similar to the 3 million board feet reported in 2009, 2008, and 2006.

VALUE: Total timber value sold in the 2013 reporting period was \$10,494,377 which is very similar to the 2012 period \$10,559,277 and the 2011 period \$10,678,849 and up from 2010 and 2009 (\$6,889,190 and \$7,278,302, respectively) and similar to the values reported in 2008 and 2006 (the volume of timber sold was also similar during these periods). Total value by type was \$4,171,085 for high quality down from \$4,968,313 in 2012 for high quality (\$5,257,530 in 2011), \$5,689,825 for medium

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quality up from \$5,118,780 in 2012 (\$5,052,387 in 2011), and \$633,467 for low quality up from \$472,184 in 2012 (\$368,932 in 2011).

STUMPAGE PRICE DROP CONFUSING – NOT REALLY INDICATIVE OF CURRENT MARKET:

The data collected this year seems to indicate a considerable drop in the stumpage prices for high quality, low quality and all sales categories. This contradicts most of the comments that were submitted that indicate an improvement in stumpage prices. A reduction in high quality sales is the likely cause for this difference (Figure 2). In 2013 there were only 3 timber sales that brought over \$1 per board foot compared to 16 sales in 2012 and 19 sales in 2011.

Prior to 2011, several consultants reported a reluctance to sell high quality timber. The large number of very high quality sales reported in 2011 and 2012 were likely due to a backlog of very high quality sales that developed when many consultants and landowners delayed sales during the recession. Strong demand for white oak and black walnut fueled much of this activity in the 2011 and 2012 periods. This year the number of very high quality sales returned to normal resulting in what appears to be a drop in stumpage price, especially for high quality sales.

Fall Logger Training Available

The Indiana Hardwood Lumbermen's Association will offer logger training the last week of October. The classes are open to everyone; you don't have to be a professional logger to attend. On October 30th, Cutter Level One will focus on introducing the participant to open face felling and the development of techniques to safely use it. Topics covered include personal protective equipment, chainsaw safety features, chainsaw reactive forces, bore cutting, pre-planning the fell, and understanding hinge wood strength.

On October 31st, Cutter Level 2 focuses on maximizing chainsaw performance through basic maintenance, carburetor setting, and filing techniques. Limbing and bucking techniques are introduced, spring pole cutting is covered and more felling is practiced.

All classes will take place at Jackson-Washington State Forest in Brownstown, Ind. Please contact Ashley at (800) 640-4452 or ashleyt@ihla.org

The other factor that influenced the price for all sales is an increase in the number of low quality sales from 25 in 2011 to 32 in 2012 to 43 in 2013 and a decline in the number of high quality sales from 101 sales in 2011 and 2012 to 80 in 2013. Although markets are promising and they should be monitored to determine when to sell timber, the most important factors on when to sell timber are the condition of the tree (is the tree increasing in value or declining – is its health and vigor going to improve, decline, or stay the same) and the impact of the tree on future woodland regeneration (maintaining high quality genetic stock).

STUMPAGE PRICES: Figure 3 shows the stumpage prices for all sales, high quality sales, average quality sales, and low quality sales held from April 16, 2012 thru April 15, 2013. The data shows a typical bell curve for low quality, average quality and all sales. High quality sales generally have a wide range of stumpage prices due to higher quality timber or potential veneer therefore the stumpage price fluctuates considerably. Any sale, regardless of quality, can be affected by a veneer component. It is important for landowners to realize their timber typically will fall within the range of stumpage prices, but probably will not fall into the outlying values. This makes it important to work with a professional when selling timber so that you know what you have. For example, a few walnut trees can greatly distort the value of a low quality improvement sale dominated by pallet material.

The weighted average stumpage price by sale type (obtained from this survey in 2000, 2002, 2004, 2006, 2008, 2009, 2010, 2011, 2012 and 2013) is reported in Figure 4. The weighted average of the stumpage price is the total value (\$) for each sales group (high, average, low) divided by the total volume by sales group. The median stumpage price by sale type per year is reported in Figure 4. The median price is the amount where half of the sales are higher and half are lower. The price reported is per 1000 board feet (MBF) of standing timber. To obtain a price per board foot, divide the price by 1000. An average price of \$366 per thousand (MBF) is the same as 36.6 cents per board foot stumpage. The average stumpage price for all sales was \$366/MBF. Below is a statistical summary for all three sale types.

High Quality Sales: The average stumpage price of high quality sales was \$478 per 1000 board feet (MBF), down considerably from \$573/MBF (2012) and \$589/MBF (2011). The median stumpage price this year of \$485/MBF was also down considerably from \$568/MBF (2012) and \$592/MBF (2011) (See Figure 4).

Table 1. Statistical Summary for High, Average, and Low Quality Sealed Bid Timber Sales

Timber Sales, April 16, 2012 thru April 15, 2013												
	High (80 sales)				Average (166 sales)				Low (43 sales)			
	Bd. Ft.	Price	Bids	\$MBF	Bd. Ft.	Price	Bids	\$MBF	Bd. Ft.	Price	Bids	\$MBF
Total	8,725,647	\$4,171,085	374	\$478	16,811,195	\$5,689,825	709	\$338	3,113,243	\$633,467	120	\$203
Low	10,270	\$6,661	1	\$292	10,090	\$2,600	1	\$190	14,444	\$1,550	1	\$96
High	814,519	\$333,606	10	\$2170	676,212	\$270,500	12	\$675	249,866	\$50,132	8	\$372
Mean	109,071	\$52,138	4.7	\$478	101,272	\$34,276	4.3	\$338	72,401	\$14,732	2.7	\$203
Median	61,103	\$31,439	4.5	\$485	61,154	\$22,269	4	\$354	55,381	\$10,000	2	\$202

Average Quality Sales: The average stumpage price for average quality sales was \$338/MBF which is slightly lower than \$355/MBF in 2012 and \$359/MBF in 2011 and \$347/MBF in 2010, and up \$320/MBF in 2009 (median price was \$354/MBF which is similar to \$349/MBF for 2012 and \$358/MBF for 2011 and \$352/MBF in 2010 and up from \$314/MBF in 2009). The median price for average quality was similar to the median stumpage price in 2008 (\$359/MBF) and 2006 (\$357/MBF) (See Figures 4).

Low Quality Sales: The average stumpage price for the low quality sales was \$203/MBF down from \$229/MBF in 2012 and \$218/MBF in 2011 with a median price of \$202/MBF down from \$229 in 2012 and \$217/MBF in 2011. Some of the decline in the price offered for the low quality sales is likely due to the fluctuation in the operating costs associated with the cost of fuel. The profit margins are tighter with lower valued timber; therefore, they are impacted more by operating costs (See Figure 4).

SUMMARY: The last few years have been very interesting and confusing. Fortunately things are looking up. Prices, for the most part, have returned to levels prior to the recession (although not quite to the housing boom levels) so more timber is going on the market. The larger trees and better quality timber as usual have the most demand. Demand for some species, such as black walnut and white oak, is strong. Red oak and sugar maple are in more demand and the prices have improved. Good “white” soft maple is doing well. Ash and tulip appear to be down, especially in areas with heavy mortality due to emerald ash borers, drought and scale. Black cherry markets are still down from historical highs a few years ago but they are beginning to improve.

It is still likely that the prices paid for some species may not return to the high levels seen during the “high

demand years” associated with the housing boom over the last decade or so. Fortunately, much of the timber from Indiana is high quality and in demand throughout the world and Indiana’s forest industry has positioned itself well to compete in the global marketplace.

Demand for low quality timber, especially if near low grade mills is strong, although higher operating costs associated with fuel prices are having an impact on the prices paid. It is important to remember that low quality sales are generally improvement cuts where trees are harvested that are impeding the growth of future higher value crop trees. Therefore, the opportunity costs of leaving the trees may cost more in lost productivity for high value crop trees, so it is generally not advantageous to delay selling lower quality if the price is reasonable.

The industry still seems to be carrying a smaller inventory and cutting sales quicker than in the past, creating more of a spot market for timber sold. There still is some reluctance from some consultants to market some species, especially black cherry.

The comment section below is offered to our readers by the consulting foresters who participated in this survey:

- Ash market in areas with heavy ash mortality (EAB) has been eaten up by the borer.
- Ash is moving well for larger, better quality trees that are still alive.
- Ash is getting to be more difficult to sell, especially in heavily infested areas. Mostly salvage harvests yielding pallet lumber.
- Tulip (poplar) problems resulting from the drought and scale infestation in southern Indiana are generating several calls from landowners now that they are more visible since they are foliated.

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- Many poplar trees are cutting poorly as a result of the drought and scale. Mills have been suggesting cutting them harder.
- Tulip poplars on the upper ridges are cutting worse than those on low slopes, especially north aspects.
- For upland mixed oak / tulip prices were up this winter but have moved back down this spring to just above last spring's levels.
- Red oak demand is improving, especially for larger quality timber.
- Mills are more eager to have red oak logs delivered.
- White oak demand is strong, especially for larger quarter sawn logs.
- Sugar / hard maple is looking good. Up a lot from last few years.
- Soft maple, if white, is moving very well.
- Black cherry markets still soft, but beginning to improve.

- Black walnut markets good. Anticipate increase towards the fall.

Consulting Foresters that have contributed to this report in alphabetical order include: Arbor Terra Consulting (Mike Warner), Crowe Forest Management LLC (Tom Crowe), Christopher Egolf, Gandy Timber Management (Brian Gandy), Gregg Forestry Services (Mike Gregg), Habitat Solutions LLC (Dan McGuckin), Haney Forestry, LLC (Stuart Haney), Multi-Resource Management, Inc. (Thom Kinney), Meisberger Woodland Management (Dan Meisberger), Chris Neggess, North Slope Forestry (Don Duncan), Quality Forest Management, Inc (Justin Herbaugh), Schuerman Forestry (Joe Schuerman), Stambaugh Forestry (John Stambaugh), Steinkraus Forest Management, LLC (Jeff Steinkraus), Turner Forestry, Inc. (Stewart Turner), and Wakeland Forestry Consultants, Inc. (Bruce Wakeland).

Invasive Vines in Indiana (cont'd from page 3)

Two newer invaders in our region are the annual vines, Japanese hop (*Humulus japonicus*) and mile-a-minute (*Polygonum perfoliatum*). Japanese hop primarily invades riparian areas, forming deep, dense mats over the ground, shrubs, and small trees. It has been reported in 15 Indiana counties and can be identified by its rough-textured, palmate leaves with five to seven lobes, and rough-textured stems with downward pointing prickles that irritate the skin. Mile-a-minute, as its name suggests, grows rapidly and kills plants by blocking light from reaching plants beneath it. Mile-a-minute leaves have a distinctive triangular shape. The plant can also be identified by cup-shaped leafy structures surrounding the stem at its nodes and barbs on the stem. Mile-a-minute is present in eastern Ohio but has not yet been reported in Indiana.

If you see these new species in Indiana, you can report them through the Great Lakes Early Detection Network website (www.gledn.org). Reporting an invasive plant just takes a few minutes but will help your neighbors by letting them know what's nearby. For more information on invasive plants, visit the Midwest Invasive Plant Network (MIPN) at www.mipn.org. Control information for the most common invasive plants in our region can be found in the MIPN Control Database at <http://mipncontroldatabase.wisc.edu>.

Kate Howe is the Midwest Invasive Plant Network Coordinator at Purdue University.



Japanese hop (*Humulus japonicus*) primarily invades riparian areas, forming deep, dense mats.

Chris Evans, Illinois Wildlife Action Plan, Bugwood.org



Mile-a-minute (*Polygonum perfoliatum*), as its name suggests, grows rapidly and kills plants by blocking light.

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Bobcats in Indiana

By Shawn Rossler

Bobcats, our only resident native wild cat, are a species of great curiosity. Generally a solitary animal, the secretive nature of bobcats often leaves Hoosiers wanting to know more about these unique mammals.

A few key characteristics set these wild cats apart from other felids, one of which is their distinctive tail. Only 5 to 7 inches and having a black tip, the tail of a bobcat is their most well known trait.

Relatively consistent features in the species coloration also distinguish them from other cats. Bobcats are generally a brownish tan color, with black spotting. Black spots can vary from distinct to a dull color, but are usually visible on the white under belly. Additionally, a series of black bars can usually be seen on the inside of their front legs. Bobcats also have a well defined white band on the backside of each ear. Collectively, all of these features can be used to correctly identify a bobcat.

As a general rule, bobcats will weigh between 15 and 35 pounds, stand approximately 2 feet tall, with an overall body length of 3 feet. The physical build and size of a bobcat cannot accurately determine their gender, but female and juvenile animals are typically smaller than mature males. The size of each individual will vary.

Equipped with large eyes, bobcats are mostly nocturnal, but they can be active and hunt during the day. According to Scott Johnson, a nongame mammal biologist with the Indiana Department of Natural Resources (IDNR), “an analysis of over 100 bobcat stomachs has shown their diet is primarily composed of mammals including rabbit, mice, voles, and squirrel. We did find the remains of several bird species, but only in a small percentage of the bobcat stomachs examined.” Johnson also noted that bobcats, like many predators, are opportunistic and will scavenge deer carcasses during fall-winter months.

What’s their status?

Indiana has historically been home to bobcats, but unregulated take and habitat loss caused their numbers to drop by the mid-1900s. These low population levels landed them on the state’s endangered species list in 1969, where they remained until 2005.

Bobcats are still a protected species in the state, meaning they cannot be hunted or trapped. Their current status as well as increases in the amount of habitat



Bobcats have short, black-tipped tails and large white spots behind each ear. The tracks of bobcats are also larger in size than house cats.

available has allowed them to further increase their range in the state. Between 1970 and 2012, the IDNR confirmed bobcat reports in 52 Indiana counties.

A study conducted by the IDNR in south central Indiana revealed that bobcats are capable of dispersing distances upwards of 50-100 miles. This ability to cover long distances allows them to recolonize available habitat. It also puts them in close proximity to roadways. Vehicle collisions are now a common cause of bobcat mortalities.

Recent trends in reported bobcat road-kills and other related mortalities suggest the bobcat population is continuing to expand. In the early 2000s (2001-2005), the IDNR received roughly 15-20 reports of bobcat mortalities each year. In 2010, 2011, and 2012 more than 70 bobcat mortalities were reported annually. A majority of these mortalities were in the southern third of the state where the hills, mixed woodlots, and reclaimed mines provide great habitat.

What should You know as a landowner?

Although bobcat reports are more common in the southern portion of the state, confirmed reports have been received from west central and northern regions. The current distribution of bobcats, coupled with forests patches and river systems corridors, provide good opportunities for bobcats to disperse into other areas of the state.

Many Hoosiers have the potential to see a bobcat, but their secretive nature still makes catching a glimpse of these animals an infrequent event. As with all wildlife,

Bobcats in Indiana (cont'd from page 9)

if you happen to see a bobcat it should be respected, but landowners shouldn't be afraid as the natural response of a bobcat is to flee from humans.

Recovering bobcat populations across the state is a good thing, but it can generate questions about livestock predation, safety of pets, and impacts on game birds. Conflicts between bobcat and livestock are currently a rare event, and recent results from stomach content analysis indicate bobcat diet in Indiana focuses primarily on smaller mammals, rather than bird species. To date, the IDNR has received no verified accounts of bobcats injuring a pet.

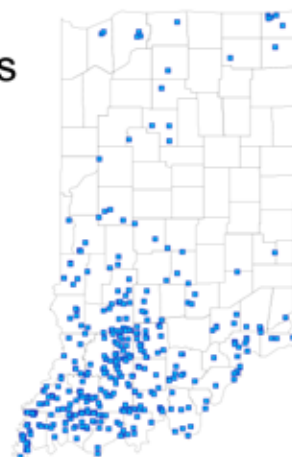
The recovery of the bobcat is a great conservation success story for the Hoosier state.

The IDNR continues to collect information on bobcats and asks for your help in documenting mortalities and sighting. Any confirmed bobcat sighting including trail cameras, observed road-kills,

Bobcat Mortalities in Indiana

1970 - 2012

374 records
in
52 counties



or a report of an animal that has been incidentally trapped is very useful to the IDNR. These observations can be reported by contacting the IDNR at (317) 232-4200 or on dfw@dnr.in.gov.

Shawn Rossler is the furbearer biologist for the Indiana Department of Natural Resources, Division of Fish and Wildlife.

Help the Hellbender

By Nate Mullendore

Most forest owners know that stewardship and active management helps improve habitat for a variety of wildlife, ranging from bobcats to songbirds. Some southern Indiana timber managers can add a toothy, two-foot long salamander—the eastern hellbender—to the list of animals that benefit from their efforts.

The hellbender is North America's largest salamander. They are fully aquatic animals that can live for more than 20 years in the wild. In Indiana, hellbenders were once found in several southern tributaries to the Ohio River, including the lower Wabash River near Vincennes and the Whitewater River in Brookville. Now they are a state-endangered species known to survive only in the Blue River in parts of Harrison, Crawford, and Washington counties.

Hellbenders are most commonly found in cool, fast-flowing streams with limited sedimentation and plenty of large rocks for cover and nesting. The number of sites offering these conditions decreased significantly as the Indiana landscape experienced drastic land conversion and farming intensification over the last two hundred years.



The Indiana Department of Natural Resources is working with Purdue University's Forestry and Natural Resource Department to better understand how to help this rare animal survive in Indiana. While it is unlikely that hellbenders will return to all parts of their historical range, forest managers throughout the state can utilize a variety of best management practices to protect habitat for all aquatic wildlife species that require good water quality. Erosion control measures in stands near rivers and creeks are especially important for sensitive wildlife like the hellbender.

You can learn more about the hellbender and related conservation efforts at <http://www.helpthehellbender.org>.

Nate Mullendore is a research associate and outreach coordinator for the Natural Resources Social Science Laboratory at the Department of Forestry and Natural Resources, Purdue University. The lab is directed by Linda Prokopy, Associate Professor of Natural Resources Planning.

Pathway to Water Quality

A vista of beauty and conservation education at the Indiana State Fairgrounds

By DeeDee Sigler

Stop, and enjoy the beautiful flowers and trees welcoming you to a cool quiet spot amidst thousands of people on a hot August day.

Did you realize there is a beautiful park-like exhibit at the Indiana State Fairgrounds nestled in the northeast corner that is a showcase for soil and water conservation? The almost one-acre vista known as the Pathway to Water Quality (PWQ) is a model watershed showing how land “sheds” water, or drains to a common place such as a river, lake or stream.

Celebrating 20 years of conservation education, the exhibit has provided a beautiful “path” displaying how soil and water plays such an important role in our everyday life. The Pathway to Water Quality exists to show the connection between healthy soils and clean water, why it is important, and what we can do at home and on the farm to protect our soil and water quality!

Located next to the Boy Scout’s log bridge, Pathway is a cool green oasis for fairgoers. The park-like setting is not only educational, it is usually keeps it about five to 10 degrees cooler than anywhere else on the grounds.

The PWQ exhibit contains practical displays and information for anyone who uses the land. The display is managed by organizations that comprise the eight-member Indiana Conservation Partnership <http://www.iaswcd.org/icp/index.html>.

Why is this connection between soil and water so important for people to understand?

- Last night you slept in a building built on soil.
- You drink water that flows through soil and is cleaned by the soil.
- You breathe air that comes from plants growing in the soil.



Visit the Pathways to Water Quality exhibit at the Indiana State Fairgrounds to learn what you can do to protect our soil and water.

- You even wear clothes made from plants that grow in the soil.

Soils make our lives possible. We also play on soil, drive on soil, eat food grown in or raised on soil, and take medicines from soil. The entire earth — every ecosystem, every living organism — is dependent upon soils.

Surrounded by trees and native plantings, Pathway’s two ponds, waterfall, and meandering creek provide the perfect setting for visitors to learn about soil and water

cont’d on page 12



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Pathway to Water Quality (cont'd from page 11)

conservation. Conservation partnership employees and volunteers are available along the way to answer questions about agriculture, forestry, water quality, and urban conservation.

Visitors enter Pathway on pervious concrete that shows how impurities can be filtered before going into our groundwater supply. Rain barrels, rain gardens, compost bins and native plants provide fairgoers with practical tips on water conservation they can easily implement at home.

Cover crop demonstration plots provide information to farmers and home gardeners alike on their benefits to the soil. A cover crop is any plant grown for the primary purpose of improving soils. Cover crops, also known as green manures, are an excellent tool for vegetable gardeners, especially where manures and compost are unavailable. They lessen soil erosion during the winter, add organic matter when turned under or used as mulch in the spring, improve soil quality, suppress weeds, and create and cycle soil borne nutrients.

Winding around Pathway, visitors will see what a two-stage ditch is and learn how it mimics a natural stream channel to create storage for water during heavy rains. Visitors also can study Indiana soils, see the working parts of a water well and a properly plugged well. A highlight of the exhibit is a cold cup of well water at the water history cabin.

On the way "back to the fair activities," visitors will view the "science" behind well managed pastures that lead to better soil structure, improved animal health, enhanced wildlife habitat, all while protecting our water quality.

Pathway's education area enables young people to engage in conservation games and activities centered on "Where does your water shed?"

We invite you to stop by during the fair to meet us and learn how you can help conserve Indiana's natural resources. For more information on Pathway to Water Quality, visit the exhibit's website at www.pathwaytowaterquality.org.

DeeDee Sigler is a Communications Manager with the Indiana Association of Soil and Water Conservation Districts. The IASWCD represents the interests of local Districts as one voice, and assists their leadership through coordination and education for the wise use and management of our natural resources.

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Rare Beauty – The Yellowwood Tree

By Lenny Farlee and Keith Woeste

The yellowwood tree, *Cladrastis kentukea*, is one of the rarest –and most spectacular–hardwood trees in the eastern United States. Although found as a native tree in 12 states and planted as an ornamental tree in several more, it is uncommon to rare across most of its range. In Indiana, Yellowwoods are found as native trees only in Brown County, where they have a state forest named after them. The yellowwood trees in Brown County State Park and Yellowwood State Forest represent the most northerly native populations of the species and the trees there are isolated from the next nearest populations in Kentucky by more than 100 miles. In Brown County, the trees are found almost exclusively in small groves on steep north or northeast facing slopes extending from the central portion of Brown County State Park to the Crooked Creek Lake area of Yellowwood State Forest. The Ogle Hollow Nature Preserve and trail in Brown County State Park is a good location to see native yellowwood, but be prepared to negotiate some steep slopes.

Yellowwood is named for the bright to muted yellow color of the tree's heartwood. The wood color may gradually turn to a medium brown with exposure to air and light. Because of the rarity of the tree, what little wood that is available originates from salvaged landscaping trees in Indiana. Past and present uses for the heavy, strong wood includes wood turnings, custom furniture, and, historically, gun stocks. Yellowwood branches often emerge at steep, upright angles, making them susceptible to breakage and wind damage.

The yellowwood tree is famed for its beautiful white flower clusters that appear in June and resemble white wisteria blooms. Trees in sun or partial shade can be nearly covered in these waterfalls of blossoms, but the flower show only appears at best every other year. The bark of yellowwood is smooth and gray on young and middle-aged trees, looking very similar to beech bark. Old trees can have rougher bark that may be darker in color. The leaves are compound with the base of the leaf completely covering the bud. Leaves may turn a bright yellow in the fall, adding to the attractiveness of the tree. Yellowwood is a member of the bean family, which includes trees like redbud and honey locust. This tree is moderately slow growing and of medium size compared to many other hardwoods, but can grow and survive on either alkaline or acidic soils.



Flower clusters on yellowwood

Ornamental use of this tree is recommended where a medium sized tree with good flowering and interesting bark are desired. It can tolerate shady spots or full sun, but will bloom best in sunny locations. Trees grown in open conditions will tend to branch very close to the ground, so some pruning to produce good branch structure and eliminate V-shaped main branch unions can increase useful lifespan. Trees growing in a forested area will tend to have longer trunks with less branching, but still have a tendency to have forks and crooks. Deer appear to enjoy browsing on yellowwood, so some protection may be needed if you plant the tree in areas with high deer populations.

Many yellowwood populations, including the native Indiana groves, tend to exist on what are effectively islands of appropriate habitat, isolated from other yellowwoods. The flowers are pollinated by insects, so spread of pollen is limited by the travel distance of the pollinators. Staff of the Indiana chapter of The Nature Conservancy approached the Hardwood Tree Improvement and Regeneration Center (HTIRC)

cont'd on page 14

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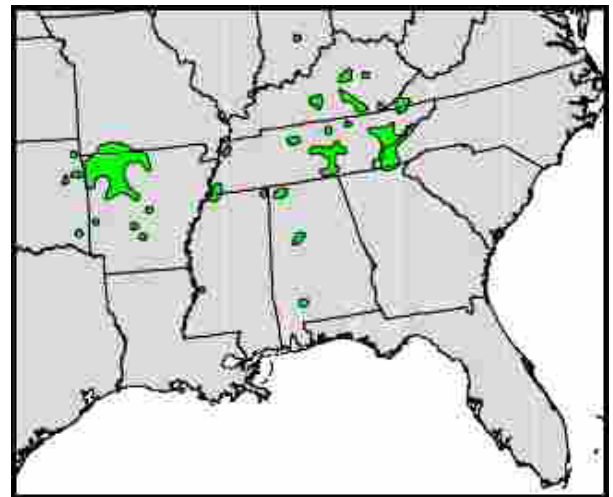
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Rare Beauty - Yellowwood tree (cont'd from page 13)

at Purdue University to investigate the genetic composition of the Indiana yellowwoods to see if the population had unique characteristics compared to other populations in the US. The HTIRC is a partnership between the US Forest Service Northern Research Station, the Department of Forestry and Natural Resources at Purdue University, and several other organizations and enterprises; HTIRC's mission is to explore the

genetics and management of fine hardwood trees. Researchers at the HTIRC collected leaf samples from yellowwood populations in Indiana, Missouri, Kentucky, and Arkansas for comparison. Each of the populations demonstrated significantly different genetic characteristics, indicating they have probably been isolated from each other for a long time and are evolving as independent communities. The Kentucky and Indiana populations had the least evidence of in-breeding and loss of genetic diversity. This suggests these populations have either been separate lineages for a very long time, or are isolated remnants of an earlier single population that have been evolving independently of each other due to the great distances between groves. Even the individual groves sampled in Indiana showed moderate genetic separation from one another, reflecting a lack of cross-pollination between groves that may be less than one mile apart. The future of yellowwood in Indiana is not currently in question, but will ultimately depend on its ability to produce new generations of trees on these islands of suitable habitat.



The Native range of yellowwood

Lenny Farlee is an Extension Forester with the Hardwood Tree Improvement and Regeneration Center located at Purdue University. Keith Woeste is Molecular Geneticist with the USDA Forest Service, Northern Research Station, Hardwood Tree Improvement and Regeneration Center, and adjunct assistant professor of forestry in the Department of Forestry and Natural Resources at Purdue University.

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Ask the Steward

By Dan Ernst



Question:

I heard black locust was once used to make nails for ship building. Is that true?

Answer:

Black locust is one of the hardest and densest woods grown in North America. It is tougher than nearly all Indiana woods- only osage orange is tougher. Because of its unique qualities black locust wood has been used to satisfy many special applications. Ship building is just one of those uses and is still a species of choice for many wood ship building applications. As for wooden nails: black locust is a favorite for wood pegs in post and beam barn building and restoration projects due to its toughness and low shrinkage. Locust tree nails for ship building are sometimes called 'trunnels' and have certain advantages over steel nails. For one, they do not corrode like steel nails exposed to salt water. Also, as water seeps into the end grain the trunnel expands forming an even tighter seal.

Additionally black locust is a favorite for fence posts due to its high resistance to decay. Fence posts of black locust may last 20, 30, 40 years or more. Locust is also a favorite for xylophone keys. It was used as mine props due to its great structural strength- some were even hauled to California during the gold rush.

Don't rush out to plant this species, however. In Indiana it is considered

somewhat invasive as it spreads by suckers and can form dense groves. It also has insect problems – most notably locust borer and the locust leaf miner, which sooner or later affects most all black locusts.

Question:

After the drought and heat wave of 2012 my woods has several trees that look sickly. Will they die?

Answer:

Last year was indeed a record year for heat and drought covering much of Indiana and the Midwest. Additionally, the outbreak of tulip tree scale made for a perfect storm of tree stress in south central Indiana. Among the most affected areas are Owen, Monroe, Putnam, Jackson, Bartholomew and Brown counties. It indeed was the harshest summer conditions in my career.

The result will be many thousand dead trees across Indiana. This includes yard and urban trees that were planted in tough conditions outside their normal environment and quickly succumbed to the bone dry conditions. Hemlock and Northern White Cedar were common early casualties due to their need and preference of moister soil conditions.

In the forest, tulip tree, dogwood and understory sugar maples were notably hard hit, but this is part of the natural selection process. The impacts of the drought on trees will be felt for 2-5 years. Many of the severely and visibly

affected trees will die within the first year - but certainly not all. I have seen tulip trees with 50% leaf drop survive just fine after subsequent years of normal precipitation.

Surviving year one is a good sign, but does not guarantee survival. Stressed trees can also be affected by secondary pests, such as two lined chestnut borer and Armillaria (shoestring) root rot. Trees can usually fight off one of these pests just fine, but in a weakened state secondary attacks can take their toll. In some case affected trees will appear healthy and recovering, only to die in year 2, 3 or 4, but with each passing year the chance of survival climbs significantly.

What can you do? As a forest owner walk your woods now while in full leaf out and monitor tree crown conditions. Watch for trees with greater than 50% unhealthy crown and epicormic sprouting. If only a few trees are affected, there is little for you to do. If large numbers of trees are looking bad, contact a forester for woods inspection as discuss the advisability of a selective harvest.

Dan Ernst is an Assistant State Forester with the Indiana Division of Forestry. He oversees the state forests in Indiana and has authored the "Ask the Steward" column for years. Have a question for the column? Email Dan at dernst@dnr.in.gov.



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Days Gone By



Sugar camp located in Kosciusko County
on March 31, 1947

Photo courtesy of Arthur Parish

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