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Fall 2015

The *WOOD*land Steward

Promoting the Wise Use of Indiana's Forest Resources

2015 Indiana Forest Products Price Report and Trend Analysis

By Jeff Settle, Chris Gonso and Mike Seidl

Survey Procedures and Response

Data is collected twice a year, but log prices change constantly. Standard appraisal techniques by those familiar with local market conditions should be used to obtain estimates of current market values for stands of timber or lots of logs. Because of the small number of mills reporting logging costs, "stumpage prices" estimated by deducting the average logging and hauling costs from delivered log prices must be interpreted with extreme caution.

Data for this survey was obtained by a direct mail survey to a variety of forest products industries including sawmills, veneer mills, concentration yards, and independent log buyers. Only firms operating in Indiana were included. The survey was conducted and analyzed by the Indiana Division of Forestry. The prices reported are for logs delivered to the log yards of the reporting mills or concentration yards. Thus, prices reported may include logs shipped in from other states (e.g. black cherry veneer logs from Pennsylvania and New York).

The survey was mailed to 62 firms. It is estimated these companies produce close to 85-90% of the state's roundwood production. Electronic reminders, follow-up phone calls and additional mailings got a few of those mills and operators back into the system.

Nineteen firms reported some useful data. Eight mills reported producing 1 million board feet (MMBF) or more. Four mills reported production of 5 MMBF or greater. Total production reported for 2014 was 64 MMBF compared to 147 MMBF for 2013, and 151 MMBF for 2012. The largest single mill production reported was 19 MMBF. These annual levels are not comparable since they do not represent a statistical estimate of total production.

The price statistics by species and grade don't include data from small custom mills, because most do not purchase logs, or they pay a fixed price for all species and grades of pallet-grade logs. They are, however, the primary source of data on the cost of custom sawing and pallet logs. The custom sawing costs reported in Table 4 do not reflect the operating cost of large mills.

This report can be used as an indication of price trends for logs of defined species and qualities. It should not be used for the appraisal of logs or standing timber (stumpage). Stumpage price averages are reported by the Indiana Association of Consulting Foresters in the Indiana Woodland Steward, http://www.inwoodlands.org/.

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Bees, not the only pollinators see the articles on pages 10 and 12.

In This Issue

This publication is funded in part by the Renewable Resources Extension Act (RREA)

visit us online at

www.inwoodlands.org

Calendar of Events

February 2
Present & Potential Problems: Things to watch for in your woods
6 PM
Southeast Purdue Ag Center, Butlerville
Contact casie.auxier@hhhills.org

February 2-4
Indiana Hardwood Lumbermen's Association annual convention
Indianapolis Marriott Downtown
See www.ihla.org for details

February 18
Tree Planting Workshop
1- 4 PM EST
Fulton County Fairgrounds, Rochester
Contact 219-843-4827 for details

February 25
Tree ID Workshop
6-8 PM
Spring Mill State Park
Lawrence County
$10 cost
Register at 812-276-4757

February 27
Tree ID Workshop
9 AM- 12 PM
Spring Mill State Park
Lawrence County
$10 cost
Register at 812-276-4757

March 3
Woodland and Wildlife management workshop
Indiana Small Farms Conference
Danville, Hendricks County
See https://ag.purdue.edu/extension/smallfarms/Pages/default.aspx for details

March 3 - April 21
Forest Management for the Private Woodland Owner
6 – 9 PM weekly
Parke County Fairgrounds, Rockville
Contact 765-494-2153 for details.

March 8
SICIM annual meeting
Spring Mill state park

March 8
Southern Indiana Conservation Happenings
9:00 am - 3:00 pm
Muscatatuck National Wildlife Refuge,
Contact 812-522-4352 or susan_knowles@fws.gov

March 9
Timber Industry meeting
6 PM
Southeast Purdue Ag Center, Butlerville
Contact casie.auxier@hhhills.org

March 18-19
Indiana Tree Farm Landowners Field Tour and Clinic
Clifty Falls State Park, Madison
Contact 317-409-8519 or kingwalnut@sbcglobal.net for details

March 31- May 19
Wildlife Management for the Private Landowner
6 – 9 PM EDT weekly
Clinton Public Library, Vermillion County
Contact rnchapman@purdue.edu or 812-662-4999

April 2
Ohio River Valley Woodland and Wildlife Workshop
Clifty Falls State Park, Madison
Contact 765-583-3501 for details.

April 5
Exotic Feline Rescue Center presentation
6 PM
The Pines- Seymour
Contact casie.auxier@hhhills.org

April 9
Walnut Council spring field day
Darlington, Montgomery County
Call 765-583-3501 for details.

April 30
Wildflower hike
Feldun Purdue Ag Center near Bedford
10 AM or 1 PM
Limited space, $12 fee includes lunch
Contact 812-723-3311, ext 3 or Michael.Wilhite@in.nacdnet.net

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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.

Member Organizations
Indiana Woodland Steward Institute

Table 1. Prices paid for delivered sawlogs by Indiana sawmills, March and October 2015.

Species/Grade	15-Oct Range ($/MBF)	No. Responses 15-Mar	No. Responses 15-Oct	Mean ($/MBF) 15-Mar	Mean ($/MBF) 15-Oct	Median ($/MBF) 15-Mar	Median ($/MBF) 15-Oct	Change (%) Mean	Change (%) Median
WHITE ASH									
Prime	400 - 700	7	4	579	588	600	625	1.6	4.2
No. 1	300 - 700	9	8	456	481	450	475	5.5	5.6
No. 2	250 - 600	9	7	350	375	350	350	7.1	0
No. 3	150 - 550	9	6	271	300	300	300	10.7	0
BEECH									
Prime	300 - 350	6	4	298	325	300	325	9.1	8.3
No. 1	160 - 300	5	5	274	262	280	300	-4.4	7.1
No. 2	150 - 300	6	5	262	232	290	250	-11.5	-13.8
No. 3	150 - 300	5	6	244	235	250	250	-3.7	0
CHERRY									
Prime	600 - 800	7	4	771	770	800	700	-9.2	-12.5
No. 1	400 - 750	9	8	600	556	650	550	-7.3	-15.4
No. 2	350 - 500	9	7	444	418	450	400	-5.9	-11.1
No. 3	250 - 450	9	6	287	308	300	300	7.3	0
HICKORY									
Prime	450 - 600	7	4	543	538	600	550	-0.9	-8.3
No. 1	350 - 550	9	8	444	419	450	400	-5.6	-11.1
No. 2	250 - 500	9	7	342	354	350	350	3.5	0
No. 3	150 - 450	9	6	276	292	300	300	5.8	0
HARD MAPLE									
Prime	500 - 800	7	4	700	700	700	750	0	7.1
No. 1	400 - 750	9	8	594	563	600	575	-5.2	-4.2
No. 2	300 - 650	9	7	444	425	450	400	-4.3	-11.1
No. 3	200 - 550	9	6	295	352	300	300	10.2	0
SOFT MAPLE									
Prime	400 - 600	7	4	407	488	400	475	19.9	18.8
No. 1	300 - 450	9	8	361	369	350	350	2.2	0
No. 2	200 - 400	9	7	298	307	300	300	3.0	0
No. 3	150 - 300	9	6	263	258	280	275	-1.9	-1.8
WHITE OAK									
Prime	600 - 1100	7	4	850	825	800	800	-2.9	0
No. 1	500 - 900	7	8	657	663	600	625	0.9	4.2
No. 2	350 - 750	7	7	450	482	400	450	7.1	12.5
No. 3	250 - 650	7	7	319	350	300	300	9.7	0
RED OAK									
Prime	550 - 700	7	4	693	613	700	600	-11.5	-14.3
No. 1	400 - 550	9	8	572	478	600	500	-16.4	-16.7
No. 2	300 - 450	9	7	450	379	450	375	-15.8	-16.7
No. 3	200 - 400	9	6	296	308	300	300	4.1	0
TULIP POPLAR									
Prime	450 - 600	7	4	511	525	500	525	2.7	5
No. 1	250 - 550	9	8	378	413	400	400	9.3	0
No. 2	200 - 500	9	7	300	343	300	350	14.3	16.7
No. 3	150 - 450	9	6	249	292	250	300	17.3	20
BLACK WALNUT									
Prime	1000 - 3000	7	4	1593	1719	1800	1437.5	7.9	-20.1
No. 1	800 - 2500	9	8	1322	1319	1400	1150	-0.2	-17.9
No. 2	500 - 2000	9	8	972	963	1000	775	-0.9	-22.5
No. 3	350 - 1100	9	7	629	579	800	400	-7.9	-50
SOFTWOOD									
Pine	150 - 300	6	4	240	220	235	250	-8.3	6.4
Red cedar	150 - 500	3	3	517	317	400	400	-38.7	0

Price Report *(cont'd from page 1)*

Delivered Sawlog Prices

The number of mills reporting delivered sawlog prices decreased only slightly from the earlier survey conducted in the spring of 2015 (Table 1). Sawlog prices for the premium species (specifically black walnut and white oak) were up slightly from the spring report. Almost without exception sawlog prices for the premium species, such as black walnut and white oak have increased. Overall prices were up for most of the other species.

Premium Species

Three of the four grades of white oak sawlogs increased in price with the exception being the prime grade. With the markets being so strong for veneer, stave, and rift/quartered logs, finding larger, quality logs has become quite a challenge. Prices being paid for red oak were down significantly from the spring report.

Demand for black walnut has slowed in recent months so availability is not the issue it was several months ago. Prime black walnut logs increased 8% while the remaining three log grades saw lower average prices.

Black cherry sawlog prices decreased around 4% across three of the four grades, the exception being No. 3 sawlogs which was 7% higher. Consumer demand for the darker finished wood has waned the past year and this is most likely the cause for lower log pricing.

Hard maple sawlog prices were generally down with the exception of the No. 3 grade sawlog. The summer and early fall months usually see less hard maple production due to the fear of stain and this may have played a large part in the price drops. Soft maple markets have been pretty steady due to strong lumber demand. Consumers are buying more painted wood materials which play very well into soft maple's

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Price Report *(cont'd from page 3)*

hands. Prime soft maple logs averaged almost 20% higher while the average price across the three remaining grades was basically unchanged.

Other Hardwood Species

More and more ash timber is being harvested in an effort to stay ahead of the Emerald Ash Borer. Production is high right now. That being said, ash sawlog prices still rose slightly (6%) compared to the spring report. The lower grade sawlogs saw significant price increases.

Tulip poplar increased across all grades except the prime grade. Normally when poplar markets are good, overproduction eventually slows the market. Poplar markets however have been one of the steadiest performers among hardwoods. Tulip poplar prices across all log grades averaged 11% higher from the spring 2015 report.

Softwood Logs

The price of pine sawlogs decreased slightly to $220/MBF. However, red cedar decreased 38% to $317/MBF. Four producers reported pine sawlog prices and three producers reported red cedar prices.

Veneer Log Prices

The number of mills reporting veneer log prices increased slightly from the spring 2015 report (Table 2). Prices were reported by both veneer mills and sawmills. Sawmills resell their veneer quality logs to veneer mills, exporters, overseas importers and manufactures. On occasion sawmills may produce specialty cuts like quarter sawn with the marginal veneer logs. The variation in veneer log pricing is due to mix veneer mills, sawmills and loggers reporting their values. This difference in values could be reduced if prices were only from veneer manufactures.

As reported in the spring, veneer demand remains slow with most

Table 2. Prices paid for delivered veneer logs by Indiana mills, March and October 2015.

Speices / Grade / Log Diam.	Range ($/MBF)	No. Responses 15-Mar	No. Responses 15-Oct	Mean ($/MBF) 15-Mar	Mean ($/MBF) 15-Oct	Median ($/MBF) 15-Mar	Median ($/MBF) 15-Oct	Change (%) Mean	Change (%) Median
BLACK WALNUT									
Prime									
12–13	800-4500	4	7	3375	2971	3250	3000	-12	-7.7
14–15	1000-5500	4	8	4250	4219	4000	4500	-0.7	12.5
16–17	3000-7500	4	8	4875	5563	4750	5750	14.1	21.1
18–20	4000-8000	4	7	5250	6750	5500	7500	28.6	36.4
21–23	6000-10000	3	7	6667	8571	6000	9500	28.6	58.3
24–28	6500-12500	3	7	8000	10071	8000	11000	25.9	37.5
>28	6500-14000	2	4	10000	9875	10000	9500	-1.3	-5
Select									
12–13	600-3750	4	4	2375	2025	2500	1875	-14.7	-25
14–15	800-4500	4	4	2700	2825	3000	3000	4.6	0
16–17	1500-6500	4	4	3625	3875	4000	3750	6.9	-6.3
18–20	3000-6500	4	4	4250	4750	4500	4750	11.8	5.6
21–23	3500-7500	3	4	3833	5500	3000	5500	43.5	83.3
24–28	3500-8500	4	4	5500	6250	6000	6500	13.6	8.3
>28	3500-8000	3	3	6000	5883	6000	6000	-2	0
WHITE OAK									
Prime									
13–14	600-2400	4	8	1525	1800	1550	1925	18	24.2
15–17	800-2600	4	9	2200	2056	2000	2300	-6.5	15
18–20	2000-3200	4	7	2650	2614	2550	2700	-1.4	5.9
21–23	2000-4000	3	7	3167	3050	3000	3150	-3.7	5
24–28	200-4500	3	7	3767	3279	3800	4000	-13	5.3
>28	3000-5000	2	5	4000	3960	3500	3800	8.6	
Select									
13–14	350-2200	4	6	0	0	1050	1500		
15–17	600-2400	4	6	1600	1675	1550	1775	4.7	14.5
18–20	1000-2800	4	4	2175	1988	2200	2075	-8.6	-5.7
21–23	1000-3000	3	4	2167	2138	2200	2275	-1.3	3.4
24–28	1000-3250	3	3	2767	2000	3000	1750	-27.7	-41.7
>28	1000-4000	2	2	2650	2500	2650	2500	-5.7	-5.7
BLACK CHERRY									
Prime									
12–13	600-3000	2	4	800	1900	800	2000	137.5	150
14–15	600-4000	2	4	900	2150	2000	2000	138.9	0
16–17	1000-4000	3	6	1367	2417	1750	2250	76.8	28.6
18–20	1200-4250	3	6	2033	2492	2250	2250	22.6	0
21–23	2000-4500	3	5	2667	2600	4000	2000	-2.5	-50
24–28	2000-5000	3	4	3000	3000	3500	2500	0	-28.6
>28	2000-5000	2	4	4000	3000	N/A	2500	-25	0
Select									
12–13	2000	2	1	900	2000	900	2000	122.2	122.2
14–15	3000	2	1	900	3000	900	3000	233.3	233.3
16–17	3000	3	1	1300	3000	1300	3000	130.8	130.8
18–20	3500	3	1	1500	3500	1500	3500	133.3	133.3
21–23	3500	3	1	1500	3500	1500	3500	133.3	133.3
24–28	3500	3	1	1500	3500	1500	3500	133.3	133.3
>28	3500	2	1	3150	3500	3150	3500	11.1	11.1
RED OAK									
Prime									
16–17	1500 - 2500	3	6	1333	1075	1500	1100	-19.4	-26.7
18–20	1500 - 2500	3	7	1567	1150	1800	1200	-26.6	-33.3
21–23	1500 - 2500	2	7	1450	1179	1450	1200	-18.7	-17.2
24–28	1500 - 3000	2	7	1450	1186	1450	1200	-18.2	-17.2
>28	1500 - 4000	2	5	1450	1240	1450	1400	-14.5	-3.4
Select									
16–17	1100	3	1	1067	1100	1200	1100	3.1	-8.3
18–20	1100	3	1	1333	1100	1700	1100	-17.5	-35.3
21–23	1100	2	1	1150	1100	1150	1100	-4.3	-4.3
24–28	1100	2	1	1150	1100	1150	1100	-4.3	-4.3
>28	1100	2	1	1150	1100	1150	1100	-4.3	-4.3
HARD MAPLE									
Prime									
16–20	1000 - 3000	6	8	2375	2125	2500	2000	-10.5	-20.0
>20	1000 - 3500	4	7	3000	2357	3500	2500	-21.4	-28.6
Select									
16–20	1000	2	2	1500	1000	1500	1000	-33.3	-33.3
>20	1000	2	2	2000	1000	2000	1000	-50.0	-50.0
YELLOW POPLAR									
Prime									
16–20	500 - 1000	1	4	-	675	1800	600	-	-66.7
>20	600 - 850	1	4	-	738	2200	750	-	-65.9
Select									
16–20	350	0	1	-	350	-	350	-	-
>20	350	0	1	-	350	-	350	-	-

mills running at 60% - 70% capacity. Conversely, veneer quality logs continue to remain in demand although pricing has leveled off or in some species have dropped this fall. Depending on the species, these decreases are greater in some, i.e. red oak than others like walnut. Additionally, weather conditions like the economic environment can play havoc on log pricing and volumes available.

Black walnut and white oak veneer remain in demand both domestically and internationally with pricing continuing for the most part remaining stable. Additionally, importers especially China are purchasing 3SC & 2SC walnut logs which has driven some of the local veneer mills and sawmills to drop out of the market or reduce production.

Veneer mills specializing in certain species (i.e., hard maple) report to some extent higher pricing mostly due to the larger volumes and freight costs to the mill. Overall this domestic demand for veneer, 3SC, 2SC, and grade 2 and 3 saw logs continues to keep pricing stable. Additionally, a slower economic condition throughout the international markets also increases the pressure on export log value and should continue into 2016.

These economic conditions will also affect white oak veneer, but to a much smaller degree. One of the biggest drivers for white oak currently is the stave market. Wine and whiskey manufactures are currently having difficulty building inventories thus requiring additional stave demand. When you add the demand for quarter-sawn and export lumber to the mix, the pressure for logs increases exponentially. Look for white oak logs to remain constant for 2016 and possibly longer.

Miscellaneous Products

The change in prices paid for or received for various raw-wood products between the spring 2015 report and the current report. (Table 3). These are lower quality and sometimes smaller logs purchased in batches of random species to be sawn into cants or chipped. The cants are re-sawn into boards used for pallets, blocking, railroad ties or other industrial applications that have a strong market. Some mills restrict purchases to specific species or exclude specific species, depending on the markets they sell to. The price for pallet and cant logs decreased slightly, pulpwood and bark prices generally decreased, and sawdust prices increased from the spring report.

Table 3. Prices of miscellaneous products reported by Indiana mills, March and October 2015, free on board (fob) the producing mill.

	No. Responses	Range	Mean		Median	
		15-Oct	15-Mar	15-Oct	15-Mar	15-Oct
Pallet logs, $/MBF	8	160-320	305	266	300	300
Pallet logs, $/ton	3	40-50	42	43	40	40
Pulpwood, $/ton	1	20	31	20	34	20
Pulp chips, $/ton	5	12.7-25	22	20	20	21.8
Sawdust, $/ton	0	-	17	-	12.25	-
Sawdust, $/cu. yd.	4	Jul-35	5	16	4.3	11.5
Bark, $/ton	2	7.5-10	8	9	10	8.75
Bark, $/cu. yd.	5	23-Feb	8	9	11	7
Mixed, $/ton	1	15	19	15	19.03	15
Mixed, $/cu. yd.	1	3	-	3	-	3

Table 4. Custom costs reported by Indiana mills, March and October 2015.

	No. Responses	Range	Mean		Median	
		15-Oct	15-Mar	15-Oct	15-Mar	15-Oct
Sawing ($/MBF)	3	250-400	281	317	250	300
Sawing ($/hour)	0	-	-	-	-	-
Logging ($/MBF)	2	200	148	200	150	200
Hauling ($/MBF)	4	70-100	60	85	-	85
Distance (miles)	3	20-75	35	47	60	45
$/MBF/mile	0	-	-	-	-	-

Until about the 1970's sawdust, chips and bark would have been burned or landfilled by many mills. They now have many more uses. Sawdust can be used to make fuel pellets, burned as a heating source, or used as animal bedding. Wood chips are produced primarily from slabs sawn off of debarked logs. The decline in the pulp and paper industry is a threat to this market. Bark used for landscape mulch is now a large market. In some facilities all or some portion of these byproducts are used to fire efficient low-emission boilers to heat dry kilns year round and heat facilities in the winter. Attempts have been made to cogenerate electricity at mills, standalone generating plants, and biofuel. Success has been limited by the low cost of electricity purchased off of the grid, below cost price received if sold into the grid, and the high cost to produce biofuels.

Custom Costs

Costs of custom services increased from the spring report in the areas of sawing and logging (per/MBF). The high cost of diesel fuel usually plays a large role in logging costs. (Table 4). Logging costs as reported in this survey indicate an increase in average logging costs from $148 to $200 per MBF.

Indiana Timber Price Index

The delivered log prices collected in the Indiana Forest Products Price Survey are used to calculate the delivered log value of typical stands of timber. This provides trend-line information that can be used to monitor long-term prices for timber. The weights are based primarily on the 1967 Forest Survey of Indiana. The following species were removed from the index and their relative weight reassigned proportionally

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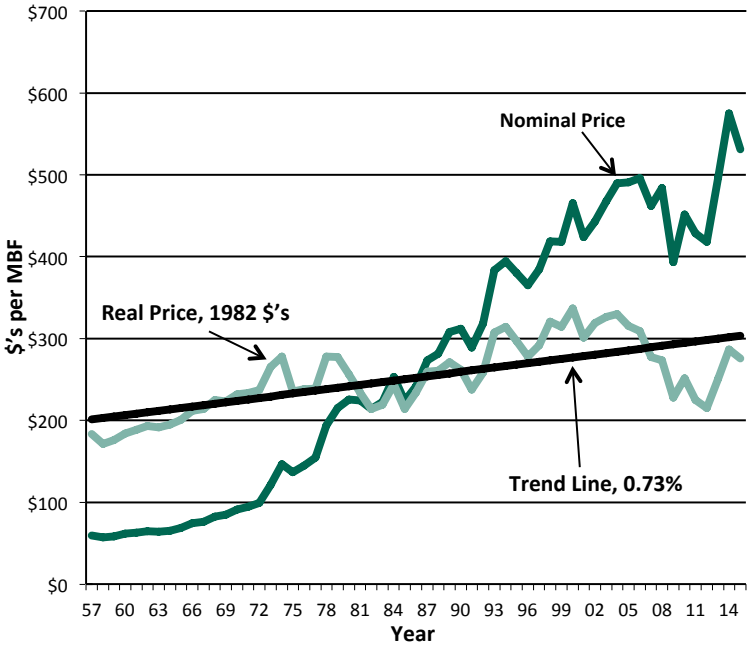
Price Report *(cont'd from page 5)*

Figure 1. Average stand of timber: nominal, deflated, and trend-line price series, 1957-2015.



to the remaining species in both average and quality stands: basswood, cottonwood, elm, black oak and sycamore.

The nominal (not deflated) price is a weighted average of the delivered log prices reported in the price survey. The price indexes are the series of nominal prices divided by the price in 1957, the base year, multiplied by 100. Thus, the index is the percentage of the 1957 price. For example, the average price in 2014 for the average stand was 937.0 percent of the 1957 price. The index for a quality stand increased from 997.5 percent to 1092.6 percent.

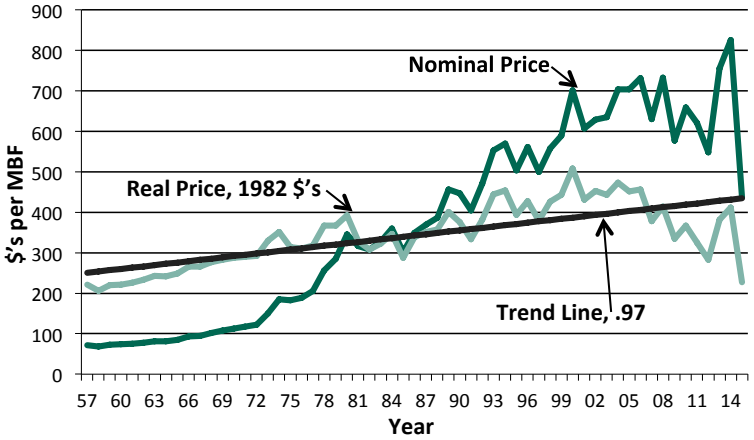
The real prices are the nominal prices deflated by the producer price index for finished goods, with 1982 as the base year. The real price series represents the purchasing power of dollars based on a 1982 market basket of finished producer goods. It's this real price trend that is important for evaluating long-term investments like timber and the log input cost of mills. Receiving a rate of return less than the inflation rate means that the timber owner is losing purchasing power, a negative real rate of return.

Note that each year the previous year's number is recalculated using the producer price index for finished goods for the entire year. The price index used for the current year is the last one reported for the month when the analysis is conducted: November this year. The index decreased from 200.5 for 2014 to 192.7 as of November 2015.

The nominal weighted average price for a stand of average quality decreased from $575.10 in 2014 to $531.4 this year. Again, this series is based on delivered log prices, not stumpage prices. The deflated, or real, price increased from $286.8 in 2014 to $275.8 this year. The average annual compound rate of interest required to take the linear trend line from $201 in 1957 to $303 in 2015 is 0.72 percent, i.e. less than 1 percent (Figure 1). This rate will continue to decrease until the real price is above the trend line for several years.

The nominal weighted average price for a high-quality stand decreased from $825.9 in 2014 to $437.3 this year. The average real price series for a high-quality stand decreased from an adjusted $411.9 in 2014 to $226.9 this year. The average annual compound rate of increase for the trend line remained relatively unchanged at 0.97% year (Figure 2). As for an average stand, this rate will continue to decrease until the real price is above the trend line for several years.

Figure 2. Quality stand of timber: nominal, deflated, and trend-line price series 1957-2015.



Implications

The extent to which holding a stand of timber increases purchasing power depends on when you take ownership and when you liquidate. The 59 year period used in this analysis is much longer than the typical length of ownership. The rate of increase in the trend line doesn't include the return resulting from increase in volume per acre by physical growth, nor the potential increase in unit price as trees get larger in diameter and increase in quality. Maximizing these increases in value requires timber management.

The complete 2015 Indiana Forest Products Price Report and Trend Analysis can be read in its entirety at: www.in.gov/dnr/forestry/.

Jeffrey Settle, Forest Resource Information (FRI); Chris Gonso, Ecosystem Services Specialist for the Indiana Department of Natural Resources, Division of Forestry; and Mike Seidl, Hardwoods Program Manager for the Indiana State Department of Agriculture

A Brief Biography of a Forester – William "Bill" L. Hoover

By Brian MacGowan

They always say you don't know how busy you are until you retire. That is certainly the case with Dr. Bill Hoover of Purdue University Department of Natural Resources (FNR). I had the chance to sit down with Bill recently and catch up on what he has been doing since his retirement. Prior to our meeting, Bill wrote to me that he considers retirement as an opportunity to engage in volunteer, physical and academic activities that were not possible to the extent desired when he worked at Purdue.

Bill Hoover

For those who don't know Bill, he has been a leader and nationally known expert in the application of the federal income and estate tax laws to family forest owners. He has expertly guided thousands of landowners all over the U.S. through his publications, web sites, regular tax columns and workshop presentations on forest economics. One of the department's most popular publications was the "Indiana Forest Products Price Report and Trend Analysis" which Bill published from 1976 through 2013, spanning his 37 year extension appointment with Purdue University.

Working in the Department of Forestry and Natural Resources at Purdue for the past 20 years has given me the privilege and honor of working with talented individuals like Bill who have contributed much towards woodland management in Indiana. When I interviewed for my current position Bill and I hopped in a car and he gave me a tour of Purdue's Ag Centers and introduced me to staff around the state. Bill helped me get started in my extension career and he's been an important mentor to me.

Liz Jackson, executive director of Indiana Forestry & Woodland Owners Association has a similar story: "Bill was my major professor in grad school but then I lost touch with him. Twenty years later we reconnected and he encouraged me to join Purdue FNR in my current position. He introduced me to forestry professionals around the state and has been a great resource and friend to me since." Undoubtedly, countless other grad students and Purdue FNR staff have similar stories. As co-director of the Natural Resources Leadership Institute for several years, Bill was instrumental in training this generation's natural resource leaders.

Perhaps like most retirees, Bill said he likes to spoil his grandchild (soon to be two), volunteer at church, and even plan family reunions. I asked him what he enjoyed most about his other retirement activities. Bill said without hesitation, "Working in the woods. At the end of the day, I stop, look at what I've done, reflect on the changes, and then decide what to do next." If you know Bill, that shouldn't surprise you. Even so, many activities Bill is involved in were quite surprising and impressive.

He's probably in the best physical shape in a long time because of his work controlling invasive plants at Berlovitz Woods, a 19-acre city-owned woodlot in Tippecanoe County. Like many historically grazed woodlots in Indiana, Berlovitz Woods is overrun with Asian bush honeysuckle. As many of our readers know firsthand, that is hard work – plain and simple! With a gleam in his eye, Bill said his resting pulse is 58. However, Bill cracked his rib recently doing this work. He told me this with perhaps just a hint of pride, but who can blame him. So unfortunately, working in the woods is out of the question for the next six weeks.

Brian MacGowan is an Extension Wildlife Specialist with Purdue University's Department of Forestry. He also has served as secretary and editor for the Woodland Steward since 2008. Liz Jackson, executive director of Indiana Forestry & Woodland Owners Association, contributed to this story.

Love the Landscape

By Dan Shaver

The woods are a little less noisy this time of year. The cold grip of winter is close at hand and the songbirds that flood into the Brown County Hills in the spring have defended territories, attracted mates, built nests and hopefully fledged their young and headed south for the winter. Many of these birds return to the western slopes of the Andes Mountains in South America where they face grave threats to their mountain habitat from fragmentation and conversion of land to non-forest uses. But their time in the Brown County Hills helps them prepare.

So think ahead to next spring. Songbirds, like the Cerulean Warbler (Figure 1), will start an incredible journey from the Western slope of the Andes Mountains. They make their way through Central America and then launch themselves from the Yucatan peninsula to make an 18-24 hour non-stop flight over the Gulf of Mexico. The Cerulean Warbler, weights about as much as a AAA battery and can lose up to 1/3 of its body weight just making the flight over the Gulf. But that is not the end of the journey. The birds then make their way up through the southern United States feeding and foraging as they go. They take some time, resting occasionally to fuel up, but looking for something more. What they are looking for is a large block of contiguous forest, abundant food resources and nesting sites that will ensure the survival of their young. What they are looking for is the Brown County Hills.

Figure 1. Cerulean Warbler (Photo credit: © Matt Williams/TNC)

Although size matters to these birds, just a big forest will not ensure their survival or viability over time. The quality, composition (tree species and community types), and the structure of the forest make the difference. There is also the reality that what is good for one bird species, may not be good for another bird. Of the birds that like big forests, there are some like the Cerulean that like to live high in the top of the trees, Ovenbirds like to nest on the forest floor, Yellow-breasted chats like young forest and the Louisiana Waterthrush likes forested streams with overhanging banks. The forests of the Brown County Hills provide all of these habitats and more (Figure 2). Yet, it is always changing. Young forest becomes old, old forest begin anew, tornados reset the forest, ice storms disrupt the canopy and fire alters and adjusts the understory. For thousands of years these disturbances naturally adjusted the forest to provide the various habitats needed. Species moved and adjusted to follow the habitat they wanted. This was when forest covered 80% of Indiana. Now forest covers only 20% of Indiana, but in the Brown County Hills forests still make up 80% of the landscape. Unfortunately the influence of natural factors has been disrupted. We suppress fire, the odds of a tornado disrupting forest land in Indiana has been changed, we have added an overabundance of deer that alter the understory of the forest and we have introduced invasive plant species that alter the composition and structure of the forest.

So we have less forest that has to provide many habitats to many species. The reality is not every acre can provide all habitat to all species. Fortunately we have a wonderful mix of public land in the Brown County Hills. We have the Hoosier National Forest and the Deam Wilderness Area, we have Yellowwood and Morgan-Monroe State Forest, we have Brown County State Park, we have Lake Monroe and Reservoir land, we have Camp Atterbury and we have a scattering of IDNR Nature Preserves, land trust properties, and county and local parks. We also have a lot of private land that is a mix of forest age classes, but subject to subdivision, conversion and inappropriate forest management. The forest diversity found on both the public and private land is very beneficial to migratory songbirds and many other species. The public lands are not all managed the same, and this is good and somewhat intended by having the Indiana Department of Natural Resources (IDNR) split up into different Divisions with different missions. It is all state land, but some is managed for timber, some recreation, some wildlife and some natural area conservation. As the IDNR evolved they realized not every acre could provide everything to all citizens. Just like every acre cannot provide everything to all bird species. The Hoosier National Forest is all one property, but managed for multiple-use having different areas managed for different objectives (See Hoosier National Forest Page 14). If all the public land in the Brown County Hills was managed like the Deam Wilderness Area or Brown County State Park, biodiversity of plants and animals would suffer. If all the public lands were managed like Morgan-Monroe and Yellowwood State Forest there could be problems too. Each

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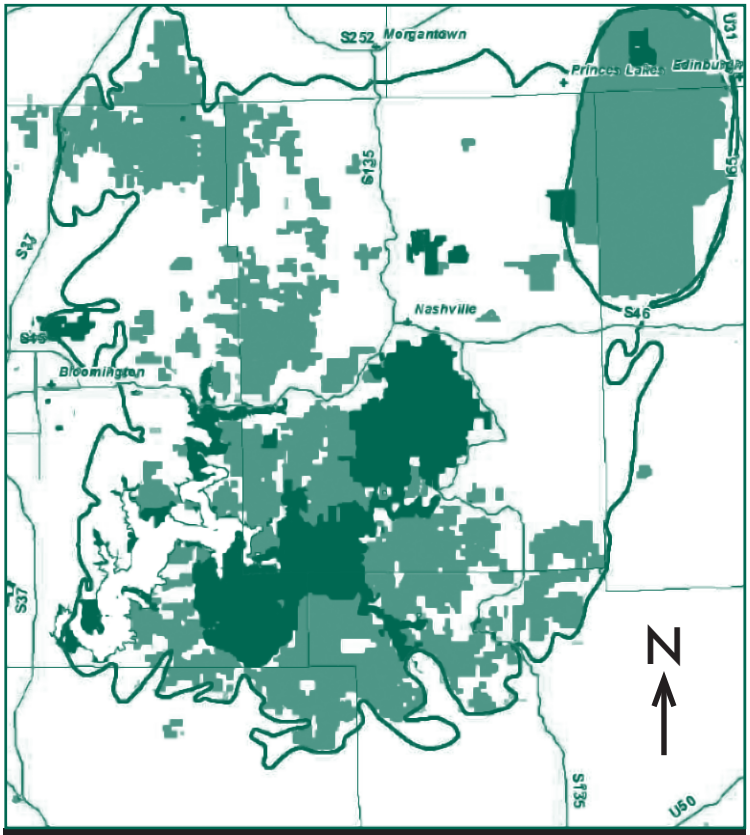

BROWN COUNTY HILLS AREA

Total Size: 340,000 Acres • Total Public Land: 188,500 Acres
Managed Forest (Green): 143,900 Acres
Trending Towards Old Growth (Black): 44,600 Acres

Figure 2. Unlike most of Indiana, forests cover about 80% of the Brown County Hills Area. This region also contains a mix of large, public landholdings.

of these various public lands provide landscape benefits to migratory songbirds and other species. We need and want some areas to be allowed to grow and mature into deep, high canopy forest. We need and want some areas to be managed for a more open oak woodland condition. We need and want some areas to be managed for young forest, teenage forest and old forest. Every acre of forest cannot provide everything for every species. Just like each acre cannot provide everything for every person. The birds seek out and utilize the land that provides the habitat they need. Like the birds, people should seek out and use the public land that meets their needs for solitude, biking, hunting or hiking. If we just have old trees, we lose everything associated with the young forest. We need diversity within the forest. Cerulean warblers don't want to nest in young forest. They find a mature forest to nest in and then utilize young forests to raise their young. People that don't want to hike in an area that shows evidence of timber harvesting, can hike in the Deam Wilderness area, or Brown County State Park. Hunters that want habitat diversity can seek out the state forests or wildlife areas instead of parks or wilderness areas.

Diversity of tree age classes, tree species and habitat replication across the landscape of the Brown County Hills is beneficial for neotropical migratory songbirds. The disturbance to the forest whether it is natural like tornados, ice storms or fire or manmade like timber harvesting is critical in maintaining forest diversity and in turn diversity of songbirds. Every year when the songbirds fly south, they head back into peril. They don't know what they will find when they return south and can't do anything about it. There is no guarantee that the habitat they need will be there when they arrive. So in the Brown County Hills, we can help. If we maintain the structural and age diversity within the forest of the Brown County Hills, the better the habitat will be reflected in more nesting success and more birds fledging and thriving. The more birds we can send south in the winter, the more that have a chance to survive and return in the spring to start the cycle over again. The birds are compelled to migrate. They fly into peril on their wintering grounds. The least we can do is guarantee that when they make that perilous journey across the Gulf of Mexico in the spring that they return to the guaranteed diverse, rich and resilient forests of the Brown County Hills.

Although this article focuses on the Brown County Hills area, all private and public forest land across the state are important for the long term health and sustainability of plant and animal populations. We have many bird species that migrate through Indiana headed north to the vast boreal forest, but the small woodlots and riparian forests across Indiana are temporary stopover habitat for species to rest and refuel before heading further north or south depending on the season. So whether you manage your land for wildlife, timber production, hiking, old forest or a combination of them all, your forest is important to the landscape we love and call home.

Dan Shaver is the current president of the Woodland Steward Institute. He is also a professional forester and director of the Brown County Hills Project with the Nature Conservancy in Indiana. The BCHP is a community-based program working to help ensure the viability and health of the forests.

Pollinator's Who They Are and How to Manage For Them

By Dan Luczynski

In case you haven't heard pollinators are declining but we can do something to help them. You're probably asking yourself, "Who or what are pollinator's and why should I care?" Many species of insects and even some vertebrates are pollinators. Insects include, but are not limited to, honey bees, native bees such as bumble bees, pollen wasps, ants, bee flies, butterflies, moths and beetles. Vertebrates are mainly bats and birds but not limited to these only. However, bees are the number one pollinator in the U.S.

Pollinators visit flowers in their search for food (nectar and pollen). During a flower visit, a pollinator may accidentally brush against the flower's reproductive parts, unknowingly depositing pollen from a different flower. The plant then uses the pollen to produce a fruit or seed. Many plants cannot reproduce without pollen carried to them by foraging pollinators.

More than 80% of the flowering plants (about 240,000 species) require an insect to move pollen. Approximately 75% of field crops grown worldwide for food, fiber, beverages, condiments, spices, and medicines rely on pollinators. It is estimated that one out of every three to four bites of food and drink we consume come from pollinators. These insect-pollinated crops directly contribute anywhere from $18 to $29 billion to the United States farm economy.

There has been approximately 50% decline in managed honey bee hives since 1950. Beekeepers have been losing about 33% of their hives annually since 2006. To compound this problem, wild honey bee colonies have declined an estimated 70-100% since 1995. Monarch numbers are also on a steady decline – an almost 90% drop in numbers from the 1990's estimate of the overwintering monarch population in Mexico and an 80% recent decline from the 21 year average in California. It's difficult to determine the exact cause(s) of decline. Contributing factors may include disease, pathogens, or pests (e.g., Varroa Mite); lack of habitat diversity (e.g., flowers, milkweed); invasive plants; and use of neonicotinoid insecticides.

All of this was a quick overview of pollinators and what they contribute to the world and the value they bring to our environment and our lives. Without out pollinators, plants will not reproduce and we will all be in a world of hurt. So now maybe you are asking what can I do? At least I hope that you are. There are many things that we can do as landowners and as good stewards of the land. It doesn't matter if you live in a rural or urban setting, you can do your part by planting pollinator friendly wildflowers.

For those of you that have some land that can provide habitat for pollinators, here are a few things to do and/or look for.

Increase the available foraging habitat to include a range of native plants blooming at different times throughout the growing season to provide nectar and pollen throughout the seasons.

Create nesting sites by providing suitable ground conditions or tunnel-filled lumber and appropriate nesting materials. About 70% of native bee species nest in the ground and 30% use tunnels bored into wood. Bumble bees—a small, but very important group of bees for crop pollination— require small cavities in which to fashion their nests.

Reduce the risk to bees from the use of insecticides and herbicides which may impact pollinators or the plants they rely on. Avoid using neonicotinoids. Read the label to determine if products contain imidacloprid, acetamidprid, dinotefuran, clothiandin, and thiamethoxam. Utilize alternative strategies to manage pests, and/or minimize the use of insecticides.

Maybe you have existing habitat such as areas left untilled, woodlots, streambanks, utility easements, conservation

areas, and even unused areas around farm lots and buildings. Other things to consider when evaluating or creating habitat is the distance to the foraging plants. Native bees travel from 50 feet up to a half mile. Habitat should be within a half mile of an insect pollinated crop. The bigger the habitat the better, but anything is better than nothing. Gardens are a perfect example of small size pollinator habitat as long as they have the appropriate wildflowers that bloom throughout the growing season.

You can also convert monocultures of grass such as fescue to pollinator habitat. First, eliminate the grass using tillage, chemical burn down, prescribed fire, or heavy clear plastic. The first three options should all happen in late summer to early fall, followed up with a spring planting. The clear plastic should be used in the summer months followed up with a dormant planting in the fall/winter.

The size of your pollinator habitat will likely determine how you will plant the seeds. A large plot may require a no-till drill while a small patch could be disked, culti-packed, broadcast with seed using a carrier such as sand or cat litter, and then culti-packed again. Dormant seeding would take place during freeze/thaw conditions and can be broadcast on top of the ground. Remember to ensure existing sod is treated first to maximize seed-to-soil contact.

Maintenance on these sites will vary based again on the size of the plot. Small plots can be weeded by hand whereas large plots would need some type of mechanical treatment such as spot spraying.

Eventually the site may need to be periodically reseeded, especially if some type of disturbance is applied to the site after a couple of years of establishment.

If this is all new to you or you're unsure on what to do or how to do it, contact your local NRCS District Conservationist. The USDA/NRCS service center is there to provide you with technical assistance and if eligible may even have financial assistance to establish and manage pollinator habitat. Contact your local service center for more information about USDA Farm Bill Programs for Pollinators.

BOX 1. WHAT ARE NEONICOTINOIDS?

Neonicotinoid insecticides have been adopted because of lower toxicity in mammals than previous insecticides. They are commonly used as seed treatments on about 200 million acres of corn, cotton, wheat, canola, and soybeans combined. Potential risks include:

- **Dose accumulates with ongoing exposure**
- **Long-lived in the environment**
- **Lethal and sub-lethal effects on beneficial insects (i.e., pollinators, butterflies and invertebrates)**
- **Water soluble; bind poorly to soil (only 1.6 - 20% of seed coating gets into plants)**
- **Concerns about potential ground water, surface water & wetland contamination**

References

U.S. Department of Agriculture, Natural Resource Conservation Service

Xerces Society Guide: Farming with Native Beneficial Insects and Attracting Native Pollinators

Dan Luczynski is a Resource Management Specialist with the USDA Natural Resources Conservation Service.

Trees are Important for Pollinators too!

By Denise Ellsworth

Important pollinators such as honey bees, bumble bees and monarch butterflies have gained attention in recent years due to concerns about declining populations. Pollinators are currently facing many threats, such as lack of forage (food), pests, pathogens, pesticides, invasive plants, climate change and lack of suitable nesting sites. Fortunately, woodland stewards can take steps to support these and other pollinators through plant selection and woodland management practices.

Pollination is the movement of pollen from the male part (stamen) of one flower to the female part (pistil) of another flower. Without pollination, most plants can't make seeds and fruits. Many plants are wind pollinated, including most grains such as corn and wheat, but other plants rely on animals to carry pollen from flower to flower.

Animal pollinators are essential to the food we eat. Some scientists estimate that one in three bites of food we take can be traced back to the role of animal pollinators. A 2012 study by Cornell University estimates that bees and other insect pollinators contribute $29 billion annually to U.S. farm income by pollinating 58 crops, including almonds, apples, berries and squash.

In addition to their role on farms and gardens, pollinators are essential to the survival of native plants. Approximately 75% of all plants depend on animal pollinators to move pollen from plant to plant. Without the work of pollinators, many native plants couldn't produce seeds to ensure the plant's next generation. These seeds and the fruit that often accompany them also provide important food sources for approximately 25% of birds and many mammal species.

Many people are concerned about the health and survival of bees, including honey bees, native bumble bees and the hundreds of lesser-known native and wild bees that call Indiana home. Bees are considered the most important group of pollinators because they are uniquely adapted to gather and transport pollen. Bees' fuzzy bodies and branched hairs help female bees collect pollen into special structures, such as pollen baskets on the hind legs or long hairs on the legs or abdomen. Bees rely on flowers for food to feed their young, so they actively seek out and visit flowers.

Bees and flowering plants have a critical relationship. Flowering plants provide nectar and pollen for a bee's diet. Pollen is an essential source of protein for developing bee larvae, and nectar provides a carbohydrate source. Honey bees convert nectar into honey by adding an enzyme which breaks down the complex sugars into simple sugars. Bees, in turn, transport pollen from flower to flower as they forage, allowing for plant fertilization and the production of seeds and fruit.

Figure 1. Red maple and many other tree species provide an important source of food for pollinators.

Flowers can also provide shelter and gathering places for pollinating insects. Flowers depend on repeat visits by pollinators, so they may offer small rewards repeated at regular intervals to encourage return trips. To attract visitors, flowers use a variety of strategies, including petal color, scent, UV light patterns and nectar guides (lines and marks on petals to direct pollinators to a reward). Bees in particular use floral qualities such as polarized light patterns, petal texture, temperature, humidity, and static charge to help them locate flowers.

Bees typically visit one or only a few flowering species during each foraging trip, even when other flowers are available, a behavior called flower fidelity or flower constancy. Bees also forage for food close to their nesting sites, a practice called central place foraging. These practices make bees especially reliable couriers to move pollen to receptive flowers.

While trees provide many well-known ecological benefits, the importance of trees as a source of food for bees is sometimes overlooked. When in bloom, a large tree can provide hundreds to thousands of nectar- and pollen-filled flowers. Because a tree's flowers are often high up in the canopy out of view, the thousands of insects visiting these flowers are rarely noticed or appreciated.

Table 1. Key trees species for bees. Even though some of these trees are wind pollinated, they still provide important pollen resources for bees.

Latin Name	Common
Acer spp.	Maple, Boxelder
Aesculus spp.	Buckeye, Horsechestnut
Alnus spp.	Alder
Amelanchier spp.	Serviceberry
Catalpa spp.	Catalpa
Celtis occidentalis	Common Hackberry
Cercis canadensis	Red Bud
Cladrastis lutea	Yellow Wood
Corylus americana	Hazelnut
Crataegus spp.	Hawthorn
Diospyros virginiana	Persimmon
Fraxinus spp.	Ash
Gleditsia triacanthos	Honey Locust
Lirodendron tulipifera	Tulip Poplar
Magnolia spp.	Magnolia
Malus spp.	Apple, crab apple
Nyssa sylvatica	Black gum
Oxydendrum arboreum	Sourwood
Prunus spp. (cultivated)	Cherry, Plum, Peach, Apricot, cultivated
Prunus spp. (native)	Wild Cherry (*P. serotina*) and others
Ptelea trifoliata	Hop tree
Quercus spp.	Oak
Robinia pseudoacacia	Black Locust
Salix spp.	Willow
Sassafras albidum	Sassafras
Tilia spp.	Basswood, Linden
Ulmus americana	Elm

Early-blooming trees such as maples, willows and redbuds provide food at an especially critical time. In March and April, queen bumble bees are establishing new colonies at a time when few other flowers are in bloom. Foraging honey bees take advantage of tree flowers in early spring to bring food back to the growing hive, which may be short on stored food after a long winter. Later in the spring, black locust and tulip tree provide a rich source of nectar, just the hive's demand for food increases. For honey bees, honey stored during this period of "honey flow" is crucial to build the hive and ensure the health of the colony into the following winter.

For a sequence of native and non-native woody flowering plants for Ohio, consult the Ohio State Phenology Calendar http://www.oardc.ohio-state.edu/gdd/. This calendar will help Indiana residents predict the sequence of plant bloom from late winter to late summer.

Besides providing an essential source of food for pollinators, trees also provide important nesting and overwintering habitat. Cavity-nesting bees make their nests in the pith of twigs like elderberry or sumac, or in abandoned beetle burrows in dead trees. Brush piles, dead standing trees and fallen wood provide important nesting and overwintering habitat for bees and butterflies. Bare soil can provide nesting habitat for ground-nesting solitary bees such as mining bees or sweat bees that nest in sandy, well-drained soils, commonly on south-facing slopes.

By using an integrated pest management approach with multiple strategies to reduce pest damage, woodland managers can limit negative effects of pesticides on pollinators. Pesticides can kill bees and other insects outright or affect behavior or longevity. Insecticides and fungicides can act together to weaken bees' immune system. Contact your county Extension office for pest management assistance and best management practices when using pesticides.

Woodland stewards can play an important role in pollinator conservation by providing plants and nesting sites for pollinators and by limiting pesticide impact. To learn more about pollinators and pollinator plants, consult these resources:

- The Xerces Society for Invertebrate Conservation: www.xerces.org
- Pollinator Partnership: www.pollinator.org
- The Ohio State University Bee Lab: beelab.osu.edu

Denise Ellsworth is the director for the Honey Bee and Native Pollinator Education program at the Ohio State University.

National Forests Practice Multiple Use Management

By Judi Pérez

The Hoosier National Forest provides over 203,000 acres of public land in the south central part of our state. The first Chief of the Forest Service, Gifford Pinchot's philosophy of having national forests provide "the greatest good for the greatest number of people in the long run" became the Forest Service motto that we know today "Caring for the land and serving people." This motto reflects the Forest Service practice of multiple use management on national forest in Indiana and nationwide.

National forests conduct visitor use surveys every five years, the last surveys on the Hoosier occurred from October 2013 to September 2014. While we are still waiting on the specific outcomes of those surveys, we know that 333,000 visits to the Forest were estimated during that time. Previous surveys have shown that most visitors to the Hoosier come to view nature and wildlife, and to hike. The Hoosier has over 260 miles of trails available for hiking, mountain bike riding and horseback riding. Much of our annual program or work is spent monitoring and maintaining these trails, keeping them cleared and safe for visitors.

Due to its proximity to larger communities such as Bedford, Bloomington, Columbus and even Indianapolis the almost 13,000 acre Charles C. Deam Wilderness in the northern part of the Forest receives a lot of use. It is the only Congressionally designated wilderness in Indiana. Wilderness is designated for the preservation and protection of lands in their natural condition. Though the lands in the Deam show evidence of past human use and settlement, no commercial forest management occurs here. There are 37 miles of trails available in the Deam for backpackers, hikers, and horseback riders access to have a more primitive experience with less likelihood of human interaction.

Horseback riders (and mountain bikers) must display a trail tag when riding the Hoosier. The proceeds collected from the sale of the tags goes directly back to maintain and repair local resources. Some of those funds may be used to gravel Forest trails helping the soils stay in place and reducing the impacts of heavy use on the trail systems.

Many hikers, mountain bike riders, horseback riders, and other visitors stay on the Hoosier. The Forest provides a variety of camping experiences to meet most needs. Fee based recreation areas at Hardin Ridge, Tipsaw, and Celina Lake provide developed experiences with level pads for tents or RVs, water, electricity, restrooms, showers, and even RV dump stations. Much of the rest of the Forest is available for dispersed camping; these areas may have a few amenities but there is no charge.

The Hoosier is dotted with fishable ponds and lakes ranging from Monroe Lake to the quarter-acre Shove Ridge Pond on the southern end of the Forest. Anglers must follow state fishing regulations but over 30 small lakes and ponds are available to keep any angler occupied. Please note that larger areas are signed but many are off the beaten path, so access may be a challenge. Ponds and lakes are managed

Figure 1. Timber management is used to diversify vegetation structure and composition in forested habitats.

Figure 2. Plant communities, including many types of forests and grasslands, can benefit from prescribed fire treatments. Prescribed burns can set back succession and create conditions ideal for desirable plants to grow.

cooperatively with Indiana Department of Natural Resources, Division of Fish and Wildlife. The Hoosier manages access and habitat while DNR manages the fish.

Wetlands are popular for hunters and wildlife watchers seeking waterfowl and other wetland species. Wetlands help improve water quality, reduce flooding, and provide habitat for bottomland wildlife species including amphibians, migratory waterfowl, wading birds and eastern forest bats. These areas also provide more diverse bottomland hardwood forest, while providing enhanced opportunities for fishing, hunting, wildlife viewing and even conservation education. One of the larger wetlands on the Hoosier is along the Little Blue River in Crawford County; the Otter Creek complex provides approximately 150 acres of riparian ecosystem.

Similar to fishing, hunters using the Hoosier must follow state regulations. Habitat management work on the Hoosier is done to increase the amount of high quality habitat for all native wildlife species. Permanent Forest openings are managed across the landscape to provide vital components of early successional habitat. Managing forested areas to provide a mix of tree species and age classes creates higher quality habitat and meets other species needs, such as creating canopy gaps to increase forbs and other understory components.

Likewise, management of woodlands and barrens habitat provides diversity of available habitats to plant and wildlife species. Farm fields acquired by the Hoosier have been planted with warm season grasses and native prairie forbs to provide habitat for grassland bird species and migrant butterfly populations.

National Forests manage resources to maintain forest health and all that it entails. Many of the forest stands on the Hoosier are around the same age class because the lands were acquired and replanted around the same time. Therefore, the resulting forest has little diversity in age class or structure. Since 2006, personnel have been implementing the Forest Plan to increase diversity and improve resilience across the Hoosier (Figure 1). Since 2008 the Hoosier has averaged around 4,000 MBF/year of timber volume sold. Over the coming years the Forest expects to continue to harvest timber at an estimated 300 acres/year. This coupled with prescribed fire treatments should increase habitat quality across the Forest in the coming years (Figure 2).

There are some things that are not available on the Hoosier. The most problematic unauthorized use seems to be off-road vehicle riding. All-terrain vehicles (ATV) on the Hoosier cause thousands of dollars in resource damage and personnel time annually. Analysis in the 2006 Forest Plan concluded that due the limited land base and the soil composition an ATV trail may not the best use for the Hoosier. However, challenges associated with limiting this use are a struggle. Hoosier personnel will continue to work to limit impacts from illegal ATV use.

Sustainable management of resources on the Hoosier provides the greatest good for the greatest number of people. National forest visitors benefit from a multiple use management approach in the changing colors, the variety of habitats providing home to wildlife and fish, and a multitude of recreation experiences offered on these public lands.

Judi Pérez is a Public Affairs Officer with the USDA Forest Service, Hoosier National Forest.

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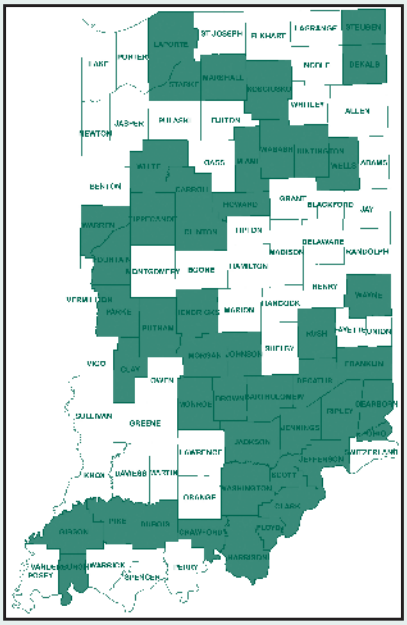

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