

2016

Division of

Forestry

Annual Report



www.in.gov/dnr/forestry/

STATE FOREST PROPERTIES



Salamonie River State Forest renovation of the 1930s CCC picnic fireplace



Thanks to a generous donation and the hard work of volunteers, the Civilian Conservation Corps fireplace at Salamonie River State Forest has been returned to its former glory for all to enjoy.



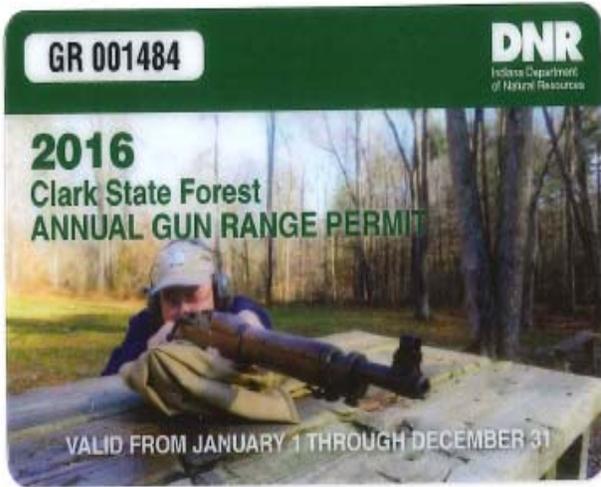
Renovation of the Museum Shelter House has been completed at Jackson-Washington State Forest.



The lake improvement project continues at Starve Hollow Lake, as we remove more than 75 years' worth of accumulated sediment. The project is expected to conclude in 2018.



Reconstruction and expansion of the offices and visitors center at Morgan-Monroe State Forest/Fire Control Headquarters continues. Completion is expected in 2017-2018.



Clark State Forest has issued nearly 2,000 annual and daily permits for use of its gun range.



Horse trail improvements at Clark State Forest and improvements to the bike/pedestrian trail at Morgan-Monroe State Forest.

STATE FOREST RESOURCE MANAGEMENT

- The 158,300 acre State Forest system has been certified by the Sustainable Forestry Initiative®* (www.sfiprogram.org) and the Forest Stewardship Council® (FSC®-C012858) “green certification” programs since 2007. Independent third-party audits are conducted annually to assess compliance with the rigorous certification standards. Audits in 2016 were conducted by Scientific Certification Systems and NSF International Strategic Registrations (NSF-ISR) and successfully completed with high marks and no corrective actions issued. Forest certification independently confirms the State Forest system as “well managed forests” and allows wood products from State Forests to participate in the national and global market of “green certified” wood products.



- In 2016, many miles and thousands of acres of forest restoration, trail, boundary and forest improvement work was completed or contracted. The work positions these forests for continued health and productivity, providing jobs and other forest benefits for Hoosiers today and tomorrow. Primary work included control of invasive plant species (669 acres), trail maintenance and improvement (329 miles), forest and timber stand improvements (2,075-plus acres), and 80 miles of boundary work.
- Sustainable “green certified” wood products from State Forests in fiscal year (FY) 2015-2016 totaled 7,145,779 board feet equivalent, made up of 6.53 million board feet of timber and 2,433 cords with gross revenues of \$1,588,188. These managed harvests were spread over 3,508 acres of the 158,300-acre State Forest system, down from the previous year’s 4,953 acres. Single-tree select cuts were the predominant harvest strategy. Acres of openings declined 63%, from 413 acres to 153 acres. Average opening size also declined from last year to 2.1 acres.

Timber Sale Volume and Sale Prices The Past Twelve Years

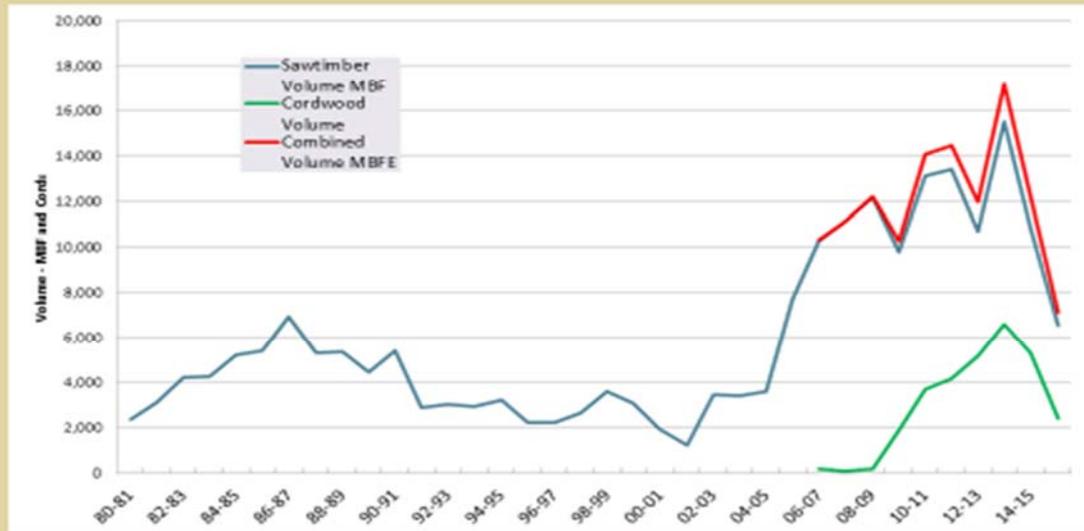
| Fiscal Year | Volume Sold (BFE) | Sale Prices |
|--------------|--------------------|---------------------|
| 2004-2005 | 3,599,844 | \$975,388 |
| 2005-2006 | 7,683,400 | \$1,979,460 |
| 2006-2007 | 10,267,384 | \$2,669,179 |
| 2007-2008 | 11,302,104 | \$2,928,707 |
| 2008-2009 | 12,154,436 | \$2,330,511 |
| 2009-2010 | 10,253,981 | \$2,368,521 |
| 2010-2011 | 14,065,864 | \$2,720,629 |
| 2011-2012 | 14,435,135 | \$2,686,672 |
| 2012-2013 | 11,995,721 | \$1,887,726 |
| 2013-2014 | 17,148,568 | \$4,036,782 |
| 2014-2015 | 12,198,010 | \$2,988,047 |
| 2015-2016 | 7,145,779 | \$1,588,188 |
| TOTAL | 132,250,226 | \$29,159,811 |

The chart above is a summary of timber volume sold from State Forest lands by fiscal year from 1980 through 2016.

- DNR Forestry sends 15% of timber sale proceeds to county governments to help support volunteer fire departments. This amounted to \$397,399 in FY 2015-2016. IC 14-23-4-5 & 6 requires the division to return to counties from where timber was sold 15% of the net timber-sale receipts. Local fire departments with cooperative agreements with the division may receive as much as 50% of the county amount, up to a maximum of \$1,000 each, unless otherwise appropriated by the county. The ten year average for State Forest timber sales is 10.6 million board feet. The timber-harvest prescription for the State Forest system for FY 2016-2017 is 10 million board feet.

* SFI Marks are registered marks owned by *Sustainable Forestry Initiative INC.*

Timber Sale Volume History Since 1980



- Yellow poplar was the species with the highest volume sold, 32%, which is more than last year. The percent of volume sold in yellow poplar has been increasing for a number of years. Black oak had a larger share of volume sold compared to last year's numbers (14%). Other species accounting for large amounts of the total volume sold were white oak (7%), chestnut oak (5%), white ash (11%), Northern red oak (4%), sugar maple (4%), white pine (4%), red maple (2%), American beech (2%), and scarlet oak (5%). Oak as a group accounted for 35% of the volume sold, less than last year. Pine was about 6% of the volume sold, also down from last year.
- State Forest land acquisition added a 422-acre parcel in Miami County to be managed as part of Salamonie River-Francis Slocum State Forest. This property was acquired with a life estate from the current owners, who are longtime forest conservationists. Although acquisition funds are limited, DNR Forestry will continue to entertain strategic conservation land purchases in 2017.
- Emerald ash borer (EAB) was first confirmed in Indiana in 2004. By 2009 it had spread to the State Forest system at Salamonie River State Forest, where it killed nearly all ash trees greater than 2 inches in diameter. EAB has continued to spread across Indiana and is now found on nearly all DNR properties with ash trees, including all State Forests. Considerable work has been undertaken to remove ash trees from campgrounds and along main roads for the safety of visitors. Much ash continues to be salvaged as an ongoing part of forest operations to provide wood for local wood industries. Despite these efforts, the majority of ash trees will not be salvaged, but will provide some short-term habitat value as the trees die and decay.

Indiana Bat & Northern Long-eared Bat Habitat Conservation Plan (HCP) Update

Division staff completed the first comprehensive draft of its Indiana Bat HCP for State Forests. The next step will be for the U.S. Fish and Wildlife Service to review the plan, the supporting documents and materials, and the accompanying Environmental Impact Statement (EIS) in 2017. The HCP is a necessary component in the application for an Incidental Take Permit, which authorizes limited incidental “take” of Indiana bats during regular State Forest management activities.

The HCP will direct the division’s Indiana bat conservation program for State Forests over the next 20 years and includes strategies to minimize risk of incidental take on State Forests, programs to increase awareness of Indiana bat conservation on privately owned forest in Indiana, measures to fully mitigate the impacts of unavoidable incidental take, and a monitoring program designed to evaluate the effectiveness of impact minimization measures and mitigation activities.

Once approved, this HCP and the accompanying Incidental Take Permit will be among the first granted to a State Forest management agency for the conservation of the Indiana bat. The division takes great pride in its leadership role on this important issue and believes its HCP will serve as a model for other forest management agencies to follow.

Before completion of the draft HCP and draft EIS, the division jointly hosted a public scoping meeting and open house with the U.S. Fish and Wildlife Service’s Bloomington field office. The public meeting was held at the Morgan-Monroe Training Center, and information was provided to guests by both Fish & Wildlife Service biologists and the division’s wildlife specialist. Additionally, several comments and suggestions were received during a 30-day public comment period announced in the Federal Register and through direct correspondence with local conservation groups and other parties who had expressed interest in the division’s HCP.

Previous updates have indicated the federally threatened Northern long-eared bat would be included in the State Forest HCP. The division has now decided that it will continue to manage the Northern long-eared bat on State Forests as it has since it was federally listed in April 2015—under guidance provided by the USFWS and conservation measures detailed in its final 4(d) rule for the species. By following this guidance, the division can fully avoid prohibited incidental take of Northern long-eared bats, as specified by the 4(d) ruling. For this reason, and after consultation with the USFWS, the division decided to cover only the Indiana bat under its HCP. However, it is likely the conservation measures proposed in the draft HCP will not only benefit Indiana bats, but also help Northern long-eared bats and the many other state-listed bats that use State Forests.

Wildlife & Research Support and Output

- In 2016, DNR Forestry provided direct support to 16 research projects investigating the ecological effects of forest management on State Forests. Most of the support went to researchers involved with the Hardwood Ecosystem Experiment (www.heeforeststudy.org/), a long-term project based at Morgan-Monroe and Yellowwood state forests.



- DNR Forestry provided support to 10 graduate/postgraduate researchers in 2016 working on questions related to forest management and ecological impacts. Since 2006, DNR Forestry has provided support to 36 graduate and postgraduate researchers.
- DNR Forestry-supported researchers published 12 articles in peer-reviewed scientific journals and completed two master's theses in 2016.
- Two extension videos were produced featuring research of the Hardwood Ecosystem Experiment. Each are available for free viewing at the Purdue Extension Education Store: <https://mdc.itap.purdue.edu/>.
 - Managing Woodlands for Birds (FNR-517-WV)
 - Forest Birds (FNR-518-WV)

Recent Select Hardwood Ecological Experiment (HEE) Project Summaries:

- Indiana bats (federally endangered) and Northern long-eared bats (federally threatened) continue to use recently harvested sites and forest openings for roosting during the summer maternity period. Ongoing research focuses on two Indiana bat maternity colonies at Morgan-Monroe and Yellowwood state forests. Findings indicate female Indiana bats select maternity roosts located in

canopy gaps, edges, and openings. Radio-tracked Indiana bats and Northern long-eared bats appear to prefer foraging in recently harvested patch cuts.



A recent timber harvest opening where female Indiana bats were roosting.

- Two recently completed acoustic bat echolocation studies found that all State Forest bat species used experimental harvests areas as well as unharvested controls. Similar to earlier HEE studies, no evidence was found showing that any bat species avoided harvested areas.
- As in previous years, bird species associated with mature forest habitats dominated breeding-bird surveys conducted in experimentally harvested areas and unharvested controls. These commonly encountered species included worm-eating warbler, scarlet tanager, ovenbird, red-eyed vireo, Acadian flycatcher, and wood thrush.
- Research continued on the use of clearcuts by bird species that breed within mature forest. Several species associated with mature forests were captured using early successional areas during late summer, including worm-eating warbler, scarlet tanager and ovenbird.



- Long-term studies of the state-endangered cerulean warbler continued at HEE research units. Over the nine breeding seasons studied to date, researchers have found that average relative abundance of males in unharvested control units (3.88 km²) has been consistently lower than in even-age (7.57 males/km²) and uneven-age (6.74 males/km²) experimental harvest units. Overall reproductive success was slightly lower than in previous years (20.9%); however, the researchers note nest failures may have been influenced by weather events affected by the El Niño phenomenon.
- Recent surveys of the spider communities at HEE study areas resulted in the discovery of 23 species that were previously not known to be in Indiana. Additionally, two previously undescribed species were also discovered. Future work will determine the effect of prescribed fire on spider diversity at these experimental sites.

State Forest Recreation



There are more than 100 lakes to explore and challenge muskie anglers and other outdoor enthusiasts at Greene-Sullivan State Forest.

- State Forest recreation facilities include three gated properties, 19 family campgrounds (650 electric and non-electric camp sites), six equestrian campgrounds (200 electric and non-electric campsites), 40 camping cabins at three locations, two family cabins, 300 miles of hiking trails, 41 miles of bike trails, 270 miles of horse trails, more than 140 lakes, 150,000 acres of hunting and foraging opportunity, three backcountry-style trails with walk-in trail-side camping, one shooting range, two archery ranges, two nature centers, three swimming beaches, 30 picnic shelters, and more.
- Campground improvement projects are underway at Clark State Forest and Greene-Sullivan State Forest to add a comfort station and flushing toilets. These improvement are expected to be functional in 2018. These facilities will also continue to offer primitive camping experiences. Camping at Deam Lake and Starve Hollow State Forest Recreation Areas and Greene-Sullivan State Forest can be reserved at indianastateparks.reserveamerica.com.

- The sediment removal project at Starve Hollow Lake continues around the lakefront campsites and into the upper reaches of the lake. The project is removing sediment that has accumulated since the lake was built in 1938. The project continues to improve boating and fishing access. Work is concentrated during the winter months to minimize impact on summer recreation users and is slated for completion in 2018.
- Annual recreation revenue was \$1.5 million in 2016, a 7% increase over the previous year. The increase is attributed in part to enhanced facilities and an improving economy.
- Trail maintenance and improvement projects were undertaken at several properties with approximately 390 miles of trails receiving attention. The Knobstone Trail was fully transitioned from Division of Outdoor Recreation management to State Forest management in late 2015. A new trail map is now available. A new, comprehensive trail map for Deam Lake-Clark State Forest will be available in 2017.
- State Forest camping cabins and the fully furnished retreat cabins at Morgan-Monroe and Covered Bridge state forests continue to be popular with guests. Additional camping cabins have been added at Starve Hollow SRA and Greene-Sullivan State Forest. See more at www.in.gov/dnr/forestry/7694.htm

State Forest Community Involvement

- State Forests hosted 38 special events in 2016 with an estimated 7,209 participants. Organized hikes, trail runs, and equestrian events are the most common sponsored events. A growing event is the trail marathon at Morgan-Monroe/Yellowwood state forests, which has been held for several years. We are experiencing an increase in outdoor weddings that seek to use State Forest facilities and the backdrop of forests and lakes as a wedding venue.
- Annual open-house and public-comment events were held across the system to invite the public to view operations, meet property personnel and comment on property projects and concerns. Some events featured tours of facilities, short hikes and talks on forestry and other natural resource topics of interest. Visitors to the Salamonie River State Forest open house were able to try using a replica Native American atlatl.
- Volunteer opportunities on State Forests continue to expand, ranging from working on one-time projects to serving as campground hosts, and long-term efforts and contributions by individuals and groups. Significant trail improvement projects were accomplished at Clark, Greene-Sullivan, Morgan-Monroe, and Yellowwood state forests with volunteers from various trail groups. The Annual Day of Caring has been active at Starve Hollow SRA for the last several years. Campground host opportunities continue to be offered at several State Forests and can be found at <http://www.in.gov/dnr/forestry/files/fo-campgroundhost.pdf>



State Forest Facilities

- Repair, renovation and updating of facilities is an ongoing part of State Forest operations. Many facilities received facelifts and some new construction in 2016. Significant projects included full restoration of the CCC-era “Museum Shelter House” at Jackson-Washington State Forest, which will open in September 2017. Paving projects have improved access at office and services areas at Ferdinand and Clark state forests. The pedestrian/bike trail paralleling the main access road at Morgan-Monroe State Forest continues and will provide safe linkage from the front entrance to the campground and popular recreation sites on the forest once completed. The year 2016 brought new restroom facilities and road repairs to Deam Lake SRA. And, the CCC outdoor grills and stonework at Salamonie River State Forest were restored, using generous donations and dedicated volunteers. Construction continues on complete renovation and expansion of the administrative office and visitors center at Morgan-Monroe State Forest. This project will merge offices from three locations, streamline operations, reduce costs, and provide improved visitor services. This project should near completion in 2017-18 and will showcase the rich tradition of Indiana hardwoods.
- State Forest facility improvements and construction projects rely heavily on use of in-house labor, skills, and wood materials. This has kept down costs and allowed significant accomplishments over the last several years. Partnerships with the Indiana Department of Correction also have been instrumental in these accomplishments, as has valued assistance from many volunteers.

Below are select photos of additional facility-improvement projects:



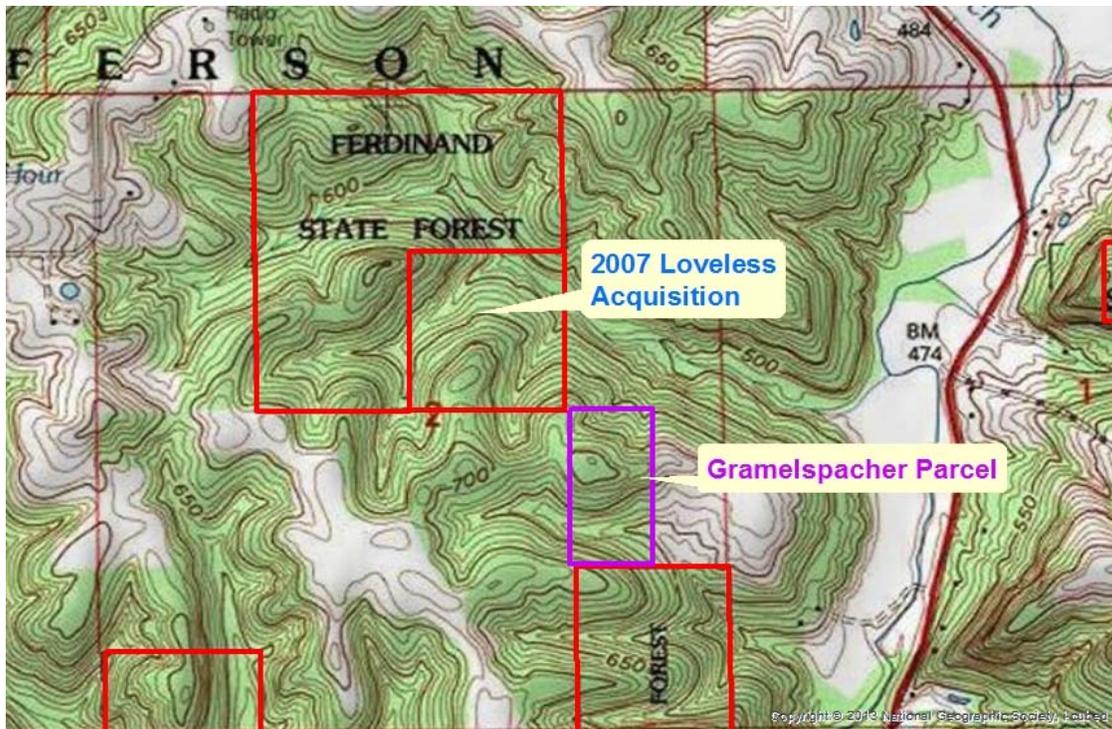
Deam Lake SRA begins the replacement of decades-old restrooms and undertakes repairs to the campground access road.



Additional camping cabins arrive at Starve Hollow, Deam Lake and Greene-Sullivan State Forest.

State Forest Land Holdings

One minor land acquisition was completed — 20 acres at Ferdinand State Forest. Two other larger land acquisition projects were started, including a 422 acre life estate parcel in Miami County.





Oak-hickory and mixed hardwoods grow on lower slope.

Forest Resource Information

- DNR Forestry provided 1,641 technical assists upon request to various customers on topics of marketing, utilization, efficiency, forest industry certification, best management practices, and forest-resource and industry data.
- DNR Forestry managed a Forest Stewardship Council Chain of Custody group consisting of 68 small to medium forest industry companies and conducted 26 internal audits and coordinated nine audits by our certifying body (Scientific Certification Systems). Estimated economic impact of this group is more than \$38 million.
- DNR Forestry completed four documents highlighting log pricing, logging costs, residue costs, custom costs, and lumber pricing.
 - The Hardwood Report – 2015 in Review <http://www.in.gov/dnr/forestry/files/fo-hardwoodreport2015.pdf>
 - Indiana’s Hardwood Industry: Its Economic Impact (update of 2010 report) http://www.in.gov/dnr/forestry/files/fo-Hrdwd_Imp_2016.pdf
 - 2016 Indiana Forest Products Price Report and Trend Analysis (spring 2016) http://www.in.gov/dnr/forestry/files/fo-2016_Spring_Forests_Products_Price_report.pdf
 - 2016 Indiana Forest Products Price Report and Trend Analysis (fall 2016) – completed and should be available on our website soon



- Compiled data depicting economic impact to the state from combined primary/secondary forest-products industries as well as how Indiana ranks against other states in several economic indicators and export data. (See tables 1-8 trailing.)
- Provided various training opportunities (log, lumber, tree grade workshops, chainsaw training, best management practices, SFI, etc.) to 225 attendees for 3,050 contact hours. Attendees included professional natural-resources personnel and forest-industry professionals.
- Three field day/industry education/industry tours and presentations highlighting Indiana's forest products industry were coordinated with an attendance of more than 80 people.
- 31 harvest sites on State Forests and 51 harvest sites on Classified Forest and Wildland (CLF&W) lands for a total of 82 harvest sites were monitored for Best Management Practices (BMPs) for application/effectiveness. BMP monitoring reports were produced for the monitoring completed on the state properties, which can be found at http://www.in.gov/dnr/forestry/files/fo-1996_2015_State_Forest_BMP_Report.pdf, and for the CLF&W program carried out in 2015, which can be found at http://www.in.gov/dnr/forestry/files/fo-Classified_Forest_BMP-1996-2015.pdf



- State employee field staff collected forest-inventory data from 250 Forest Inventory and Analysis (FIA) plots across the state. Collected annually, the information provides an excellent picture of the forest resource in Indiana. Some highlights from this research show Indiana has 4.9 million acres of forestland (2.1% increase since 2010), 2.2 billion live trees or 452 trees/acre on average, and net volume (10.6 billion cubic feet) increased 6.3% to an average of 22,000 cubic feet/acre. The latest annual update can be found at http://www.in.gov/dnr/forestry/files/fo-2015_FIA_Annual_Report.pdf, while the latest full five-year analytical report can be found at http://www.in.gov/dnr/forestry/files/fo-IN_Forests_2013.pdf.

- The Forest Resources Information (FRI) section concluded its ninth year (fourth year of re-measurements) of the Continuous Forest Inventory (CFI) program this year. CFI, which closely resembles the U.S. Department of Agriculture Forest Inventory & Analysis Program, provides an up-close view and valuable, timely, and current data regarding the forest resource on State Forest properties. Data were collected from nearly 800 plots. The latest property report can be found at http://www.in.gov/dnr/forestry/files/fo-State_Forest_CFI_Report_2011_2015.pdf. Another inventory program coordinated by FRI concluded its fifth and final year of plot establishment on private lands enrolled in the CF&W program. These 500 plots are measured in identical fashion to the property plots. Findings can be found at http://www.in.gov/dnr/forestry/files/fo-State_Forest_CFI_Report_2011_2015.pdf



- Five reports were written in 2016. All are posted on our website. Two logged-area analysis studies were conducted in 2016 as part of a five-year study to increase knowledge of harvest efficiencies, allow us to calculate better estimates of residual volume left in the woods after a harvest, and to make better tree taper equations, among other things.
- Compiled data depicting economic impact to the state from combined primary/secondary forest products industries as well as how Indiana ranks against other states in several economic indicators and export data. (See tables 1-8 trailing)

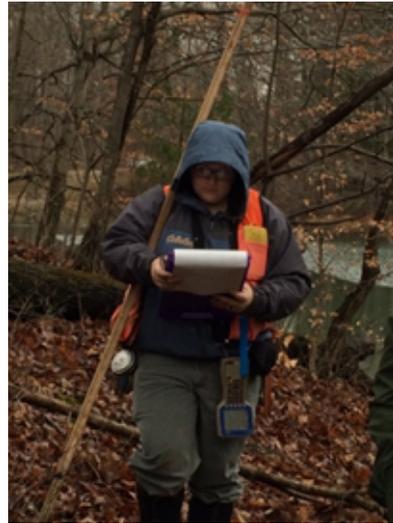
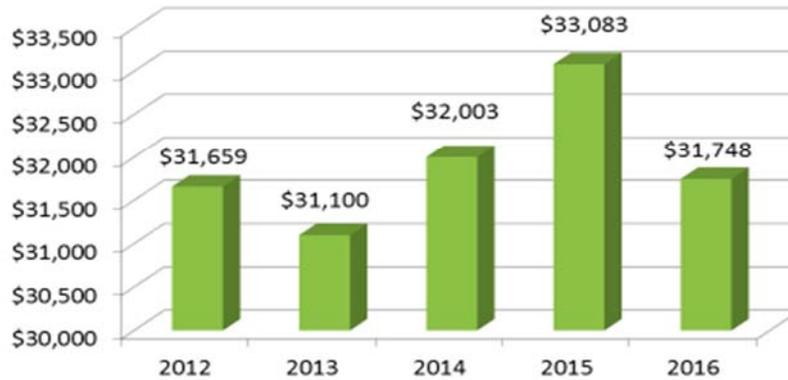
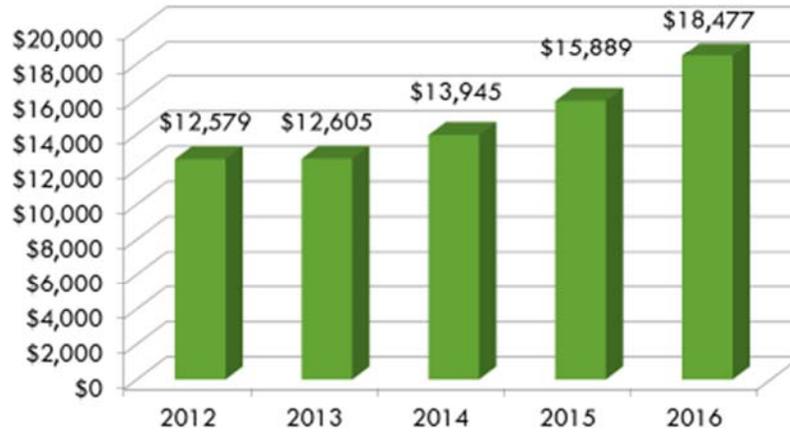


Table 1.

Exports – Veneer (millions dollars)

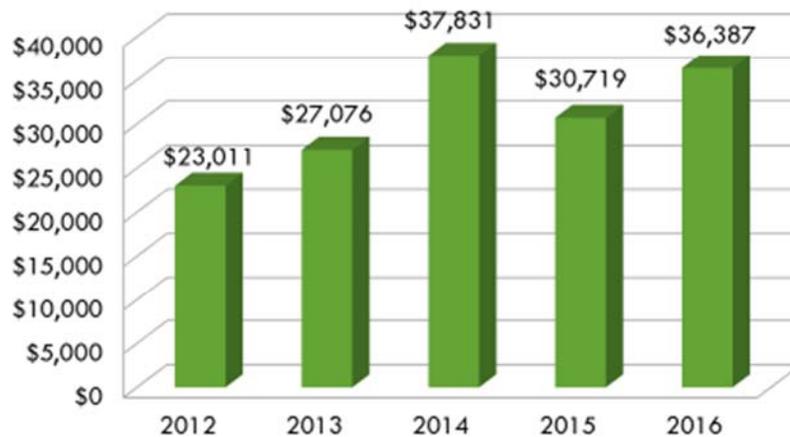


EXPORTS — LOGS (MILLIONS DOLLARS)



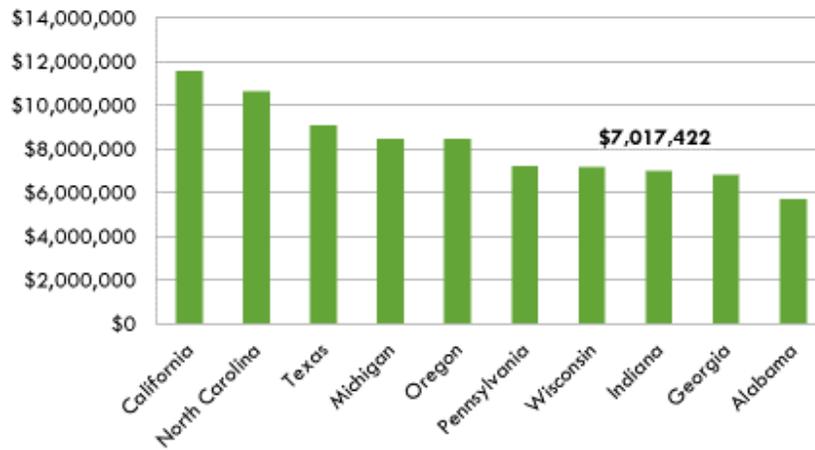
US Census Bureau 2017

EXPORTS — LUMBER (MILLIONS DOLLARS)



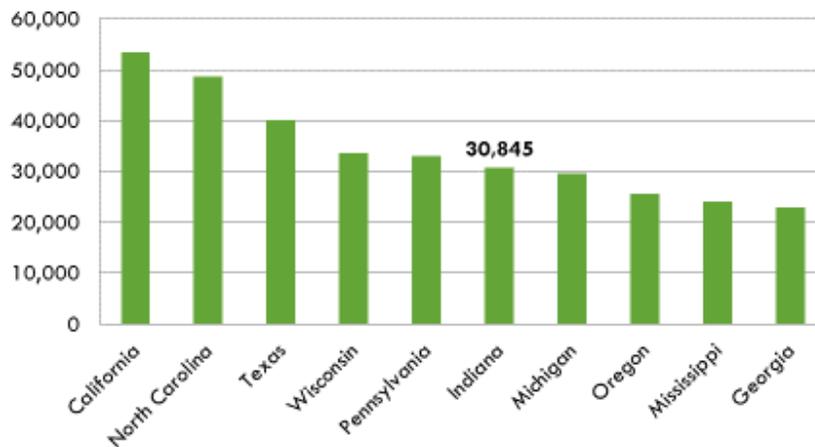
US Census Bureau 2017

US PRIMARY/SECONDARY FOREST INDUSTRY TOTAL VALUE OF SHIPMENTS (\$1000)



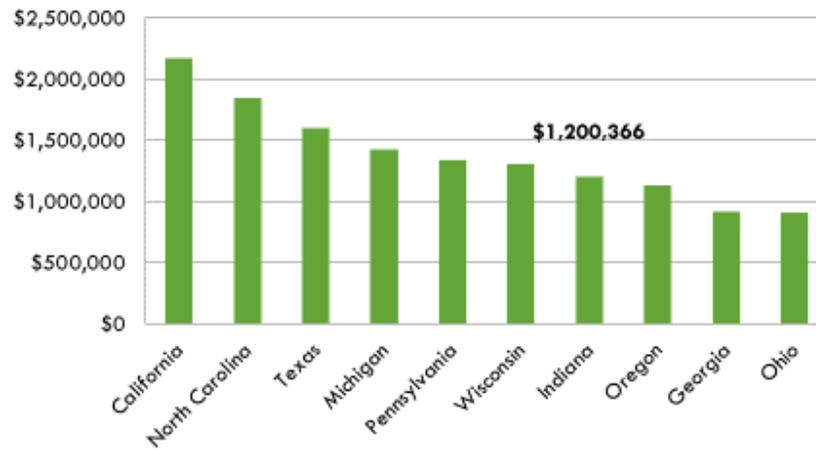
Census of Manufacturers - 2014

US PRIMARY/SECONDARY FOREST INDUSTRY # OF EMPLOYEES



Census of Manufacturers - 2014

US PRIMARY/SECONDARY FOREST INDUSTRY ANNUAL PAYROLL (\$1000)



Census of Manufacturers - 2014

INDIANA FOREST INDUSTRY FACTS

\$13.5 billion economic impact

\$7 billion in total value of shipments

\$1.2 billion in annual wages

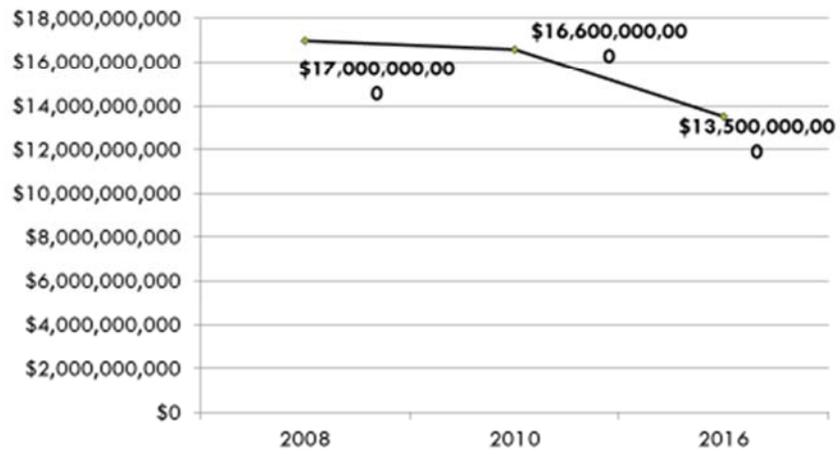
200 sawmills

For every board foot processed = \$43 of economic impact

\$166 million paid to landowners for timber

Almost 31,000 employees

TOTAL ECONOMIC IMPACT



Indiana's Hardwood Industry: Its Economic Impact, 2005, 2010, 2016



2016 export trade mission to China.

COMMUNITY & URBAN FORESTRY

Arbor Day Foundation Initiatives

In 2016, Indiana maintained 65 approved Tree City USA Communities. Of those, nine communities expanded their urban forestry program to earn a Tree City USA Growth Award. The number of Tree Campuses in the state grew to 10 participating universities and colleges. Four Tree Utilities were maintained. The Alliance for Community Trees (ACTrees) has now become a program of The Arbor Day Foundation. Neighborwoods Month (October) was still promoted in Indiana but not to the same level as ACTrees was promoted because division staff was less available to promote Neighborwoods Month programs.



Indiana municipal arborists, foresters and managers attended the Partners in Community Forestry conference in Indianapolis in 2016.

In terms of statewide metrics, the CUF program promoted its volunteer coordinator to program coordinator in July and hired an outreach coordinator in October 2016. The program also has an intermittent grants administrator. Although short on staff for three-quarters of the year, the program continued to provide direct technical assistance or education programs in 122 cities and towns, serving the approximately 3.1 million Hoosiers who live in the communities receiving technical/financial assistance and educational programs.

CUF worked harder than ever in 2016 to promote the value of urban forestry through youth education. The program partnered with Hoosier ReLeaf and many cities and towns, local utility companies and SWWCDs to hold an essay contest for 4th grade students, sponsor a nationally recognized youth education speaker at four locations, and provide experts to regional Arbor Day events. In total CUF reached more than 9,000 students teachers and parents statewide.



Walking tours were given during the National Partners in Community Forestry conference hosted in Indianapolis.

Grants Programs

In 2016, CUF contracted a total of \$100,000 in sub-grants to communities and not-for-profit organizations across the state. Sub-grants were awarded for inventories and management planning, tree planting, and education programs with 11 communities and other groups in Indiana. CUF is also working with partner communities to plant 5,000 trees through a Great Lakes Restoration Initiative grant project to mitigate the effects of EAB on community canopy cover. The two grant programs will lend to four inventories/management plans, two Urban Tree Canopy Assessments, more than 14 tree plantings (approximately 5,443 trees), and educational programs including a state-level urban forestry conference track at the Indiana Arborist Association conference in 2018.

CUF also worked with the Bicentennial Commission on applying for a Foundation grant to plant 45 trees on the Indiana State House lawn. This \$25,000 grant will support the planting of 45 native species trees, and monitoring by professional arborists, leaving a lasting legacy of native hardwood species on the Capitol grounds for the future.

Volunteer Training Programs

In 2016, three Indiana Community Tree Steward training programs trained 73 new Tree Steward Volunteers, bringing the number of total volunteers trained since 2005 to 1,684. We also held one advanced pruning day with the Porter County Master Gardeners.

As of December 2016, Tree Stewards reported more than 3,646 volunteer hours in Indiana communities at a value of \$49,000 of in-kind volunteer services for tree planting and maintenance, educational programs for adults and youth, serving on a community tree board, continuing education time, and a host of other urban forestry-related work.

Education

CUF provided tree information talks to more than 15 green group contacts statewide in 2016 (not including Arbor Day events). CUF also provided articles to Outdoor Indiana magazine, Hoosier Arborist Newsletter and the INPAWS newsletter, and sat as an expert for two Indiana DNR Facebook chats. CUF staff helped coordinate and lead trainings in Portage, Columbus, and Madison as part of the Forest Pest Outreach and Survey Program (FPOSP), in partner with DNR Entomology & Plant Pathology and Purdue University. More than 70 people attended.

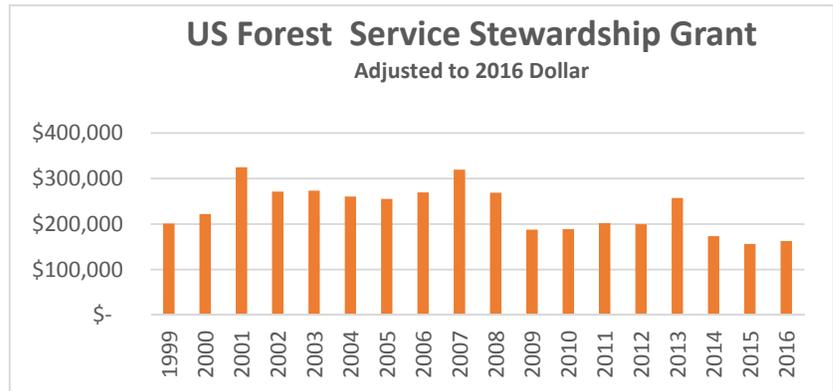
CUF staff sat on the local host committee for the National Arbor Day Foundation's Partners in Community Forestry Conference, held in Indianapolis, Nov. 16-17, helping plan two of the local tours. The program also provided 31 scholarships covering the cost of conference registration for municipal staff, local tree board members and other tree-focused partner organizations to attend the conference, along with seven Youth Tree Team members from local not-for-profit Keep Indianapolis Beautiful.

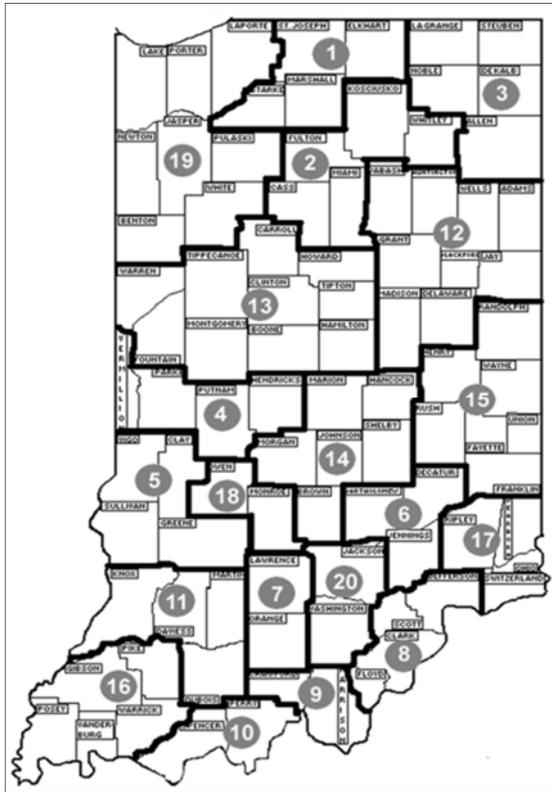
CUF staff also presented at the Indiana Association of Floodplain and Stormwater Managers (INAFSM) conference (500-plus attendees), Indiana Professional Lawn and Landscape winter meeting (250), and the State Master Gardeners Conference (200-plus attendees).

COOPERATIVE FOREST MANAGEMENT

The mission of the Cooperative Forest Management (CFM) Section is to promote forest stewardship on Indiana's privately owned forest lands, by providing forest-management information and technical assistance to owners and others, ensuring continued forest benefits, both tangible and intangible, for present and future generations.

The CFM budget is \$2.1 million (81% salaries/fringe; 11% supplies & technology). Primary funding comes from state appropriations and revenue generated on State Forests. Additional funding comes from grants from the U.S. Forest Service. Funds received from grants is decreasing.





The state is divided into 20 districts. Each district includes between two and 10 counties. District sizes are based on the amount of forested acreage in each county and the number of tracts in each county enrolled in the Classified Forest & Wildlands (CFW) program. A district forester is assigned to each district. District foresters work one-on-one with landowners and are perceived by the public as unbiased providers of forestry information.

Full staffing includes 20 district foresters, two assistant district foresters, two CFM staff, and an assistant state forester. At the beginning of 2016, two district forester positions (districts 11 & 14) and the assistant state forester position remain unfilled. During the course of the year, a district forester (District 13) and an assistant district forester left for the private sector. In addition, two district foresters retired (districts 10 & 17). Teams of districts foresters and staff covered open districts. In June, a new forester was hired for District 13. In December, the District 10 position was offered to a graduating forester. She will start her position in January 2017. Interviews for the District 11 and the assistant district forester are scheduled for January 2017. Budget consideration and the ability to attract qualified foresters

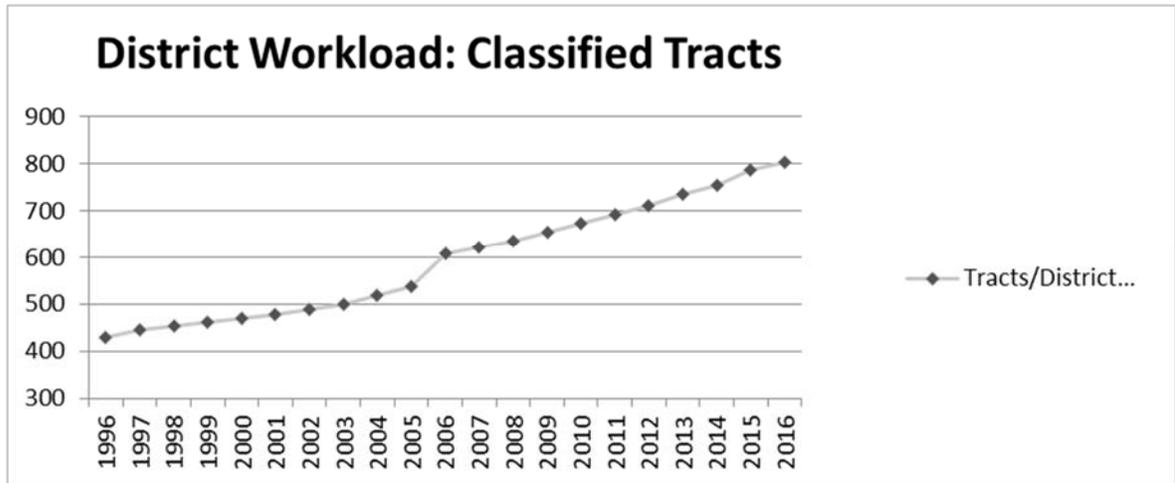
are the two biggest challenges in filling positions.

The CFM section performs the following duties related to private-lands forest management:

- Provides technical forestry assistance to private forest landowners.
- Administers the CFW program, which includes:
 - Preparing stewardship plans for people interested in enrolling acreage in CFW.
 - Enrolling acreage in CFW.
 - Performing re-inspections on CFW parcels as required by law.
 - Performing all necessary duties required by Forest Stewardship Council (FSC-C071226) third-party certification.
 - Withdrawing property from the program when requested or required by law.
- Serves as a technical-service provider to the Natural Resources Conservation Service concerning the management of the Conservation Reserve Program (CRP) and the Environmental Quality Incentives Program (EQIP).
- Provides forestry-education opportunities to landowners and other interested parties on a wide variety of forestry activities.



Jayson Waterman, district forester in east central Indiana, looks at a wildlife water hole teeming with tadpoles.



In the past 20 years, the district forester workload as it relates to the CFW program has almost doubled. In 2006, two additional districts were created to disperse the workload.

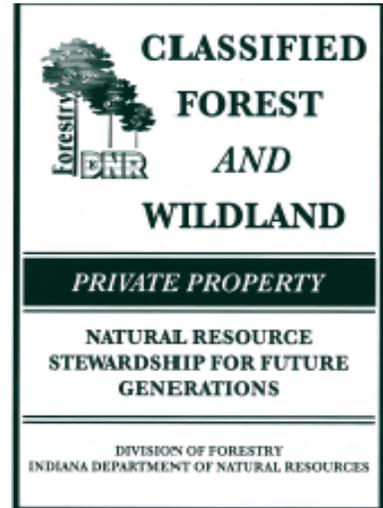
In 2016, a new redistricting plan was developed. The plan adds two districts and shifts counties between districts to balance the workload. Implementation depends on budget and the ability to find foresters.

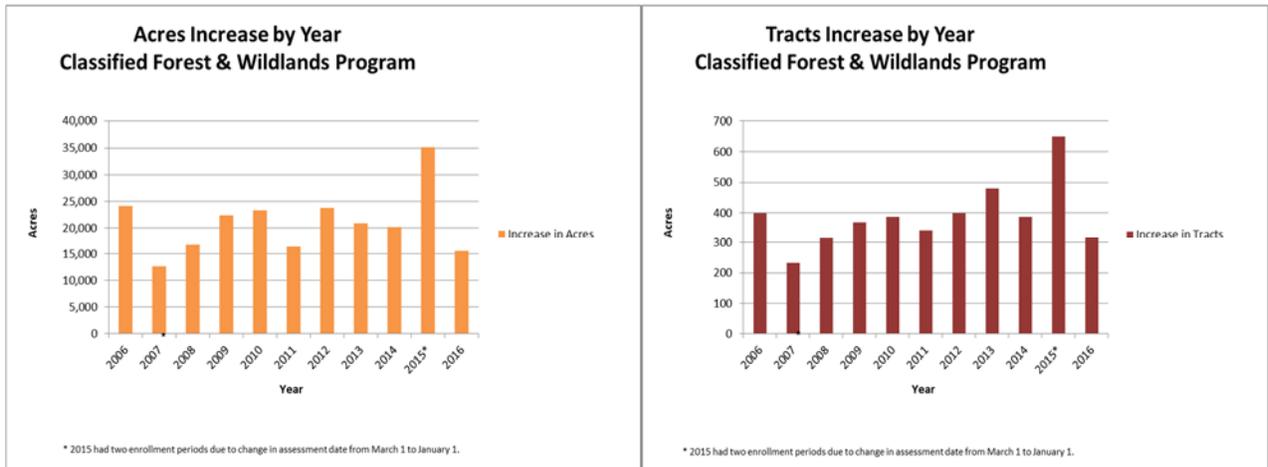
Classified Forest & Wildland Program

The CFW program is one of the nation’s oldest and most successful conservation programs. The purpose of the program is to encourage private landowners to manage their property for timber, wildlife habitat, and water quality. In return, the property tax on enrolled land is reduced.

Program Enrollment

2016 was the second year with the property assessment date of Jan. 1. Landowners must get their applications completed before the property assessment date to ensure they receive the property tax break for that tax year. The net increase for 2016 was 318 tracts totaling 15,537 acres.





CFW is a voluntary program. Landowners can withdraw, partially withdraw or add to their enrolled land at any time. In 2016, there were 50 tracts completely withdrawn, and 166 revised applications (partial withdrawals, additions or combination). A total of 1,307 acres were withdrawn from the program.

The division has an online application, Indiana Forest Resource Management System (INFRMS), to keep tract of land enrolled in the CFW. Landowners with land in the program can also log into the program to file their required annual report, submit completed management activities, and look at maps of their property. County offices can request access to the application to review classified lands in their counties.



Classified Forest & Wildlands Re-inspections

CFW tracts have to be visited once every seven years by the division (IC 6-1.1-6-19). At the re-inspection, the district forester makes sure the land is meeting the program requirements. In addition, landowners have an opportunity to walk with the forester and ask questions specific to their property. CFW tracts inspected: 2,746 tracts totaling 129,507 acres.



District forester, Allie Cline assists landowners of a recently harvested tract.

Indiana Classified Forest Certified Group

Landowners with at least 10 acres of Classified Forest can choose to have their land certified through the Forest Stewardship Council by joining the Indiana Classified Forest Certified Group. This is a free benefit of CFW. Certification provides recognition that the forest is being managed in a way that provides forest products while protecting water, soil, plant, wildlife and special features. It also allows timber from Classified forests to be sold as FSC certified.

In fall, certification auditors come to Indiana to review the program. They visit properties, talk with landowners, and review program records to determine if the Forest Stewardship Council standards are being followed. The auditors then provide a report on what is going well and areas where improvement is needed. The full 2016 Classified Forest FSC audit report is available online,

http://www.in.gov/dnr/forestry/files/fo-FSC_CFW_2016_Audit_Report.pdf.



State Forester Jack Seifert explores a tree planting that has been protected from deer by an electrified fence during a 2016 audit.

District foresters visit timber harvests (pre-harvest, active harvest, post-harvest) occurring on certified Classified Forests. The purpose of the visits is to ensure that harvest is occurring with the least long-term impact to the property. In 2016, district foresters made 492 timber-harvest inspections.

General CFM

Assists and Referrals

District foresters not only work with CFW landowners, but also provide forestry assistance and education to the general public and refer landowners to private-sector foresters for services not provided by the division. In 2016, the following assists and referrals were made:

- Referrals to private professional foresters: 1,623 referrals
- Outreach/Education: 114 events, 4,040 participants
- Incidental Assists (email, phone calls, etc.): 4,120 assists. No acreage figures are kept.

CFM Fees

The division is exploring options to fund the Cooperative Forest Management (CFM) section. Public demand for CFM services, in particular CFW enrollment and management-plan requests, have increased significantly due to property tax changes. CFM section is currently funded through state general funds and federal grants. State and federal funding has not increased. In Indiana Code (IC 14-23-1-1), the division is directed to charge for services. This has only been done sporadically since the law was put in place in 1919.

In 2015, the division presented the following CFM fee proposal:

Lands enrolled in CFW

- Annual administration fee of \$2/enrolled acre.
- Fee to be collected by county and forwarded to state. County receives 10% for collection.
- All services provided by district foresters are free for classified lands.
- Current minimum tax savings for classified land is around \$4/acre.

Lands not enrolled in CFW

Fees for services provided by District Foresters:

- Stewardship Plan: \$200.
- Revision of Existing Stewardship Plan for Cost Share (non-CRP only): \$100.
- Practice Plans for Invasive Species, Tree Planting (CRP plans not included): \$100.
- Timber Stand Improvement (TSI) Marking: \$100 for up to 5 acres; \$200 for up to 10 acres (maximum 10 acres per year per landowner).
- District Forester First Visit to Property: Free.

Comments were taken about the proposal online (<http://www.in.gov/dnr/forestry/2856.htm>) through fall 2016. Most of the comments received related to the CFW portion of the fee proposal. The majority of the comments were opposed to or had concerns about the fee proposal as written. There were a few comments that were supportive and others that were supportive with changes.

Summary of comments:

- The fees are contradictory to the division’s mission and the intent of the CFW. The fee proposal will decrease participation in the program and potentially the conversion of forest to other uses. The tax reduction of the program reduces the holding cost for landowners and makes it less likely they will use the property for other purposes that may generate more revenue. The fees will not lead to more conservation on the ground.
- The amount of the administrative fee is not equivalent to the amount of service provided. District foresters no longer mark timber, TSI marking is limited, and re-inspections have been extended from five to seven years. There is support for fees (at a lower rate than for non-classified land) for services requested beyond those required by the CFW law.
- The change is viewed as a change of contract/break of trust with the landowner.
- The argument that the fee is required because of IC 14-23-1-1 is not seen as a valid argument for CFW.
- Fear the administrative fee will increase or additional fees will be added in the future.
- Funding for the CFW should come from the general fund. Classified lands are providing public good (clean air, clean water, etc.) and taxpayers in general should pay for the benefits instead of the classified landowners who are providing the benefits paying for them.
- The division should become more efficient using technology to make up the revenue gap.

If the administrative fee is instituted, the following changes were requested:

- Grace period to leave the program without paying the back tax or flat-fee penalties.
- Grandfathering of currently enrolled parcels; no administrative fee for lands already in the program.
- Waive fee for non-profits that receive no benefit from the property-tax reduction because they are already tax exempt.
- Reduction of the \$2/acre to \$1/acre.
- Establish a cap for landowners with large acreages.
- Guarantee the administrative fee will not increase over time.
- Provide additional services in return for fee: money for invasive control, yearly services for yearly fee, and guarantee that all district forester positions be filled.

The primary comment on fees for non-classified private land was submitted by consulting foresters. Their main concern is that if the division sets rates for district forester services, it will inadvertently set the “industry” rates. If the division goes ahead with fees for non-classified lands, it should set the fees at market rates. There was one comment from a landowner who felt the proposed fees were at least 50% too low.

Forest Health

The Forest Health Specialist, after 10 years, ended the joint appointment as State Entomologist, Division Director of the Division of Entomology & Plant Pathology, and as Forest Health Specialist of the Division of Forestry, and returned to the Division of Forestry as Forest Health Specialist.

The Forest Health program conducts surveys to monitor the forests and detect forest pests, using that information to provide management assistance to foresters, forest landowners, timber industry and homeowners.

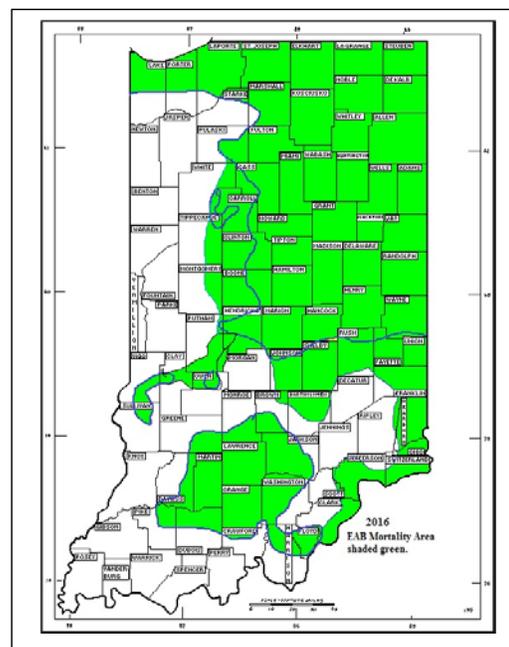
The surveys include aerial surveys to detect and map forest damage, and ground surveys to place insect traps and examine tree or forest damage from insects, disease or weather. The surveys covered 6,656,572 acres in 2016.

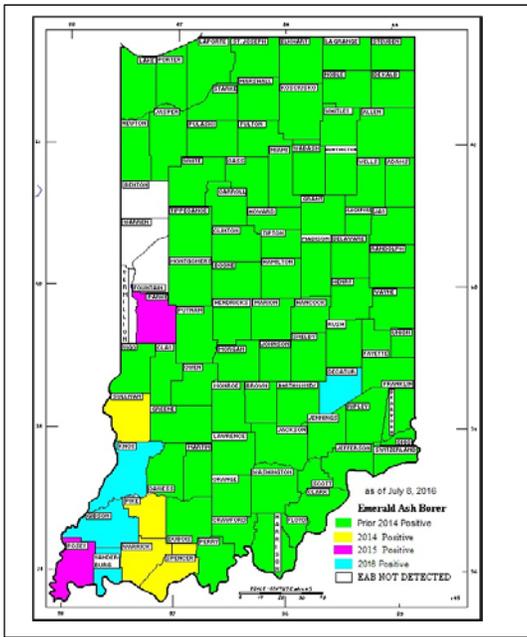
The major forest health concerns for 2016 are emerald ash borer, gypsy moth, thousand cankers disease of black walnut, chestnut oak mortality (new disease?), jumping oak gall and oak wilt.

Emerald Ash Borer

Ash mortality from emerald ash borer (EAB) was the primary forest damage again, as it has been for the past eight years, as recorded during aerial surveys. A total of 20,863 acres in 461 locations were recorded in 2016. Since mapping of ash mortality began in 2009, 152,285 forested acres have ash mortality. This does not include all forested acres with mortality. Since then, the aerial survey only recorded the “advancing front” of ash mortality for each year and did not return to the prior-year survey area to detect any forest with mortality that had developed. Thus, in the attached map, all forests, including rural and urban forests and trees with ash in the shaded area of the map, have dying and dead ash trees.

Through 2016, EAB was detected and confirmed in 88 of Indiana’s 92 counties. Counties confirmed for the first time in 2016 were Decatur, Gibson, Knox and Vanderburgh. Only, Benton, Fountain, Vermillion and Warren counties did not have a tree confirmed with EAB by the end of 2016. Vermillion had one possibly infested tree that is expected to be confirmed in 2017. (See map below.)





With only four counties without EAB, Indiana’s EAB state quarantine was no longer needed. The Natural Resources Commission repealed the quarantine in October 2016.

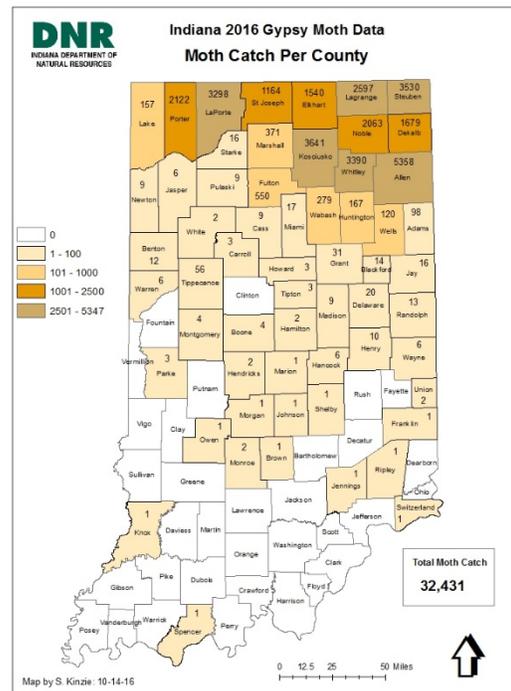
What is the future for ash? All of the ash species in Indiana—black, blue, green, pumpkin and white—are susceptible to EAB but vary in their degree of tolerance. Black ash is the most susceptible to mortality, followed by green and white ash. Blue ash is the least susceptible to mortality and appears to tolerate, recover and regenerate the most in forest stands where green and white have been killed. Susceptibility to mortality for pumpkin ash is unknown but is expected to be similar to that of green and white ash.

Gypsy Moth

The divisions of Forestry and Entomology & Plant Pathology have jointly conducted the Gypsy Moth Management Program since 1988. Since 2000, the program has been called “Slow the Spread Program (STS).”

The 2016 survey set 11,055 traps in 86 of the 92 counties. The traps caught 32,431 moths from 59 counties, ranging from one to 5,358 moths per county. This was 17,101 more than last year’s number of 15,330 (see map).

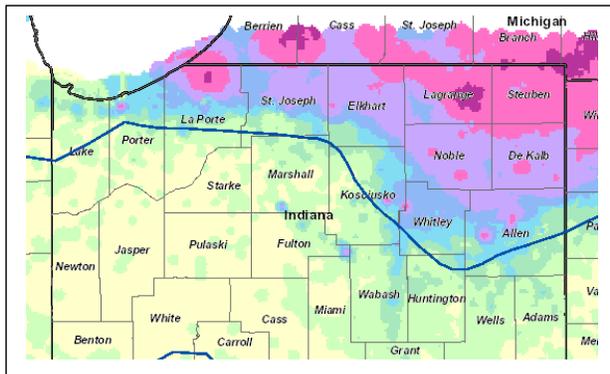
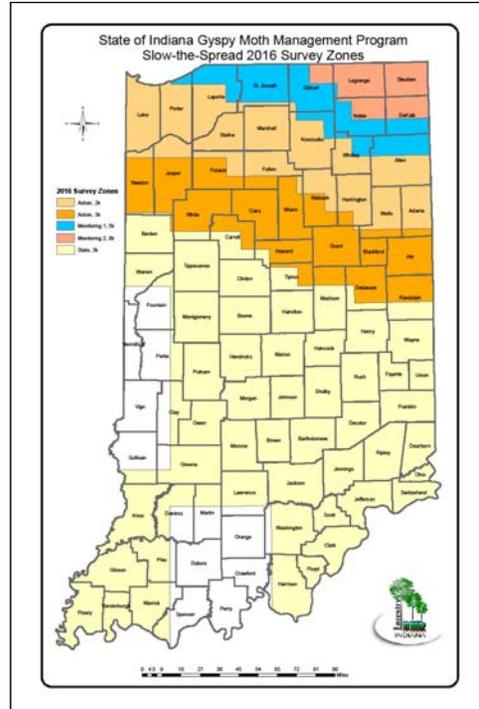
The survey is divided into the STS Evaluation and Action Areas and the State Area, which is the northern third of the state and the southern two-thirds of the state, respectively (see map). The STS Evaluation and Action areas caught 72% and 27.6%, respectively. The State area caught 0.4% (139 moths).



The STS program treats sites to slow the spread of gypsy moth and treated four sites totaling 1,089 acres with Btk (*Bacillus thuringensis kurstaki*) and four sites totaling 4,573 acres with mating disruption. The survey and treatments are supported by federal funds from the USDA Forest Service STS program.

Gypsy moth sites outside STS are eradication sites. Purdue University is the current eradication site and was expected to have no moth catch in 2016. However, 46 moths were detected in and around the 2014 treatment site. This site and an additional area is planned for treatment in 2017.

Since 1972, gypsy moth surveys have caught a total of 512,809 male moths from 90 of 92 counties. Gypsy moth has never been detected in Dubois and Sullivan counties.



The STS program has continued to slow gypsy moth and has not allowed gypsy moth to move below U.S. 30 for the past 30 years. (On the map, the blue line is the approximate location of U.S. 30.)

To date, gypsy moth has only defoliated 237 acres (total all years). In 2016, defoliation was detected or reported in two locations in Porter County totaling 96 acres.

Thousand Cankers Disease of Black Walnut

Thousand Cankers Disease of Black Walnut (TCD) has not been detected and confirmed from a walnut tree in Indiana. There is no mortality of black walnut trees from TCD occurring in Indiana.

The Walnut Twig Beetle (WTB), *Pityophthorus juglandis*, was detected in traps from a sawmill in Franklin County and a Veneer Mill in Johnson County during the 2014 and 2015 trapping surveys. The 2016 WTB survey has not detected any beetles at these mills or other locations in Indiana. *Geosmithia morbida*, the fungus involved in TCD, was not detected in 2016.

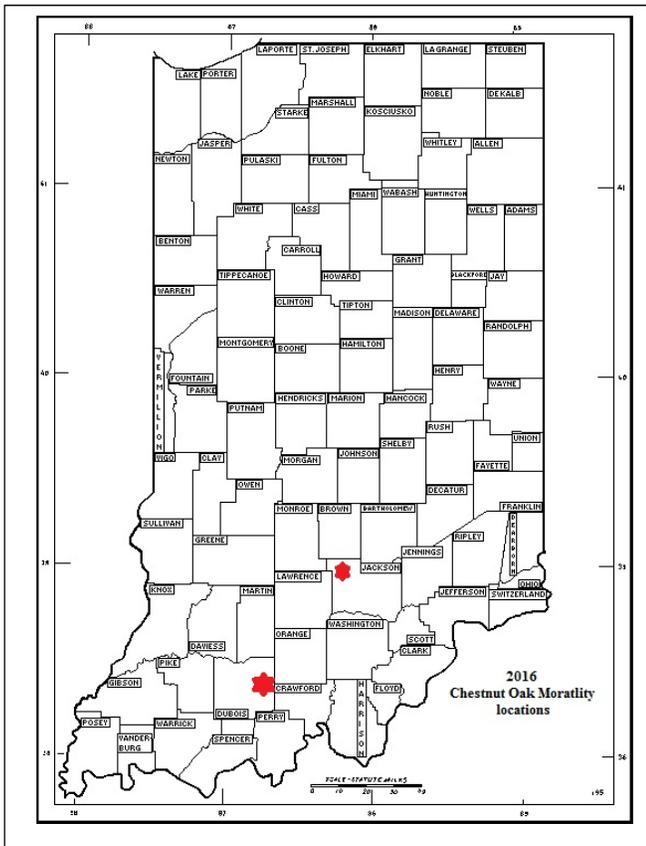
The Black Walnut Plantation on Yellowwood State Forest where *Geosmithia morbida* was detected from a weevil reared from a study tree continues to show no symptomatic trees. Only two sites are quarantined in Indiana—the sawmill in Franklin County and the plantation on Yellowwood State Forest. The Veneer Mill in Johnson County operates under a compliance agreement.

Chestnut Oak Mortality – New Disease?

In 2016, a 9-acre area on Patoka Lake had chestnut oak dying with symptoms similar to those of oak wilt. Inspection of the trees found that oak wilt was not involved, and there is concern that the symptoms may be from a new disease. The reason is that this type of mortality to only chestnut oak has not occurred before in Indiana or any other state. If it is a new disease, it could move to other oak species. (See map and photo below.).

A survey of the chestnut oak at the site in August and September found the disease to be moving rapidly through the trees, resulting in mortality. Although the disease complex called oak decline is a possible cause, the normal insects and diseases associated with oak decline were detected in the trees but do not explain the rapid mortality, which is to only chestnut oak and not the other oaks or hardwoods at the site.

Since the initial report, one additional site was reported in Jackson County. This site was reported in the fall and could not be evaluated to fully compare it to the Patoka site. It will be surveyed in 2017.



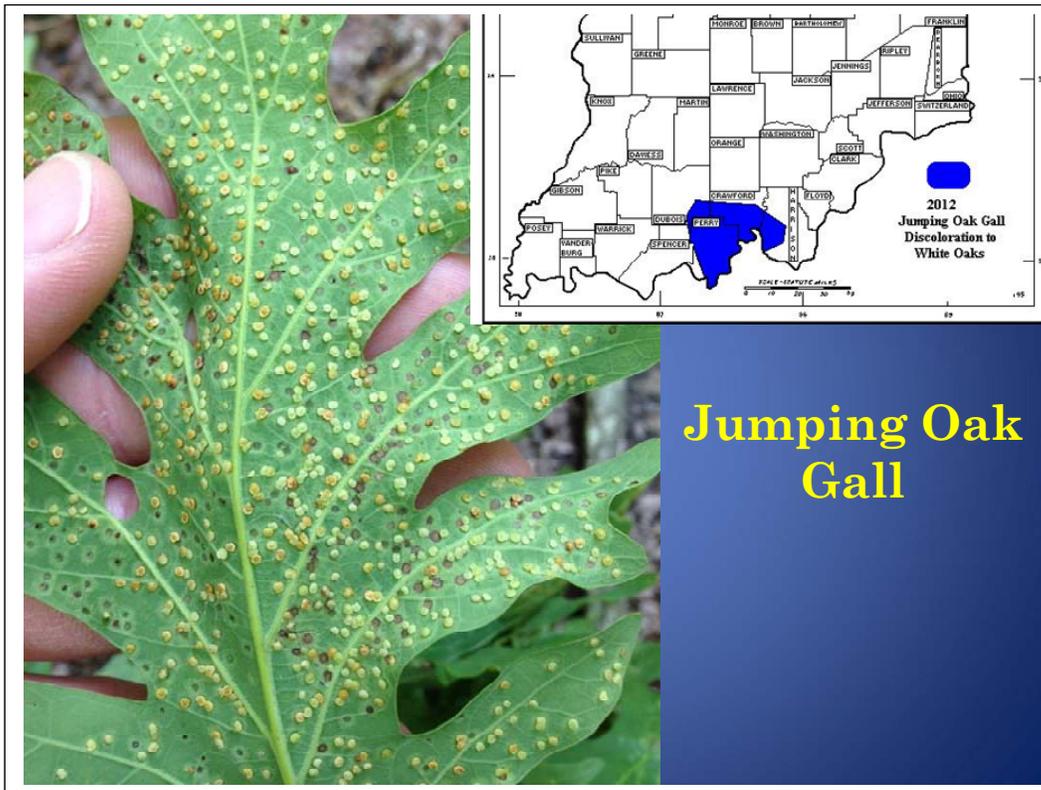
Chestnut oak mortality at Patoka Lake in September 2016. Trees with yellow and red foliage are dying chestnut oak.



Jumping Oak Gall

Jumping oak gall is a small wasp that creates tiny round galls on the underside of white oak trees. When the leaf is heavily galled, it turns a brown color in May and June. The discoloration is similar to a defoliation—it interferes with the leaves' ability to produce food for the tree, which can result in tree stress.

The brown discoloration of white oak returned in 2016 in Harrison County to Harrison-Crawford State Forest and forests in Perry County, primarily Hoosier National Forest. The discoloration is considered to be at moderate levels, which may not result in serious stress to the white oak. The first occurrence of jumping oak gall and the discoloration of white oak was in 1999 in the same counties. It happened again in 2012 and in 2016.



Oak Wilt

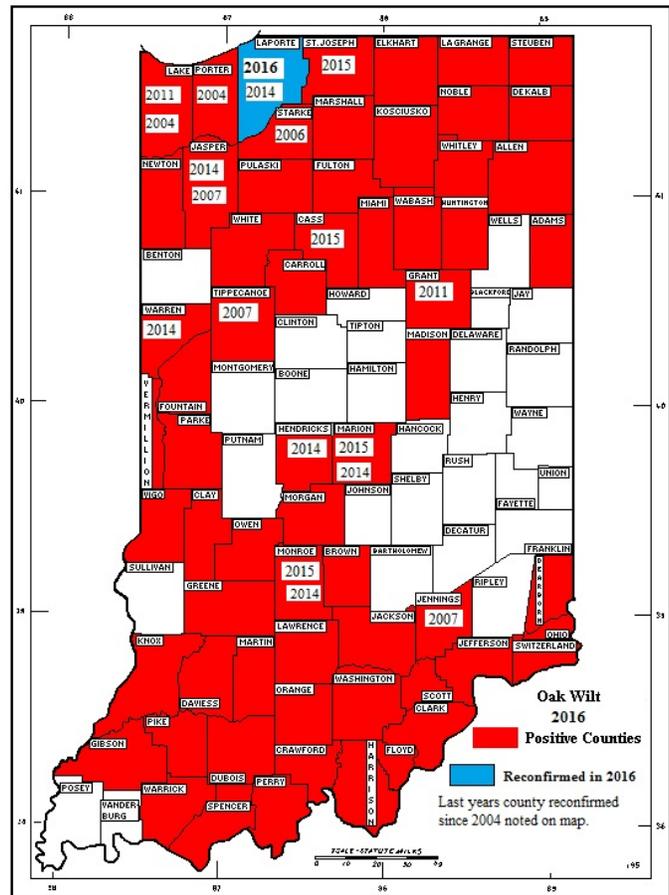
Oak wilt is a vascular disease that kills oak trees in the red oak group. Oak wilt can infect oaks in the white oak group, but they may only have branch dieback or no damage.

Oak wilt is common and prevalent in northwestern Indiana, causing annual mortality of black and red oak in the Kankakee Valley area and throughout the old prairie area of Indiana. It occurs across the state (see map).

Oak wilt was reconfirmed in LaPorte County in 2016. The last counties to record first-time-confirmed oak wilt are Hendricks and Warren in 2014. Before that it was Jennings County in 2007, and then Grant County in 2001 and again in 2011, in the same urban forest both years. The usual mortality is a spot in the forest of one to five trees, but oak wilt can kill a larger number of trees. Management methods are available for homeowners to prevent and protect their red and black trees.

This disease affects the timber industry if the logs are sold in international trade, because fumigation is a requirement of many countries for allowing logs to come into their country.

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GRANTS

In 2016, DNR Forestry continued to carry out a number of federally funded grant projects. The abstracts provided below represent a handful of the important working-forest conservation initiatives made possible through the support and assistance of federal and other partners.

Urban Select Bareroot Nursery Stock Project

The division and its Vallonia State Tree Nursery will provide special, large-sized, stock for urban planting to replace trees lost to EAB. Focusing in Indiana EPA Areas of Concern, Community & Urban Forestry specialists will distribute 10,000 trees to municipal and non-governmental organization partners for planting and maintenance. All project plantings will occur within Great Lakes watersheds and within the state of Indiana. The Indiana Division of Forestry is providing 10,000 bareroot, 2-3 year-old, quick-to-establish seedlings of the following species: *Quercus bicolor* (swamp white oak), *Quercus shumardii* (Shumard oak), *Quercus macrocarpa* (bur oak), *Carya ovata* (shagbark hickory) and *Carya illinoensis* (Northern pecan).

Large Block Outreach & Enrollment

Classified Forest & Wildlands (CFW) program expansion continues to be a goal in statewide conservation initiatives, including the 2010 Indiana Forest Action Plan. Legislated requirements, changes in state tax policy, and limited resources for hiring additional Cooperative Forest Management (CFM) staff create challenges in targeting outreach and new enrollments to large tracts in priority areas.

The project provides funding for outreach and for foresters to enroll targeted forestland, according to a prioritized parcel list developed from the Parcel Level Strategies project, a geospatial forest landowner contact-information database. The largest privately owned parcels of existing forestland within Forest Action Plan target areas will be contacted and sent information about the CFW program, federal programs, and other conservation options. Follow-up and detailed records will be kept of landowner responses, conservation intent and program enrollments.

Next Steps in Early Detection, Rapid Response

This project specifically addresses the Forest Action Plan, Strategy 3 component to “develop statewide Early Detection Rapid Response Program (EDRR) for forest invasive plants” and other action steps. It creates a robust bulwark against establishment of new invasive plants in Indiana's Target Forest Areas using a “Strike Team” to coordinate education and awareness, and to conduct control efforts for EDRR species. The project builds on an established and successful U.S. Forest Service Northeastern Area State & Private Forestry funded project in southern Illinois. DNR Forestry coordinates the project in cooperation with Southern Indiana Cooperative Invasives Management (SICM), the oldest and largest CWMA in Indiana. DNR Forestry and SICIM have an established track record of working successfully with a broad base of partners to facilitate EDRR.

Invasive plants are a significant problem throughout Indiana. A conservative estimate by the Indiana Invasive Species Council (IISC) showed that property owners and taxpayers spent \$5.85 million in 2012 to control invasive plants. State agencies spent about \$3 million controlling plant species. Control of invasive plants ranked among the top three forest issues in the 2010 Indiana Statewide Forest Assessment. Left unchecked, invasive plants are a direct threat to forest regeneration and sustainability. The project carries out the full spectrum of EDRR activities, from education and awareness to reporting and control. It

significantly enhances local-level capabilities while leveraging the Strike Team to make strides in EDRR species control.

The project leverages partner involvement from the Indiana DNR, IISC, Midwest Invasive Plant Network (MIPN) and others. It expands invasive plant EDRR efforts from a small group of well-informed partners to a coordinated regional network that acts, responds and interacts at local and regional levels to address one of the greatest threats to Indiana’s working-forest landscapes.

Sustainable Forestry Television Series and YouTube Video Series

This project will explore, in depth, 13 topics on sustainable forest management in half-hour segments, and develop 35 “how-to” instructional videos that build on DNR Forestry capacities to deliver training and information to private landowners in a reliable, on-demand format. It follows the success of “Indiana Expeditions: Forests At Work,” an hour-long TV feature first broadcast in April 2012 (also streaming online) and builds on a partnership with Metropolitan Indianapolis Public Broadcasting, Inc. (WFYI). Advances in mobile devices, changing consumer behavior, and efficiencies in audio-visual productions have increased demand for accessible, relevant and concise video to provide information on woodland stewardship to private landowners who are increasingly connected to digital media and less connected with managing their forests. Both efforts increase landowner-forest connections and help get people outdoors exploring and trying new things.

Maximizing Positive Impact of Logging in Shawnee & Brown County Hills Target Forests

This project delivers intensive, highly relevant and up-to-date training on an expanded suite of forestry best management practices (BMPs) directly to Indiana loggers who operate in Indiana’s most strategically important forests, as defined by Indiana’s Forest Action Plan, including Indiana DNR State Forests. The project focuses not only on timber harvest BMPs that protect water quality, but also on those that prevent the spread of invasive species, silviculture BMPs, and BMPs for threatened and endangered species, among others.

The Shawnee & Brown County Hills target forest is the core of Indiana’s timber-producing region. These forests are the main source of Indiana’s hardwood industry. Improved BMPs here will have an impact throughout the Central Hardwoods Region. These BMPs will affect forest ecosystems at the landscape scale and help ensure that logging is practiced with increased positive impacts and decreased negative impacts.

State Nursery Program

- Hosted a Federal Nursery Review, conducted by the U.S. Forest Service, of the Indiana Nursery Program. All facets of the nursery were visited, and recommendations were made in areas on how to increase its efficiency.
- Seedling sales and revenue collections were up from the previous year, as shown in the table below. Approximately 3,200 Indiana citizens took part in the annual seedling sales.

Summary of Nursery Statistics and Information for Years Indicated # of Seedlings Sold Expenditures

| FY | Hardwoods | Conifers | Total | Revenues | (Oper + PM) | % |
|-------|-----------|----------|-----------|-------------|-------------|-----|
| 12-13 | 2,579,126 | 434,165 | 3,013,291 | \$1,023,365 | \$1,067,403 | 96% |
| 13-14 | 2,348,686 | 297,400 | 2,646,086 | \$ 866,778 | \$ 897,270 | 97% |

| | | | | | | |
|-------|-----------|---------|-----------|------------|-------------|------|
| 14-15 | 1,633,509 | 207,135 | 1,840,644 | \$ 637,665 | \$721,900 | 88% |
| 15-16 | 2,087,962 | 273,725 | 2,361,687 | \$ 895,156 | \$770,362 | 116% |
| 16-17 | 1,800,000 | 408,390 | 2,328,770 | \$ 853,829 | \$1,090,073 | 78% |

- We provided nearly 50,000 seedlings for Indiana’s Arbor Day celebrations. Each 3rd grade student and school wishing to participate received a free tree seedling to plant.
- A new online ordering system was rolled out for the convenience of our customers. Landowners can place their order directly online from a live inventory. Payments are handled at the time of ordering, and the system only allows for the participation of Indiana residents. It can be accessed by visiting www.INForestryX.com
- A new bus was obtained for hauling our crew of DOC offenders to and from our facility for work each day. Offender labor is used in all aspects of nursery operations, from weeding in the summer to lifting and processing seedlings during the winter. A crew of up to 44 offenders comes from Edinburg Correctional Facility to make up our workforce.
- A close partnership with the American Chestnut Foundation continues. As seeds are gathered from trees in research plantings, a number of them are identified and sown in nursery beds until planted across the U.S. for further studies. The hope is to create a line of American chestnut that is resistant to the blight that ultimately depleted the U.S. of this tree species. Research is ongoing. The hope is to one day offer these seedlings for general sales.
- Corn, wheat and soybeans were grown in fallow seedbed areas as cover crops. These crops were harvested, and the remaining residue was tilled into the soil to build organic matter for future tree-seedling production. The use of a cover crop helps to reduce soil erosion and hold down weed pressure while helping build the soil profile with necessary nutrients.
- We purchased approximately 5.5 million tree seeds for 2018 stock production. Of those, 30% came from in-house collections and division-managed seed orchards.
- The program assisted with an urban tree grant by growing extra-large 2-year-old seedlings for planting in urban settings, mainly in northern Indiana communities. This will be a three-year commitment, with the first plants available for spring 2017 planting.

