Wisconsin Council on Forestry

Biennial Report

2017-2018

January 1, 2017 - December 31, 2018

This biennial report is required by state statute 26.02(2). The purpose is for the Council on Forestry to report on the status of the state § 26.02(2) (a) 1-10. Additionally, the Council chose to report on its accomplishments during the time period covered by this report.

The Council is assisted by the Wisconsin Department of Natural Resources – Division of Forestry (WDNR). This report was written by DNR staff, with review and approval by the Council.

The Council thanks the following for assistance in preparing this report: Dan Buckler, Collin Buntrock, Andrea Diss-Torrance, Rebecca Diebel, Dave Fish, Becky Gray, Ron Gropp, Kirsten Held, Mike Hillstrom, Kristin Lambert, Bill McNee, Mike Putnam, Kyoko Scanlon, Jeff Simon, Colin Sinclair, Nicolle Spafford, Jeff Stagg.

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EXECUTIVE SUMMARY

The Wisconsin Council on Forestry is a board appointed by the Governor and comprised of individuals representing the state's diverse forest stakeholders. Wisconsin State Statute 26.02 created the Council on Forestry with a charge to advise the Governor, the Legislature, the Department of Natural Resources, the Department of Commerce (now Wisconsin Economic Development Corporation), and other state agencies, as determined to be appropriate by the council, on the varied aspects of forestry in this state. The Council is required to prepare a biennial report on the status of the state's forest resources and forestry industry. This report is prepared in odd-numbered years for distribution to the governor and the appropriate standing committees of the state legislature. It covers the 24-month period ending on December 31 immediately preceding the date of the report. This report also provides the status of the state's resources and forest industry as required by state statute.

This report is available at: https://councilonforestry.wi.gov/Pages/BiennialReport.aspx

CHAIR'S INTRODUCTION

What would life be without trees? Wisconsin's forests play a key role in providing Wisconsinites with a renewable source of economic opportunity for industry and recreation; all while ensuring clean air, clean water, wildlife habitat and ecological and social benefits.

Since its creation, the Council has given direction on a countless number of forest related issues and will continue doing so well into the foreseeable future.

Serving on the Council, by appointment of the Governor, is an honor that requires a commitment of time, energy and willingness to address numerous challenges confronting Wisconsin's forests and forest owners. Council members are a dedicated and diverse group of individuals engaged in bringing forth a variety of perspectives. These diverse perspectives, combined with new or existing information, are the basis for solutions which benefit all forest users. Developing solutions is often stimulating work for the council and council members are to be commended for their accomplishments.

In addition, it takes a great deal of effort and time to track and follow through with Council decisions. As such the Council is very appreciative of DNR's Division of Forestry staff and their dedication and support to the Council.

The Council also appreciates participation by a wide variety of other forest stakeholders and would like to thank those who have served on special committees and attended Council meetings to provide input and information.

COUNCIL CHARGE

The Wisconsin Council on Forestry was created by State Statute 26.02 in July 2002 to advise the governor, legislature, Department of Natural Resources, Department of Commerce, and other state agencies on a host of forestry issues in the state, including:

1. Protection of forests, from fire, insects, and disease
2. The practice of sustainable forestry, as defined in § 28.04 (1) (e)
3. Reforestation and forestry genetics
4. Management and protection of urban forests
5. Public knowledge and awareness of forestry issues
6. Forestry research
7. Economic development and employment in the forestry industry
8. Marketing and use of forest products
9. Legislation affecting management of Wisconsin's forest lands
10. Staffing and funding needs for forestry programs conducted by the state

COUNCIL MEMBERS (During the term of this report)

Member Name	Representing
Jordan Skiff (2018)	Urban and community forestry
(vacant)	Labor unions affiliated with the forestry industry
Troy Brown	Lumber industry
Ken Zabel	Conservation education
Rep. Nick Milroy	Wisconsin Assembly
Matt Dallman	Nonprofit conservation organizations
Fred Souba, Jr.	Chief State Forester
James Hoppe	Pulp and paper industry
Sen. Janet Bewley	Wisconsin Senate
James Kerkman	Society of American Foresters
Rep. Jeffrey Mursau	Wisconsin Assembly
Ken Price	Forestry consultants
Mark Rickenbach	Forestry schools
Henry Schienebeck	Chair and Timber Producers Organization
Jane Severt	County forests
Tom Hittle	Forest products company that manages forest land
Paul Strong	U.S. Department of Agriculture
Sen. Tom Tiffany	Wisconsin Senate
Jason Sjostrom	Industry that uses secondary wood
Richard Wedepohl	Non-industrial, private forest land

2017-2018 Council on Forestry Accomplishments

Wisconsin Forest Practices Study

The FY2014-2015 Budget included funding for a Wisconsin's Forestry Practices Study (WFPS) of Wisconsin Department of Natural Resources (DNR) forestry practices. The goal of the Study was to obtain research results and provide guidance for policy development for investment in forest-based manufacturing in Wisconsin while ensuring the social and ecological benefits of forests remain viable for future generations.

As recipients of the grant to complete WFPS, Great Lakes Timber Professionals Association (GLTPA) and Wisconsin County Forests Association (WCFA) engaged the Council to assist with the overall project design and directions for research. In 2015 and 2016, the Council remained informed on the development of the project and reviewed the results of the research. Then in 2017 and 2018, the Council formed committees to make recommendations based on the proposed actions. Themes of these committees were seasonality, silviculture, and outreach/education. The Council has tracked actions that have been implemented over the last two years.

Council Work Plan

In 2018, the Council developed a work plan for 2019. It focuses on the following priorities: forestry funding, implementing recommendations from the WFPS (rutting, transportation, and education), utilization of wood products and increased marketing.

Field Tours

- Sentinel Structures Tour, Peshtigo, WI August, 2017
- Southwestern WI Forestry Tour, Spring Green, WI, October, 2018

Letters expressing support or concern

In early 2017, the Council sent letters supporting the Stewardship program, the Master Logger Program, WEEB, and Council operations to the Joint Committee on Finance as they debated the 2017-2019 state budget. They also sent a letter stating support of maintaining the forestry mill tax.
The Council sent a letter of appreciation and recognition of the Forestry Account Audit and requested the legislature to continue their strong fiscal support for forestry.

2017-2018 Report Content Required by State Statute

1. The magnitude, nature, and extent of the forest resources in Wisconsin

Forest Resources

Of Wisconsin's 35 million acres of land, 17 million acres are forested. Forest area in Wisconsin has been steadily increasing for decades due mainly to the conversion of marginal agricultural land back to forests. Currently forests cover 49% of the total land area of the state. Urban forests (the trees and green space in communities and other built areas) cover an additional 554,868 acres or about 1.6% of the total state land area.

Acres of forest land by forest type

The most abundant forest types in Wisconsin are hardwood forest types. Oak hickory, maple-beech-birch and aspen-birch forest types are the most common. Oak-hickory accounts for 4.3 million acres followed by maple-beech-birch with 3.7 million acres and aspen-birch with 2.9 million acres. While most of Wisconsin's forests are hardwood types, there are also significant softwood types occupying large areas, especially in the north and central parts of the state. Red pine, eastern white pine, tamarack, black spruce, Northern white-cedar and jack pine are the most common conifer forest types.

Species composition by forest type

- The maple-beech-birch forest type is the most common type in the northern part of the state accounting for 29% of all forestland in the region. A predominance of hard and soft maples and basswood characterize this type. Northern red oak, white ash, eastern hemlock, yellow birch and quaking aspen are also common. Maple-beech-birch supports a variety of understory plants and animals.
- Second to maple-beech-birch in the northern part of the state is the aspen-birch forest type. About 23% (2.6 million acres) of the Northern Mixed Forest region is in aspen-birch. Common tree species in this forest type include quaking aspen, bigtooth aspen, paper birch, red maple and balsam fir.
- The Northern Mixed Forest is distinguished in large part by the prevalence of conifers. The most common conifer forest type is spruce-fir accounting for 12% (1.3 million acres) of the Northern Mixed Forest. Spruce-fir forests are fairly diverse and can occur in many moisture regimes. They are the most common wet forests in the north and often surround and blend into bogs. Common tree species in spruce-fir forests include northern white-cedar, tamarack, black spruce, balsam fir and white spruce.
- Nine percent (1.0 million acres) of the Northern Mixed Forest in Wisconsin is pine forest type. Red pine, eastern white pine and jack pine are the most common species that occur in Wisconsin. Forest character can vary from jack pine barrens to red pine plantations and from thick stands of young white pine to old growth stands with pines several hundred years old. Other than pines, common associates of pine forests are eastern hemlock, red maple, quaking aspen, sugar maple and balsam fir.
- The most common forest type in the Southern Broadleaf Forest is oak-hickory. It represents about 49% (2.8 million acres) of the forests in the southern part of the state. Dominant tree species in oak-hickory forests include northern red oak, red maple, white oak, northern pin oak, black oak, basswood, shagbark hickory and bur oak.
- The elm-ash-cottonwood forest type generally is a lowland type that makes up a slightly higher percentage of the southern forests (14%) compared to the north (9%). However, the Northern

Mixed Forest contains a larger acreage of this type (1.0 million acres compared to about 0.8 million acres in the south). Common species in this forest type are black ash, green ash, silver maple and red maple.

- About 10% (0.6 million acres) of the forestland in the Southern Broadleaf Forest is in the maple-beech birch forest type. Species composition is similar to the northern maple-beech-birch forest with sugar maple and basswood being the dominant species. However, there is less hemlock, yellow birch and quaking aspen and an increased occurrence of oaks in the south compared to the northern forests.
- Other forest types of note in southern Wisconsin are white-red-jack pine (0.7 million acres) and aspen-birch (0.4 million acres).

Age class by forest type

Most forests in Wisconsin are 41-80 years old. Approximately 11% are 20 years old or younger and 6% are more than 100 years of age. The forest types proportionally best represented in the younger age class are aspen, oak-hickory, and pine; the latter two predominantly associated with dry sites. The forest types proportionally best represented in the over 100 age classes are oak-hickory, maple-beech- birch and pines.

Volume by species

In 2018, there were 23 billion cubic feet of growing stock volume, of which 6.6 billion or 29% were conifer and 16.4 billion or 71% were hardwood. The highest volume softwood species were eastern white pine, red pine, and northern white-cedar. The highest volume hardwood species were sugar maple, red maple, northern red oak and quaking aspen.

Growth, removals, mortality volume by species

Wisconsin forests are growing at a rate that significantly exceeds harvest. Between 2012 and 2018, average net annual growth exceeded harvests and other removals by 286 million cubic feet (mortality is taken into account when calculating net growth). Growing stock average annual mortality was 248 million cubic feet. During the period between inventories, average annual net growth was 581 million cubic feet. Average annual removals were 295 million cubic feet, about 51% of average net annual growth.

<u>Changes in forest composition</u>

Most of the major trends in Wisconsin forests have remained relatively constant since periodic inventories by the Forest Service began in 1936. Relative proportion of various forest types have changed significantly over the last 70 years. Hardwood succession is very apparent. Since the first official statewide forest inventory in 1936, aspen-birch forest area has decreased steadily.

Since 1936, maple-beech-birch, elm-ash-cottonwood, and oak-hickory forests have increased steadily. Conifer forest area has also increased. Wisconsin forests have increased in age over the past 40 years. In 1968, only 23% of the forests in Wisconsin were over 60 years old. By 2018, the percentage had increased to 51%. Forests more than 100 years old remained at about the same percentage: 6% (887,000 acres in 1968) and 6% (937,560 acres in 2018), an increase of 50,560 acres.

Most forest types followed the same pattern as total forest land. The exceptions were the elm-ash-cottonwood and white pine forest types which have each maintained about the same percentage of total forest land over 60 years during this time period.

Overall growing stock volume on Wisconsin forest land has increased steadily since the first forest inventory in 1936 (7.6 billion cubic feet) to the 2018 inventory (23.0 billion cubic feet).

Between 2003 and 2018, overall growing stock volume in Wisconsin's forests has increased by more than 16%, or over 3.0 billion cubic feet. Maples, northern red oaks, ashes and white and red pines are some of the commercially important species whose growing stock volume increased. Paper birch, aspen, silver maple, black oak, and jack pine volumes decreased between 2003 and 2018 inventories.

Urban Forest Resources

Wisconsin urban forests, defined here as the area within incorporated cities and villages, include 554,868 acres of woody vegetation, according to a recent Urban Tree Canopy (UTC) assessment based on 2013 aerial imagery. That canopied acreage makes up almost 29% of the state's urban lands, and about 1.6% of the state's total land. The DNR plans to expand the UTC assessment in the future to look at multiple years' imagery to detect change over time.

Insight into municipally managed urban trees is provided by the Wisconsin Community Tree Map, a compilation of tree inventories from around the state. There are currently over 724,000 trees listed in the database. While diversity across all taxonomic ranks is poor (for example, the three most common genera make up more than 57% of all trees), more recent plantings demonstrate a greater diversity (top three genera composing 38% of trees planted in the last decade).

The Urban Forest Inventory and Analysis (UFIA) program in Wisconsin is a partnership between USFS and DNR to establish permanent plots across all urban ownerships. The first field plots were established in 2015 and over seven years, around 1,300 plots will be established in census-defined urban areas of the state. Each of the sites will then be revisited every seven years, enabling the assessment of composition, health, threats and land use of the urban forest over time.

Because residential areas contain most of Wisconsin's urban trees (69%), six-thousand surveys were sent to urban landowners across four cities and their suburbs: Milwaukee, Madison, Green Bay and Wausau. The survey – jointly administered by DNR, UW-Madison, UW-Extension and USFS – received more than 1,700 responses, providing insights about homeowners' attitudes toward tree care, risks and benefits. Some of the key findings include:

- People value both the personal and community benefits from trees on their properties
- There is a need to address landowners' concerns about property damage
- Interpersonal communication is the most preferred way to learn about urban tree care
- Promoting tree planting requires different strategies for urban versus suburban landowners

Forest Health

Detection, monitoring, and management efforts continued regarding forest insects, diseases, and invasive plants that pose significant threats to the health of Wisconsin's forests. Highlighted below is the status of several key forest health issues.

Weather

Stress from weather was generally low in 2017 and 2018: temperatures fluctuated with some periods above average and some below while precipitation was above average with localized flooding impacts.

Emerald Ash Borer

By the end of 2018, emerald ash borer (*Agrilus planipennis,* EAB) was found in 51 counties of Wisconsin (municipalities indicated in green, Fig A). This invasive beetle was consistently found across the southern counties. In northern Wisconsin, populations still appeared to be scattered. The Wisconsin Department of Agriculture, Trade and Consumer Protection implemented a statewide quarantine in March 2018, removing county level regulations. Mortality of ash is extensive in southeast and southcentral Wisconsin, and along the Mississippi River. Releases of three specialist parasitoids continued in EAB-infested forest stands on state and municipal properties. Recovery surveys of the parasitoids show successful establishment. An advisory committee worked with the DNR to revise the EAB Silviculture Guidelines in 2018. The guidelines are a resource for site characteristic assessment and silviculture management recommendations.

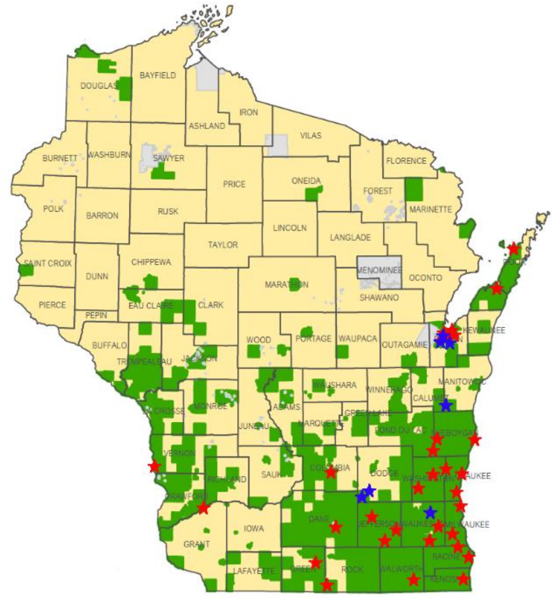


Figure A. Communities with EAB detections are shown in green. 2017-2018 natural enemy wasp release sites are shown in blue. Releases done in previous years (2011-16) are shown in red.

Gypsy Moth

Gypsy moth (*Lymantria dispar)* is established and quarantined in 50 counties of Wisconsin's 72 as of 2018 (Fig B). In 2018, the Slow the Spread (STS) program, run by DATCP, found reproducing but isolated populations in 13 non-quarantined counties, which is typical in the last few years. The STS program has been successful in slowing the westward expansion of gypsy moth and no new counties have been quarantined since 2015.

Populations of the gypsy moth were low in 2018, and no damage was recorded outside of a few yard trees. In 2017, no damage was recorded in the eastern counties of the state where the pest is generally established. However, there was a 60-acre spot of defoliation in Burnett County, indicated by a star on Fig. B, located about 35 miles outside of the gypsy moth quarantine area. This isolated, but high, population was treated by the STS program in 2018, and treatment is planned in 2019. Monitoring of the area continues.

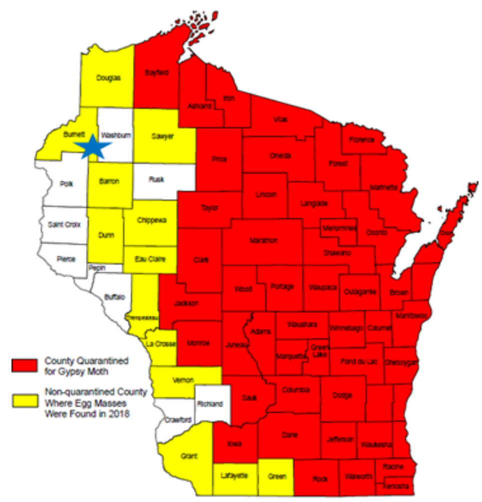


Figure B. Counties quarantined for gypsy moth and where egg masses were found in 2018.

The acreage treated to suppress gypsy moth outbreaks in the quarantined counties continued to be small: 434 acres in 2017 and 486 acres in 2018. Demand for the program has been very low since 2012, which was a factor in the decision to deactivate the DNR suppression program in 2018. Introduced natural enemies have reduced the size and persistence of outbreaks and the need for suppression treatments has become localized and is more efficiently handled by locally organized treatments.

Oak Wilt

By 2018, oak wilt (*Bretziella fagacearum*) was generally present in 47 counties, found in one or more sites in 17 counties and not found in 8 counties; 4 in the north and 4 along the Lake Michigan shore line from the Door Peninsula south to Calumet/Manitowoc counties (Fig C). Oak wilt was detected in Sheboygan County for the first time in 2017, and in Bayfield and Douglas counties in 2018. Management of oak wilt focuses on prevention as containing underground spread through a stand by trenching is expensive. State, county, and private lands entered in the Managed Forest Law program must consider precautions to prevent overland transmission of oak wilt during harvests in oak stands. These oak harvesting guidelines were revised in 2016 allowing some flexibility in oak harvesting during the restricted period, based on stand-specific situations. In 2015, the department began a study to determine if oak wilt infections could be contained using herbicides to produce a break in the root grafts between infected and healthy trees. This study will take five years to complete and it is hoped it will provide an alternative option to trenching or uprooting trees for woodlot managers.

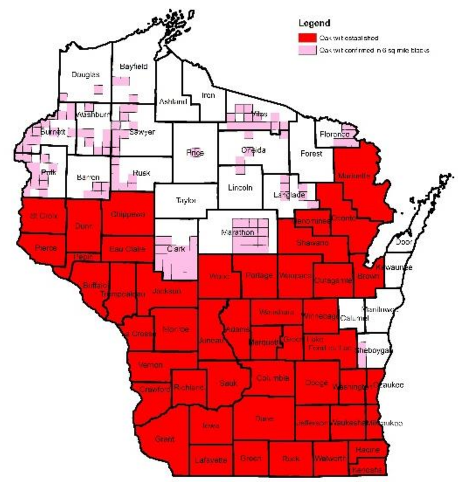


Figure C. 2018 distribution of oak wilt

Heterobasidion Root Disease

Heterobasidion root disease (*Heterobasidion irregulare*, HRD), (formerly known as annosum root rot) one of the most destructive conifer diseases, was first detected in Wisconsin in 1993 in Adams County and has since been found in 28 counties (Figure D). The disease was found for the first time in Monroe County in 2018. Most infections in Wisconsin have been in red and white pine plantations, but mortality has also been observed in spruce plantations. Management focuses on prevention of infection during thinning as it is very hard to control once in a stand. The Stump Treatment Guidelines to Reduce the Risk of Introduction and Spread of HRD were revised with an advisory committee in 2018. The revised guidelines allow more flexibility in implementing preventative treatment based on some stand-specific situations. State land managers are required to consider infection risk and treatments to prevent

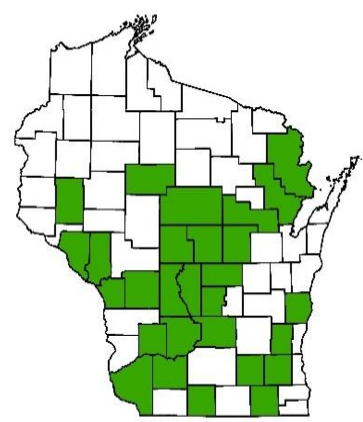


Figure D. Wisconsin counties where HRD has been confirmed (Dec. 2018) infection during harvesting if the stand is mostly pine and/or spruce, is within 25 miles of an existing infection, and is cut April – November. Private landowners are urged to do similarly.

Terrestrial Invasive Plants

Work continued with the prevention and control of invasive plants in Wisconsin's forests, both public and private. Efforts included education and outreach, support for weed management groups, and suppression and control of priority invasive plants.

Forest Health staff coordinated with partners to provide educational opportunities to foresters, loggers, and landowners on the use of best management practices to help contain the spread of invasive forest plants. An online course on best management practices for forest invasive plants was developed in 2018. This course will be hosted on the new website of the Forest Industry Safety Training Alliance (FISTA).

As part of WFLGP, the Weed Management Area-Private Forest Grant Program was administered to Weed Management Groups (WMG) throughout Wisconsin. WMGs controlled invasive plants on non-industrial private forest lands through outreach and education, inventory, control of invasive plants, post-treatment monitoring and preparation of property management plans for invasive plants. Additionally, US Forest Service grant dollars were used to leverage state dollars that assist public and private landowners control pioneer populations of invasive plants in their forests.

Inventory and control of invasive plants on state forests and other forested state properties was conducted to promote forest regeneration. Invasive plant control was performed or administered by DNR Forestry across approximately 4500 acres of private and public state land in the reporting years.

2. Current use of forest products and the benefits to the state

The predominant forest product harvested from Wisconsin's forests is roundwood for pulp and paper. Saw logs are second in prominence followed by a variety of other forest products including, roundwood for composite panels, fuelwood, woody biofuels, posts, poles, and pilings. Hardwood species comprise over 75% of total roundwood production in Wisconsin.

The forest products industry in Wisconsin supports 60,480 jobs and generates $24.1 billion in value to the state's economy. The pulp and paper sector is the largest employer with 30,614 jobs followed by sawmills and other wood products with 24,013 jobs. Further, these businesses generate $156 million in direct taxes.

A steady flow of products from well managed forests provides for a strong economy through the direct jobs that exist in the forest product industry. The timber production industry provides for primary, secondary and reconstituted wood products. Wisconsin's forest product industry creates high paying jobs. In all, the forest products industry contributes about $3.6 billion per year in wages to Wisconsin's economy.

Other amenities provided by the forest are difficult to put a value on but are significant. Forest-based recreationists annually spend approximately $2 billion within Wisconsin communities. This spending stimulates the economy further and it is estimated that forest-based recreation is a $5.5

billion-dollar industry (WEDI, 2004). Clean water and air are among other benefits of healthy managed forests that are difficult to quantify.

Urban forests in Wisconsin provide myriad ecological, social and economic benefits. Recent estimates show Wisconsin's urban forests annually remove 7,400 tons of air pollution valued at $45.3 million, annually sequester 334,000 tons of carbon valued at $43.3 million, store 11.4 million tons of carbon valued at $1.5 billion and annually provide residential energy savings valued at $81.5 million. The structural value of the urban forest (the cost to replace the trees) is estimated at $19.3 billion.

3. Projected future demand and benefits for forest products

In Wisconsin, the pulp and paper industry is the largest sector within all forest industries. It accounts for approximately two-thirds of the output in value and raw material consumption. Paper demand has historically grown with population growth, but has followed a five year up and down cycle as new plants come on line; capacity exceeds demand, and demand catches back up to production and the cycle starts over again.

Although the pulp and paper markets continue to be challenged by the growing presence of new facilities in countries such as China and Brazil, it is important to realize that paper manufacturing is comprised of four basic types, or grades: communications, packaging, specialty, and tissue. Communications includes all manner of "ink on paper" uses for the product from copier paper to books to notebook paper to advertising and information purposes. Packaging paper are those that facilitate the safe, hygienic and appropriate delivery of all manner of products. Specialty grades include a myriad of targeted uses capturing the versatility of paper. And tissue includes personal and institutional uses of tissue products, for both the home and away-from-home uses. Communication grades are being challenged by the digital revolution, but analysts and customers continue to rely on paper for a broad range of information-transfer purposes. Meanwhile, packaging, specialty and tissue paper manufacturing are regularly reporting stable markets and continued profitability.

It is reasonable to assume that the demand for paper will grow in the world, but determining the supply source is a greater question. If domestic suppliers can stay competitive in the global marketplace, they should survive. Demand has been growing for the high quality paper that Wisconsin produces. China, who has been a net importer of fine writing paper, has begun to export fine writing paper, which has generated increased competition for Wisconsin's paper industry. There are concerns that the paper industry in Wisconsin has not been investing enough capital to keep their plants efficient and competitive in global markets. This is changing as more recently the state has seen significant investment in infrastructure by the industry. If the paper industry remains competitive in global markets, it should be able to grow and provide markets for Wisconsin wood. The paper industry's adoption of bio-refining and the production of non-paper products like ethanol, hydrogen, acetic acid, and other biochemicals will be key to the long-term survival of the pulping industry in today's global market.

During 2008- 2009 economic recession the housing slump impacted sawmills and veneer plants in Wisconsin with some of the lowest lumber prices in recent history. In recent years demand for these products has improved, and as a result, Wisconsin's wood industries have experienced positive market impacts. Kitchen cabinets and wood flooring continue to provide steady markets to

Wisconsin companies, but these markets have still not fully recovered and face competition with wood substitutes. Industrial wood products such as pallets, railroad ties, and crates continue to move products world-wide and as such provide a stable market for low grade wood products.

International markets have expanded market opportunities for many Wisconsin companies, particularly to serve the high-end furniture sector. Nationally, the volume of hardwood lumber exports has increased by nearly 55% since 1999. Furthermore, international forest product exports from Wisconsin total more than $2.2 billion. The development of export opportunities to regions such as Southeast Asia and the Middle East, in addition to the growth of existing markets in China and North America, have contributed to this increase. However, Wisconsin exporters face challenges and uncertainty due to global economic pressures and the impact of tariffs on wood product exports to China. Continued assistance by the state to help companies move into these foreign markets is needed to help Wisconsin family-owned businesses take advantage of these opportunities and capture wider markets for their product offerings.

Wisconsin has high quality hardwoods and a rich species mix that will continue to be in demand for solid wood products. For example, Basswood has grown in popularity as a solid choice for wooden blinds, Ash demand has increased in Asian markets and white oak remains a popular species in the European market and also domestically for barrel staves and rift and quarter sawn products. There are discussions about exploring opportunities for market growth and production of products such as mass timber and thermally modified wood in Wisconsin to make industry more diverse and adaptable in an ever-changing dynamic forest products market.

4. Types of owners, forms of ownership and reasons for ownership

Wisconsin's forests are owned by a variety of public and private entities. An estimated 70 percent of forest land in Wisconsin (11.9 million acres) is privately owned, with family forest owner's owning an estimated 9.7 million acres. Corporations own an estimated 1.5 million acres, Native American tribes own 0.4 million acres, and other private owners, including conservation organizations and unincorporated clubs and partnerships, own an estimated 0.3 million acres.

Ownership of the 17.1 million acres of rural forest land in Wisconsin:

Public	
National Forest	8.3%
Other federal	1.1%
State	7.0%
Local government	13.8%
Private*	
Tribal	2.4%
Misc. corporate	10.4%
Individuals/Families	57.0%

*The Forest Inventory and Analysis (FIA) program has changed its tracking from previous years where "Forest Industry" is now narrowly defined as mills which also own forest land. This small acreage has been included in the "miscellaneous corporate" category.

Wisconsin cities and villages cover 2.1 million acres, just over 6 percent of the state's total land area.

Number of Private Owners and Parcel Size

According to the 2018 Forest Inventory Analysis (FIA) and the 2011-2013 National Woodland Owners Survey (NWOS), approximately 414,000 private forest landowners hold an estimated 11.9 million acres of forest land. When comparing these figures to previous inventories, it shows that the number of private forest landowners is increasing, but the acreage of private forest land may have plateaued.

Survey Unit	Acres of Private Forest Land		
	Year 2006	**Year 2011**	**Year 2016**
Northeastern	2,586,000	2,744,000	2,759,000
Northwestern	3,195,000	3,389,000	3,344,000
Central	2,432,000	2,594,000	2,614,000
Southwestern	1,944,000	2,039,000	2,034,000
Southeastern	962,000	1,104,000	1,134,000
State Total	11,119,000	11,870,000	11,885,000

Privately-owned Forest Land Average Parcel Size (Acres). Source: USDA FIA & NWOS Data; 2006 & 2013

	YEAR		
OWNERSHIP	**1997**	**2006**	**2013**
PRIVATE FOREST	41	30	*29*
NON-INDUSTRIAL PRIVATE FOREST	37	28	26

The most recent NWOS data has focused on landowners who own 10 or more acres. As a result, the table below does not contain data for the 1-9 acre parcel size class; however, it is important to recognize that the previous NWOS survey showed that the 1-9 acre parcel size class had 54% of the landowners, but only about 8% of the acreage of individual "family forest" land. When looking at ownerships of 10 acres or larger, there is not such a stark contrast. In total, about 183,000 owners hold 9 million acres. The 20-49 acre size class has 42% of the landowners and 27% of the individual "family forest" acreage. The 10-19 acre size class has 29% of the landowners and 7% of the acreage. For family forest owners with 10 or more acres, the average parcel is 48.8 acres which has changed very little from previous NWOS surveys

Family Forest Area and Owners by Size of Landholdings (10+ acres) in Wisconsin, 2013.				
Size of forest landholdings	**Acres**		**Owners**	
	Thousands	*Percent*	*Thousands*	*Percent*
10-19	636	7	52	29
20-49	2,393	27	76	42
50-99	2,291	25	33	18
100-199	2,113	23	16	9
200-499	1,145	13	4	2
500-999	356	4	< 1	< 1
1,000-4,999	76	< 1	< 1	< 1
Total	9,011	100	183	100

<u>Forest Industry Ownership</u>

Forest industry and other companies own 12% of Wisconsin's forests. A growing trend in forest industry ownership is the transferring of woodland as global corporations realign or divest their land holdings. Lands once held by paper companies and sawmills are increasingly held by Timberland Investment Management Organizations (TIMO) and Real Estate Investment Trusts (REIT). These ownership types typically sell portions of their land base to maintain higher returns on investment than timber management can provide. Forest industry and investor groups now hold 706,914 acres in Wisconsin's Forest Tax Law programs. Only 2.5% of that land is closed to public access.

To help maintain the integrity and traditional uses of industrial and other private forestlands, the federal Forest Legacy Program and the state Knowles-Nelson Stewardship Fund identify and protect environmentally important private forestlands threatened by conversion and promote the use of conservation easements to maintain outdoor recreation opportunities, wood products and wildlife habitat.

Recent purchases of conservation easements using funds from the federal Forest Legacy Program and the state Knowles-Nelson Stewardship Fund protected 20,903 acres of industrial forestlands. In Wisconsin, working forest conservation easements now protect over 270,000 acres; conservation values protected include critical wildlife habitat, lakes, rivers, and wetlands, along with providing public access for recreation activities.

<u>Demographics of Wisconsin Individual Private Forest Landowners</u>

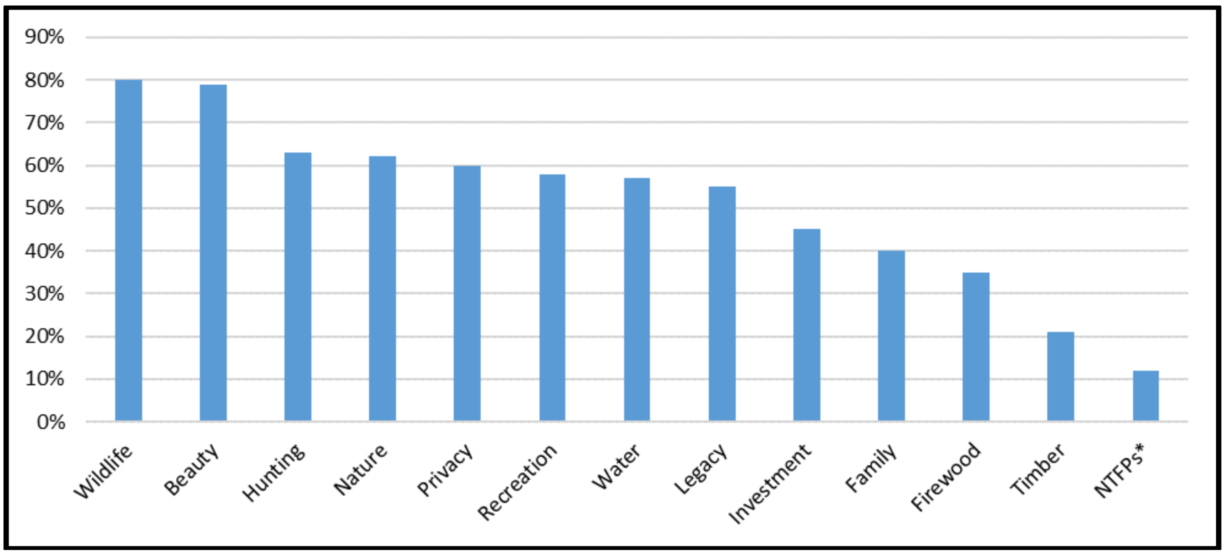
Information about the demographics, interests and management actions of family forest landowners in Wisconsin comes from the most recent USDA Forest Service National Woodland Owner Survey (NWOS). The most recent NWOS data on family forest landowners was collected from 2011-2013 and provides a snapshot of landowners who own 10 or more acres.

Family forest landowners in Wisconsin are older than the state's general population. With a large share of forest landowners retired, it follows that 37% of forest landowners are 65 years of age or older, compared to 15% of the general population. Forest landowners less than 45 years of age make up only 10% of all forest landowners, compared to 57% of the general population in Wisconsin.

In 2013, according to the US Census Bureau American Community Survey (https://www.census.gov/content/dam/Census/library/publications/2014/acs/acsbr13-02.pdf) the median household income in Wisconsin was $51,467. Among family forest landowners, 42% had annual incomes between $50,000 and $99,000, while 21% had annual incomes greater than $100,000. Family forest landowners tend to be well educated. Thirty-three percent have a bachelor's degree or higher with an additional 15% having an associate's degree and an additional 17% having some college education.

Reasons for Owning Forestland

Private forest landowner's value and own land for many reasons, including wildlife, recreation, aesthetics, hunting and privacy. Owning land for timber management tends not to rank very high as a reason for owning land, and many do not participate in traditional forest management activities or assistance programs; ~25 percent of family forest landowners have a written forest management plan to guide their land management decisions.



Timber Harvesting

Although many individual owners hold forestland for uses other than producing forest products, 63% of family forest owners have cut and/or removed trees for sale or personal use within the last five years, and nearly the same percentage intend to cut and/or remove trees in the next five years. These landowners hold over 6 million acres of forestland.

Forest Management Advice and Sources

Twenty-two percent of family forest owners have received advice or information about managing their forestland in the last 5 years. Over 70% of those who received advice utilized the state forestry agency, compared with 9% from a federal agency. Forty-six percent received advice from a private consultant and 26% from a family member or friend. Fourteen percent received advice from another landowner and 4% received advice from others.

Family forest owners say they prefer to receive advice or information from written materials, such as brochures or publications, followed by talking to someone, having someone visit their land, and using the internet. Only 18% of family forest owners say they do not need or want advice or information.

Thirty-four percent of family forest owners who harvested timber consulted with a forester on the harvest.

Private Forest Management Assistance 2017 and 2018				
	DNR Foresters		**Cooperating Foresters**	
Comprehensive Managed Forest Law or Stewardship Plans	**Number**	**Acres**	**Number**	**Acres**
	257	15,681	3,292	206,824
Number of Initial (New) Contacts	2,881		3,810	
Total Technical Service Contacts	6,822		9,312	

University of Wisconsin-Extension and non-profit educational organizations including Wisconsin Woodland Owners Association, Wisconsin Tree Farm Committee and Wisconsin Family Forests provide a variety of learning opportunities for private forest owners and others interested in managing Wisconsin's woodlands. Through field days, meetings, workshops and various partnerships these organizations help foster and encourage the wise use and management of Wisconsin's woodlands.

Concerns for Their Forests

The top five issues that family forest landowners are most concerned about for their woodlands are high property taxes (81%), trespassing or poaching (75%), keeping the land intact for future generations (74%), misuse of their forest, such as dumping (72%), and unwanted insects or diseases (68%).

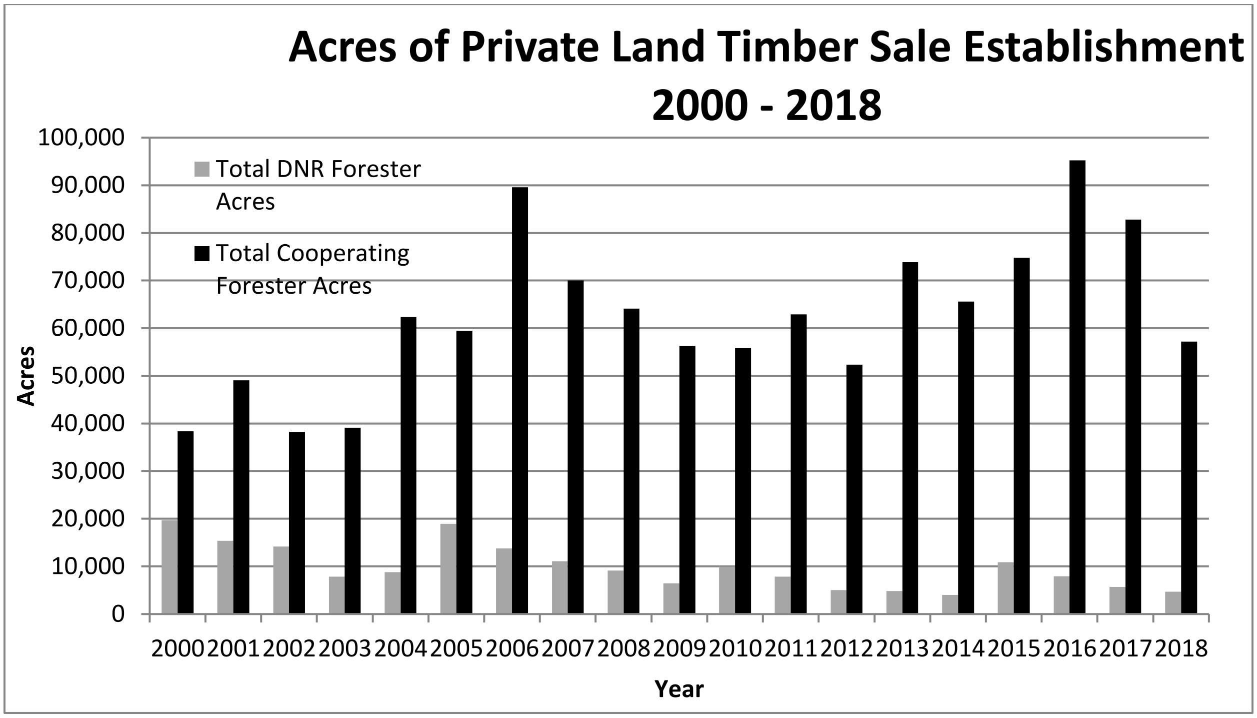
5. Success of incentives to stimulate the development of forest resources

Technical Assistance

Wisconsin Department of Natural Resources integrated service foresters are located in nearly every county of the state and provide professional planning and technical advice to Wisconsin's non-industrial private forest owners. Throughout 2017 and 2018, DNR integrated service foresters conducted outreach to landowners who have not received professional forestry assistance, educated woodland owners about forest management, built relationships with woodland owners and partners, and connected woodland owners to the resources they need to implement forest management activities.

Established in 1989, the Cooperating Forester program is a cooperative effort between the DNR and private-sector consulting foresters aimed at encouraging the practice of sustainable forestry on private forestlands in Wisconsin through a referral process; the WDNR refers landowner requests for

forestry assistance to Cooperating Foresters. There are currently over 200 private consulting firms and businesses participating in the Cooperating Forester program in Wisconsin.
Consulting foresters are independent contractors who make their living by charging a fee for the work they do. Private consulting foresters and industrial foresters voluntarily apply to participate and must adhere to the terms and conditions in a Cooperating Forester Agreement. Cooperating Foresters are listed in an online electronic directory updated quarterly) and also online on the Forestry Assistance Locator on the DNR website (go to dnr.wi.gov and enter keywords ‘forestry assistance locator’). To maintain Cooperating Forester status, Cooperators must also acquire ten hours of continuing education courses each fiscal year and file periodic reports with the WDNR.



Forest Tax Law Programs

Private forest landowners are encouraged to sustainably manage their woodlands through two property tax incentive programs, the Managed Forest Law (MFL) and the Forest Crop Law (FCL). The FCL program closed to new enrollments in 1985 after the Wisconsin State Legislature enacted the MFL program.

The MFL program is widely recognized as a model program for addressing landowners’ interests while promoting the public benefits of sustainable forestry. It provides landowners with a significant property tax reduction. Lands entered into MFL are required to have written management plans that landowners must follow. Management plans address harvesting and thinning timber, tree planting, erosion control and wildlife and aesthetic management. Plans must be prepared either by a Certified Plan Writer (CPW) or a WDNR Forester if CPW services are unavailable. The CPW program has been very successful with 206 CPWs in 2019.

The MFL program continues to grow each year. As of 2019, the program includes 50,563 MFL entries covering 3,402,652 acres. Of those lands, 30.2% (1,029,130 acres) are open to public access. There are 621 entries in the FCL program comprising 95,185 acres. All lands in FCL are open to public hunting and fishing.

The number and acres of MFL withdrawals (voluntary, involuntary, and exempt) are as follows:

Effective Date	# of withdrawals	Acres
January 1, 2013	221	8,959
January 1, 2014	311	14,589
January 1, 2015	280	11,843
January 1, 2016	278	13,102
January 1, 2017	284	10,590
January 1, 2018	328	7,598
January 1, 2019	265	6,586

On January 1 annually, additional acres of new mandatory practices become available for loggers and contractors. These mandatory practices are largely commercial timber harvests and thinnings; however, they may also include tree planting, release, site preparation and other practices to ensure that trees are healthy and actively growing. DNR and Cooperating Foresters, loggers, and landowners work together to complete these mandatory management practices. The following chart shows the number of mandatory practices and acreage by year and the date the practice was originally scheduled for completion:

	Beginning Practices and Acreage		Remaining Practices and Acreage in 2019	
	Number	**Acreage**	**Number**	**Acreage**
Pre-2007*	7,870	102,113	314	409
2007	1,769	27,389	54	60
2008	3,321	49,772	75	362
2009	2,210	31,502	94	214
2010	6,236	98,283	307	1,287
2011	3,023	50,459	158	832
2012	4,009	58,180	372	2,181
2013	4,312	65,344	409	2,200
2014	4,428	69,043	665	3,401
2015	7,130	117,810	1,180	1,220
2016	4,515	74,374	877	1,456
2017	5,635	77,550	1,296	4,417
2018	7,016	99,248	1,994	15,086
2019**	5,674	85,060		

*Mandatory practices prior to 2007 were scheduled before the current tracking system was developed. These practices may be corrected or updated over time.
**Mandatory practices which came due as of January 1, 2019.

The number of mandatory practices reflects a decline in the transition of lands enrolled in the Forest Crop Law (FCL) program to the Managed Forest Law (MFL) program, but practices continue to gradually rise as new MFL enrollments increase (as shown in Figures 1 and 2).

Figure 1: Number of scheduled mandatory practices as of 2019.

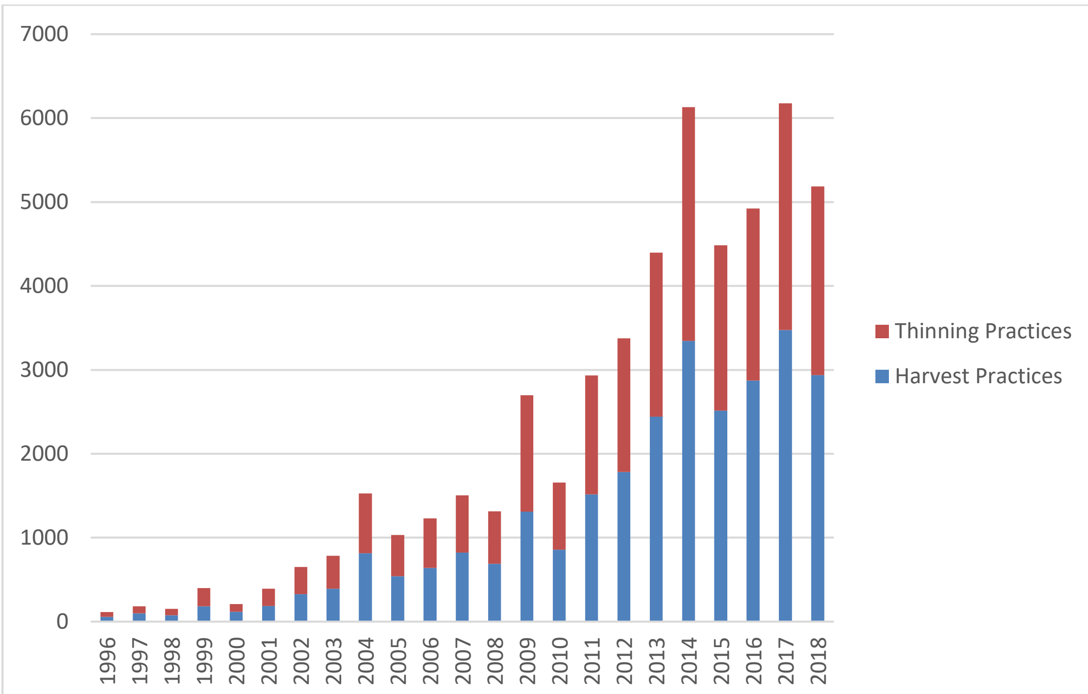
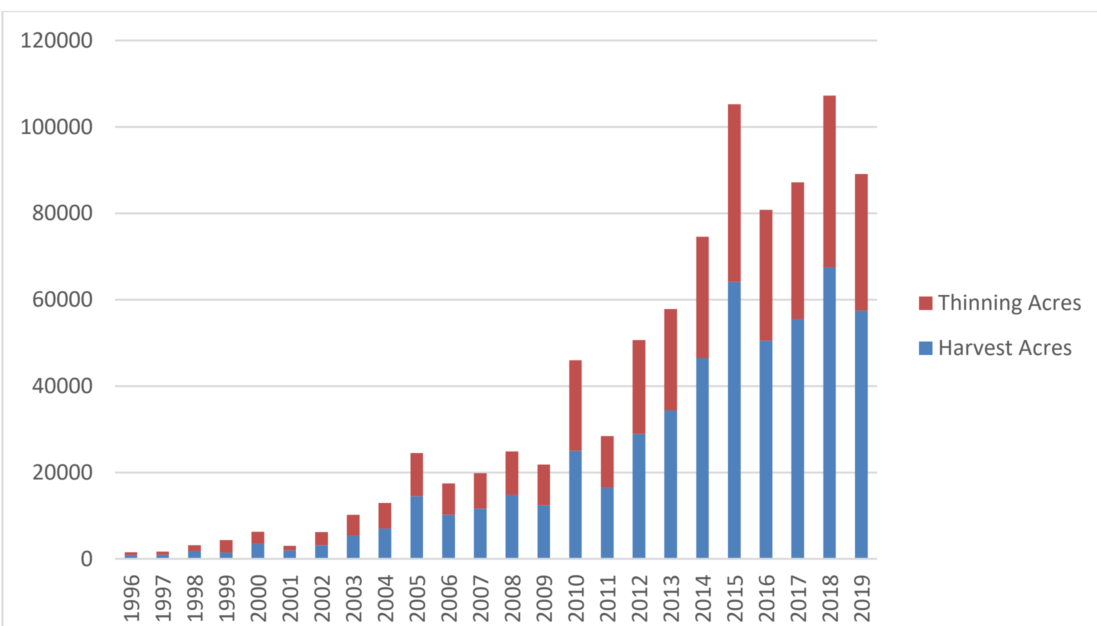


Figure 2: Acreage of scheduled mandatory practices as of 2019.



Wisconsin Forest Landowner Grant Program

The Wisconsin Forest Landowner Grant Program (WFLGP) encourages private forest landowners to manage their lands in a manner that benefits the state's forest resources and the people of the state. WFLGP provides technical assistance and cost sharing to private landowners to protect and enhance their forested lands, and to protect the water resources. The program allows qualified landowners to be reimbursed up to 50% of the eligible costs of eligible practices incurred by the landowner up to the predetermined component "not-to-exceed" rates

The allotments for fiscal years 2017 and 2018 were $1.14 million and $1.29 million respectively. Maximum cost share is $10,000 per landowner per year. The table below does not cover all practices cost-shared but shows some of the more common practices for which there were 1,600 cost-shared in 2017 and 2018.

Wisconsin Forest Landowner Grant Program
Number of practices and dollars encumbered by practice for fiscal years 2017 and 2018
(Dollars are based on the estimated cost of reimbursement (50% of practice cost) at the time the application was approved and not actual amounts paid out to landowners.)

	2017		2018	
Practice	**# of practices**	**Dollars**	**# of practices**	**Dollars**
Stewardship plans and revisions	309	$ 170,657	173	$ 110,985
Undesirable species control	249	$ 603,287	208	$ 500,945
Site preparation	152	$ 173,473	135	$ 154,705
Tree plantings	107	$ 151,675	107	$ 180,709
Crop tree release	35	$ 40,953	27	$ 24,580
Exclusion fencing	25	$ 55,224	21	$ 48,370
Seedling protection	14	$ 8,115	7	$ 5,513
Pruning	8	$ 6,530	10	$ 8,100
Direct seeding	5	$ 2,095	3	$ 1,750
Insect & disease prevention and management	4	$ 3,600	1	$ 3,375
Total	**908**	**$1,215,609**	**692**	**$1,039,032**

Environmental Quality Incentive Program (EQIP)

The Environmental Quality Incentive Program (EQIP), a federal program administered by the Natural Resources Conservation Service (NRCS), provides up to 75% cost share and can cover practices to be implemented over a 10-year period. Cost sharing is available for forestry practices such as conservation activity plans, tree planting, forest stand improvement, forest trails and landings and erosion control.

EQIP practices in 2017 and 2018 on forest land in Wisconsin.				
	2017		2018	
EQIP Practices	# contracts	Dollars	# contracts	Dollars
Forest Management Plans	113	$186,177	164	$248,070
Forest Stand Improvement	52	$152,744	46	$280,393
Tree/Shrub Site Preparation	29	$ 44,788	28	$ 34,296
Tree/Shrub Establishment	33	$ 84,435	40	$ 86,316
Forest Trails and Landings	9	$ 43,422	5	$ 31,867
Tree/Shrub Pruning	3	$ 15,895	5	$ 19,962

Urban Forestry Grants

The Urban Forestry grant program provides 50-50 cost-share funds to Wisconsin cities, villages, towns, counties, tribal governments, and 501(c) (3) nonprofit organizations to improve their ability to manage the community urban forest resource. A total of $1,100,517.47 was awarded for priority projects in 2017 and 2018. Priorities in 2017and 2018 included consideration of a canopy approach, directing efforts to both public and private trees, and emerald ash borer (EAB) preparation (conducting inventories, assessing community impact of EAB, developing EAB readiness plans, removing high risk ash, planting a diversity of non-ash species and providing EAB staff training or public outreach).

The Urban Forestry grant program was oversubscribed in both of the last two years. In 2017 $424,722.97, approximately 44.3% of eligible requests went unmet. In 2018 $200,969.25, approximately, 26.4% of eligible requests went unmet.

Grant funds are strategically disseminated based on levels of need. Applicants self-select for Regular or Start Up funding. The Regular grant (maximum $25,000 award) assists communities in advancing their urban forestry management. The Start Up grant (maximum $5,000 award) targets new or less developed urban forestry programs. Of the 130 proposed projects submitted in the last two years, the department awarded 14 Start Up grants and 57 Regular grants.

6. Possible economic opportunities that may result from improved forest-product marketing and increased business dealing in or use of forest products

Market growth for Wisconsin forest products could have significant economic opportunities in the state. These opportunities include job creation, business retention and growth, and captured value in underutilized forest resources. Bio-refining, emerging applications for nanocellulose, and growth in packaging grade papers show promise for the pulp and paper mills in the state. In addition, a close examination of waste streams suggests economic opportunities for the production and marketing of chemical and fiber byproducts. Incorporating process improvement strategies into the state's wood manufacturing segment is also promising. For some mills, strategies such as LEAN manufacturing have been shown to increase production efficiency while reducing costs.

The marketing of Wisconsin's forests as sustainable and certified serves to differentiate Wisconsin products in both domestic and international markets. Promotional efforts to showcase the unique attributes of Wisconsin's forest resources are needed to expand the state's value-added wood and paper products into wider markets. These qualities also stand to attract new businesses looking for a stable supply of quality raw materials for production of their products.

The development of new products and markets hold promise as viable opportunities, yet it is important to not lose sight of traditional or established products and industries. Mass timber products (e.g. cross-laminated timber), thermally modified wood, and engineered wood products present opportunities for sawmills and wood manufacturers to diversify their product offerings. Consideration should be given to ensure established uses of forest resources such as for pulp and paper products, wood fuels, furniture, millwork, and pallets remain viable and even grow.

Furthermore, increased access to international markets for forest products can strengthen Wisconsin's economy by fostering market diversification and growth. Given the recent volatility in exports, continued efforts by WDNR and WDATCP staff, along with other forestry experts outside these agencies, are needed to assist producers in navigating the exporting process while also assisting the industry in taking advantage of emerging forest products and technologies. These efforts have been successful in past years and should continue to gain more momentum in the foreseeable future.

7. Recommendations for increasing the economic development of the forestry industry and employment in the forestry industry

Economic development efforts in the forestry industry should focus on supporting existing forest businesses while also identifying opportunities to strengthen markets and incorporate new technologies into the sector. By expanding economic opportunities, the forestry industry could expect an increase in employment through business growth when supported by efforts to recruit and retain skilled workers across the industry.

Market growth for forest products has a net benefit on the entire forestry supply chain, from landowners, forest managers, loggers, trucking firms, and mills. Wisconsin's business climate is strong for new and existing industries seeking a stable, high quality supply of forest raw materials, including those sourcing third-party certified products. Furthermore, Wisconsin's forestry industry will benefit from unified efforts to bring wood users and producers together to create awareness of the environmental, social, and economic benefits of forest products. This can increase the market share of Wisconsin products both domestically and abroad.

Over the past two decades, global market growth for hardwood products has led to an increase in exports by Wisconsin producers. The scale of these markets and the diversity of products demanded is an important market for Wisconsin wood products. However, recent demand shifts caused by global economic pressures and trade policies have caused volatility and uncertainty for hardwood exports. Continued efforts to assist industry with export assistance and market identification are highly recommended.

The forestry industry relies on a safe and efficient transportation infrastructure to deliver forest products to market. Continued maintenance, along with modern improvements to Wisconsin's transportation infrastructure, are necessary for forest industry retention and growth. Similarly, affordable and reliable access to trucking, rail, and intermodal services will allow Wisconsin to compete in both domestic and international markets.

The development of new products and technologies is another opportunity for economic growth. The market growth of mass timber, nanocellulose, biochemicals, and wood energy would have a positive impact on the state's local economy and would also create new job opportunities. To stimulate these efforts, ongoing research is needed to investigate the potential for development in Wisconsin while also maintaining the Division of Forestry's capacity to provide forest resource data, technical assistance and technology transfer.

8. The effect of state and local governmental laws and policy on forest management and the location of markets for forest products

2017-2018 Legislation
http://www.legis.state.wi.us/

Below is a summary of two bills that were passed into law during the 2017-2018 legislative session that will have an impact on forestry in Wisconsin or employees within the Division. A list of those bills that did not pass is also included below. Between the Assembly and Senate, a total of seven forestry related bills were introduced (companion bills not included).

Session	Assembly Bills Proposed	Assembly Bills Passed into law	Senate Bills Proposed	Senate Bills Passed into law
2005-06	23	11	4	1
2007-08	9	1	6	1
2009-10	25	5	15	4
2011-12	13	1	10	6
2013-14	18	6	16	6
2015-16	7	1	5	1
2017-18	6	1	6	1

ASSEMBLY
The Assembly considered 6 bills during this session which impacted forestry in Wisconsin or the Division of Forestry. The following was passed into law in the Assembly:

AB754 – Wisconsin Act 299.
The Act relates to vehicle weight limits, and permits for vehicles transporting certain loads, on certain state trunk highways in Ashland County and Vilas County.

Assembly bills that did not pass:
1. AB150 – requiring the payment of health insurance premiums, and establishing a loan program, for survivors of a law enforcement officer, emergency medical technician, or fire fighter who dies in the line of duty and making appropriations.
2. AB230 – fences on closed managed forest land.
3. AB338 – sale of public lands owned by the Board of Commissioners of Public Lands to the state; county management of certain state lands; merit scholarships for certain University of Wisconsin System students; the obligation of moneys for land acquisition under the

Warren Knowles-Gaylord Nelson Stewardship 2000 Program; and making an appropriation (at the request of the state treasurer).

4. AB619 – charitable donations to the family of a law enforcement officer or fire fighter killed in the line of duty.
5. AB889 – eligibility for managed forest land program only if the land is owned by a resident of this state.

SENATE

The Senate considered 6 bills during this session which impacted forestry in Wisconsin or the Division of Forestry. The following was passed into law in the Senate:

SB178 – Wisconsin Act 43.

The Act allows a fence that prevents the free and open movement of wild animals across managed forest land (MFL) if the fence is used for dog training on closed MFL owned by a nonprofit organization that holds a dog club training license.

Senate bills that did not pass:

1. SB97 - requiring the payment of health insurance premiums, and establishing a loan program, for survivors of a law enforcement officer, emergency medical technician, or fire fighter who dies in the line of duty and making appropriations.
2. SB270 - sale of public lands owned by the Board of Commissioners of Public Lands to the state; county management of certain state lands; merit scholarships for certain University of Wisconsin System students; the obligation of moneys for land acquisition under the Warren Knowles-Gaylord Nelson Stewardship 2000 Program; and making an appropriation (at the request of the state treasurer).
3. SB638 – vehicle weight limits, and permits for vehicles transporting certain loads, on certain state trunk highways in Ashland County and Vilas County.
4. SB664 – charitable donations to the family of a law enforcement officer or fire fighter killed in the line of duty.
5. SB803 - eligibility for managed forest land program only if the land is owned by a resident of this state.

9. Recommendations as to staffing and funding needs for forestry programs and other conservation programs related to forestry that are conducted by the state to support and enhance the development of forest resources.

Council on Forestry

The Council will continue to work with forestry community members to develop future recommendations for staffing and funding needs based on information resulting from ongoing efforts such as Wisconsin Forest Practices Study and other council initiatives. At this time the council has no specific recommendations to report.

Division of Forestry

During 2018, the Division of Forestry assessed potential budget initiatives but did not formally request any additional funding for the 2019-2021 biennial budget.

Federal Funding

The Division of Forestry receives federal funding in the form of core and competitive grant awards from the US Forest Service. These amount to approximately $1 million each fiscal year, or 2% of the total funding for division operations. These core grant awards are issued for the purposes of forest fire suppression, forest health, forest stewardship, and urban forestry.

In addition to the federal funding there is a cooperative agreement between the US Forest Service and WDNR under Good Neighbor Authority (GNA). Under the agreement the division acts as steward of revenues from timber sales on the Chequamegon-Nicolet National Forest (CNNF) conducted under GNA. Timber sale receipts pay the US Forest Service for bills of collection, offset costs incurred through GNA implementation, lapses funding back to the Forestry SEG account for repayment of "seed money" granted by the Legislature, and will eventually be used to initiate landscape restoration projects.

Finally, the division acts as the pass-through agency for federal funding for Payments in-Lieu of Taxes and National Forest Income Aids. The former are moneys received from the federal government attributable to payments associated with national forest lands for distribution to towns, villages in cities in proportion to the level of municipal services provided by each. The latter are moneys received from the federal government for allotments to counties containing national forest lands, and designated for the benefit of school districts in such counties, and are distributed in proportion to the national forest acreage in each county as certified by the US Forest Service.

10. Recommendations as to the need to increase the public's knowledge and awareness of forestry issues

Wisconsin's forestry community recognizes the need to increase the public's forestry knowledge and awareness to have an informed electorate that understands and supports sustainable forestry in Wisconsin. Following are some endeavors undertaken by members of Wisconsin's Forestry Community during 2017-2018 to address that need:

- **Into the Outdoors:** The Great Lakes Timber Professionals took the lead in funding and coordinating with Discover Mediaworks on the production of an episode of the "Into the Outdoors" television show. This 30-minute show was aired on the Into the Outdoors syndicated television network that includes all of Wisconsin, reaching 1.56 million viewers (half adult and half under 18 years old).

- **Log-a-Load events:** The Great Lakes Timber Professionals also coordinated multiple Log-a-Load-For-Kids events during the biennium. At the events, thousands of school children get to see logging equipment in action and participate in other educational activities as the loggers donate their time and the value of a load of logs to the Children's Miracle Network.

- **K-12 forestry education:** The Wisconsin Center for Environmental Education in UW-Stevens Point's College of Natural Resources continues to administer LEAF (Wisconsin's K-12 forestry education program), Wisconsin's school forest program, and Project Learning Tree with funding from the Wisconsin Department of Natural Resources – Division of Forestry.

  The school forest program celebrated its 90th anniversary in 2018. It has grown from the first three school forests dedicated in 1928 at Laona, Wabeno, and Crandon to more than 400 school forests today that offer more than 27,000 acres of forestland for Wisconsin's students to learn about Wisconsin forestry through hands-on experiences in these outdoor classrooms.

The LEAF program added to their series of teaching kits that supplement their curriculum (available online as free PDF downloads and through educator workshops) by adding kits focused on forest products (2018) and wildland fire (2017).

- **Forest Exploration Center:** The nonprofit Forest Exploration Center continues to develop forestry education opportunities on the 67-acre property owned by the Wisconsin Department of Natural Resources in Wauwatosa (Milwaukee County).

- **Trees For Tomorrow:** Trees For Tomorrow in Eagle River has been educating students about Wisconsin forestry since 1944 and has reached hundreds of thousands of students at their accredited school over the years. Their 2017 focus was on the development of new and updated elementary lessons and methods, so they now offer inquiry-based elementary lessons that are aligned with Next Generation Science Standards. The new lessons were piloted in the fall of 2017 with great success and feedback. In addition to their K-12 education work, Trees For Tomorrow also offers programs and events for adults and families; 2018 marked the eighth year of their annual free family day called Forest Fest. That event showcases the wide variety of product we enjoy and rely on from our forests.

- **North American Forest Partnership:** Members of Wisconsin's forestry community supported and participated in a new national coalition called the North American Forest Partnership. This diverse partnership shares a commitment of sharing the story of sustainable forestry. Their original content and forestry messages reach more than a million people monthly via the #forestproud social media platforms.