

WISCONSIN
COUNCIL ON
FORESTRY
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Biennial Report 2021-2022

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 was assisted by the Wisconsin Department of Natural Resources – Division of Forestry with drafting this report. The Council approved the final report at their May 16, 2023 meeting.

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Cover photos: forester © Joel Despain; oak leaves © Jeff Martin; timber © Derek Johnson

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EXECUTIVE SUMMARY

The Wisconsin Council on Forestry is comprised of individuals appointed by the Governor to represent the state's diverse forest stakeholders. Wisconsin State Statute 26.02 created the Council with a charge to advise the Governor, the Legislature, the Wisconsin Department of Natural Resources (DNR), and other state agencies, as determined to be appropriate by the council, on the varied aspects of forestry in Wisconsin. 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 31st, 2022. The following is a summary of the topics covered in this report that are required by statute to be addressed biennially.

The Wisconsin forestry community's strength is rooted in the cohesiveness of its member's dedication to the stewardship of our forest resources, our industry and workforce, and Wisconsin's public and private forestland owners. Over time, this community has excelled at adjusting and maintaining the flexibility to address current diverse challenges and planning to position Wisconsin to continue to prioritize the health of our state's forests and overall economy. The Council appreciates the opportunity to continue its role to lead these efforts.

The Council's work in 2021 and 2022 continued to focus on being a conduit of information for Wisconsin's forestry community, holding 12 meetings, with additional committee meetings. The Council continued efforts started in 2020 to hold meetings with open virtual attendance options and has found this typically increases attendance and overall participation.

While the Council heard and discussed numerous and varied topics, the primary focus was on efforts to support, develop, and diversify the forest industry. The forest products industry in Wisconsin supports over 61,000 jobs and generates \$24.4 billion in value to the state's economy. The industry stimulates additional economic activity through interindustry and household spending and is estimated to generate total economic contribution of \$38 billion. In addition to these sizable contributions to our economy, a vigorous forest products industry is the cornerstone for the sustainable management and overall stewardship of our forests. The Council's efforts over this biennial period evolved from listening sessions addressing industry needs and opportunities to focus on the development of a Forest Industry-Wide Strategic Plan and Roadmap, with related efforts expected to continue beyond this report timeframe.

Other amenities provided by the forest are difficult to put a value on but are significant. Outdoor recreationists annually spend approximately \$13 billion. This spending stimulates the economy further and it is estimated that outdoor recreation is a \$20 billion dollar industry. Well-managed forests provide carbon sequestration, combat climate change, as well as provide clean water, clean air and habitat for wildlife; all of these benefits are often difficult to quantify.

Urban forestry activities in Wisconsin directly contributed \$966 million in industry output by supporting 12,517 full- and part-time jobs in various businesses and activities. Including direct, indirect, and induced effects, urban forestry had a total contribution of \$1.6 billion in industry output to the state economy, employing 16,725 people with a payroll of about \$672 million.

Wisconsin's forest industries rely on the state's 17 million acres of forestland. The U.S. Forest Service's National Inventory and Analysis (FIA) program suggests that Wisconsin's land area covered by forests has been increasing over the last few decades. However, observations from the forestry community in

Wisconsin suggest that productive forestland has recently come under increasing pressure from land use conversions. Monitoring and assessing this current trend will be important to understand the ecological and economic impact caused by the loss of productive forest land to other land uses. A 2016 report completed for the Wisconsin Forest Practices Study on overall timber availability showed that statewide about 62% of nonfederal forest acres were considered potentially available for timber production.

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. Wisconsin forests are growing at a rate that significantly exceeds harvest. Between 2015 and 2021, average net annual growth exceeded harvests and other removals by 309 million cubic feet (mortality is taken into account when calculating net growth).

Threats to the forest during this period included above average tornado occurrences. High speed winds and golf ball sized hail caused heavy damage to 96,000 acres of aspen and pine in Burnett and Polk counties. Wildland fire management in Wisconsin prioritizes the protection of human life, property and natural resources from unwanted wildfires while strategically using prescribed fires to enhance our natural communities and the ecosystems we manage. Education, safety and training programs and an extensive network of partners are utilized to suppress, manage and prepare for fires statewide. Wildfire acres burned in 2021 were about 6 percent above the 10-year average, while acres burned in 2022 were only 37 percent of the average annual acreage burnt.

Emerald ash borer (EAB) continued its spread across Wisconsin; by the end of 2022, it had been found in 66 of 72 counties. EAB is common across the southern half of the state and has already caused extensive mortality in that area as ash has been largely eliminated from wetland forests. Widescale decline and mortality was still uncommon in the northern counties but is expected to be dramatic when it starts to occur.

In 2021, the Entomological Society of America adopted new rules for common names for insects that no longer allow references to ethnicities, races, or people groups. The DNR forest health program played a critical role in ensuring input from forest health managers and other applied stakeholders from around the country was included in the selection of the new name, spongy moth. Drier spring weather in 2021 and 2022 increased caterpillar survival and an outbreak phase began in 2022. High numbers of egg masses in these areas and others around the state indicate continued high populations expected in 2023 and expansion of defoliation into new areas. If dry spring weather continues in 2023, defoliation may be extensive across the area where spongy moth is established. While 2022 treatments were successful in preventing heavy damage, the population of the pest remains high in those sites.

Oak wilt has been found in 65 of Wisconsin's 72 counties. Oak wilt continues to be a significant, though scattered, source of mortality for oaks, especially among red oaks. Management of oak wilt focuses on prevention as containing underground spread through a stand is difficult and expensive.

Heterobasidion root disease (HRD), is one of the most destructive conifer diseases, first detected in Wisconsin in 1993 in Adams County and since been found in 30 counties. Management focuses on prevention of infection during thinning as it is not possible to control once it becomes established in a susceptible forest.

Work continued with the prevention and control of invasive plants in Wisconsin's forests. DNR Forest Health staff coordinated with partners to provide educational opportunities on the use of best management practices to help contain the spread of invasive forest plants. Species controlled include buckthorn, wild parsnip, garlic mustard, black and bristly locust, Japanese knotweed, and Japanese stilt grass. A special project in 2022 was the use of goats to control buckthorn in the Brule River State Forest. The Forest Health Program administers the Weed Management Area-Private Forest Grant Program (WMA-PFGP), which provides funding to groups for invasive plant management on non-industrial private forest land under 500 acres. Projects funded by the WMA grant included conducting inventory, control, and follow-up monitoring on over 400 acres of private land as well as various print and social media campaigns reached over 44,000 people.

Paper demand has historically grown with population growth but has experienced rapid change in the past two decades due to growth in e-commerce and digital communications, globalization, and advancements in product development.

Although pulp and paper markets continued to be challenged by the growing presence of new facilities in countries such as China, India, and Brazil, it is important to realize that paper manufacturing includes additional final products. Wisconsin saw significant investment and conversions into packaging by the industry. If the paper industry remains competitive in global markets, it should be able to grow and provide markets for Wisconsin wood fiber. The paper industry's adoption of bio-refining and the continued diversification into stable or growing market sectors, such as specialty products and packaging, will be key to the long-term survival of the pulping industry in today's global market. During the COVID-19 pandemic, lumber prices and demand experienced rapid growth. As a result, Wisconsin's wood industries experienced positive market impacts. Kitchen cabinets, furniture, and wood flooring continued to provide steady markets for Wisconsin companies. However, these markets saw increased volatility in the last year and face competition with wood substitutes. Industrial wood products such as pallets, railroad ties, and crates moved products world-wide and as such provided a mostly stable market for Wisconsin wood.

An estimated 70 percent of forest land in Wisconsin is privately owned, with over 80 percent of that owned by family forest and non-industrial private owners. Federal ownership includes about 1.6 million acres of the total 17 million acres. State lands comprised mostly of DNR-managed lands account for a similar amount – 1.6 million acres. County owned lands, consisting predominantly of County Forest acreage amounts to about 2.4 million acres.

In comparison to previous inventories, the number of private forest landowners has increased, while the private forest land acreage has remained steady. The average age of family forest owners in Wisconsin is 61 years, with 41 percent of the family forest land owned by those who are at least 65 years of age. As landowners age, the way they transfer their land to the next generation will, at least in part, determine the future of Wisconsin's forests and how they are managed. Although many individual owners hold forestland for uses other than producing forest products, 88 percent 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. The top five issues that family forest landowners are most concerned about for their woodlands are high property taxes, trespassing or poaching, keeping the land intact for future generations, misuse of their forest, such as dumping, and unwanted insects or diseases.

Since the launch of DNR's "Connecting with 20,000 Forest Landowners" in 2018, nearly 200,000 landowners have become aware of their forests and learned more about forest management. Nearly 18,000 new landowners have taken the action to request a property site visit and walked their property with a professional forester, many of whom have decided to take additional action to manage their woodlands.

My Wisconsin Woods (MWW) is a partnership of Aldo Leopold Foundation and Wisconsin DNR. It has become a trusted source of information with a communications platform that empowers woodland owners with the knowledge and tools necessary to identify and start realizing their goals. MWW currently has 40,000 Facebook followers and 14,000 email subscribers. The brand is highly visible, and the audience is engaged through "click and open" rates far exceeding national benchmarks. The MWW social media campaign has more than doubled its members across all platforms over the last 5 years and has been instrumental in engaging the audience for the 20K landowner initiative and raising awareness about sustainable forestry.

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 ceased new enrollments in 1985 after the Wisconsin State Legislature enacted the MFL program. The program includes 50,833 MFL entries covering 3,497,437 acres. Of those lands, 27.4% (959,618 acres) are open to public access for hunting, fishing, hiking, sightseeing, and cross-country skiing. There are 334 entries in the FCL program comprising 37,566 acres. All lands in FCL are open to public hunting and fishing.

Wisconsin leverages funding from the federal Forest Legacy Program (FLP) and the Knowles-Nelson Stewardship Program (KNSP) to protect large blocks of unfragmented private working forest landscapes for the purpose(s) of maintaining traditional uses and keeping forests as forest by acquiring conservation easements (CEs). CEs also protect environmentally important private forestlands threatened by conversion to non-forest uses that provide the highest conservation value and public benefit. Purchases of working forest conservation easements using a combination of federal and state source funds protect more than 300,000 acres of privately held timberland, the most recent of which was the 12,420-acre phase I of the Pelican River Forest acquired in April 2022.

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. Demand for cost sharing exceeds current funding.

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. Financial assistance is available for forestry practices such as conservation activity plans, tree planting, forest stand improvement, forest trails and landings and erosion control.

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. In the event of a declared State of Emergency, the DNR Urban Forestry Grant program allots 20% of its available annual funds to aid communities, non-profits, and

tribes. A catastrophic storm means damage to urban forests caused by snow, ice, hail, wind, or tornado. Catastrophic storm does not include insect infestation or disease, forest fire, drought, or water saturation due to flooding. In July of 2021, a State of Emergency was declared due to storm damage. Five communities submitted funding requests for a total amount of \$228,434.50.

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 across the state, region and globally. Efforts should ensure established uses of forest resources such as for pulp and paper products, wood fuels, furniture, millwork, and pallets remain viable and even grow. The expansion of thermal wood energy systems across the state presents opportunities for schools, businesses, and forest products firms to access affordable fuels while also creating markets for low or no-value fiber or mill residues. Increased access to international markets for forest products can strengthen Wisconsin's economy by also fostering market diversification and growth. Given the recent volatility in exports, continued efforts by DNR and DATCP 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.

Economic development efforts in the forestry industry should focus on supporting both existing and new forest businesses while also identifying opportunities to grow markets and incorporate new technologies into the sector. Wisconsin's forestry industry would benefit from unified efforts to bring consumers, design professionals and producers together to foster awareness of the environmental, social, and economic benefits of locally produced Wisconsin forest products. The Council and their partners are engaged in efforts to create a strategic plan or "roadmap" for Wisconsin's forest products industry that focuses on changes occurring in our traditional markets, industry structure and workforce. A strategic plan and roadmap will provide the direction and path to vitalize, diversify and sustain our large, often fragmented industry by improved coordination, partnerships, and collaboration with industry stakeholders and government. It will also identify the opportunities to effectively pivot, mobilize and compete in rapidly changing and new marketplaces that are developing regionally, nationally, and internationally.

Forestry related legislation in 2021 and 2022 included three pieces of legislation passed into law covering the threshold amount of timber sold from state, county, or community forests above which certain approval and notice requirements apply, modifying the permit for certain oversize or overweight vehicles transporting forest products, and clarifying and adjusting Managed Forest Law program components.

The Council continued to participate in forestry state budget matters related to funding needs for forestry and conservation programs. Last year, a diverse forest industry coalition sought a Federal Build Back Better Regional Grant which made it through to the final round before ultimately not being selected for funding. This process created a blueprint for success for Wisconsin's forest products industry and showcased how partnerships help support and grow Wisconsin's forest-based economy. The Council, along with its partners, continued to seek support and funding for programs and efforts that will support, develop and diversify our industry as well as specific needs such as maintaining forestry funding from General Purpose Revenue at forestry mill tax calculated levels, increasing funding to support forestry improvement efforts on private lands, increasing funding for forestry education efforts, and providing additional funding towards developing new technologies and advancements in wood utilization and products, along with funding for education and training our forest industry related workforce.

Wisconsin's forestry community recognizes the need to increase the public's forestry knowledge and awareness and to have an informed electorate that understands and supports sustainable forestry in Wisconsin. The Council's work to explore forestry messaging and marketing identified the need to transform perceptions of a dying, legacy industry to one that is vibrant, making products that are sustainable and in-demand and that will underpin rural economies and communities as well as help mitigate climate change. The centerpiece identified by the Council would be an ongoing campaign to engage with and tell stories of the quality, sustainability, benefit, and the future of forest products to a broad audience including citizens, landowners, elected officials, tribes, business sectors, and customers and potential customers.

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



Respectfully Submitted,

A handwritten signature in black ink that reads "Thomas J. Hittle". The signature is written in a cursive style.

Thomas Hittle
Council on Forestry Chair

A handwritten signature in black ink that reads "Matt Dallman". The signature is written in a cursive style.

Matt Dallman
Council on Forestry Vice Chair

CHAIR'S INTRODUCTION

Our forests and forest industry are a significant part of our state's history and culture dating back well over 100 years. The appointment of E.M. Griffith as the first state forester in 1904 brought organization and leadership to sustainable forest management in Wisconsin. Since then, strong partnerships between state, federal, and county forest and land and natural resource managers, private sector foresters, and forest industry representatives, along with a strong cohort of private forestland owners have tended our forestlands and urban trees with an uncompromised stewardship philosophy. Our forests today exhibit increasing trends of forested acreage with growth figures that exceed the volume we harvest to support our industries. The forestry, wood products and paper industries were highlighted as a cornerstone of our state's rural communities in the December 2020 Wisconsin Economic Development Corporation's (WEDC) Rural Voices for Prosperity Report summarizing the findings of the Governor's Blue Ribbon Commission on Rural Prosperity. Report authors reported hearing a few key points that appropriately summarize the significance of our forests:

- Forestry, wood, and paper have deep roots in rural Wisconsin's economy and culture, and have new opportunities to endure, employ and contribute to prosperity.
- Forestry, wood products and paper remain a core industry for rural Wisconsin- and the entire state.
- Wisconsin has world-class forestry assets.
- Well-managed working forests are good for Wisconsin and its economy.

These key points are consistent with what the Council hears from our stakeholder groups and are common threads in the Council's work.

Serving on the Council, by appointment of the Governor, is an honor that requires a commitment of time, energy, and the 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 existing or newly discovered information, are the basis for solutions which benefit all forest users. The Council strives to strike a balance of addressing issues that span from being current and time sensitive to issues that are on the near horizon as well as topics that are perhaps well off in the future in an effort to meet our statutory charge of advising the Governor, DNR and other state agencies and legislators. The Council sees our role as including efforts to proactively assess a wide host of forestry issues so that we can inform and advise forestry stakeholders and policy makers on actions that can be taken now to mitigate negative or enhance positive long-term outcomes.

Council members volunteer a significant amount of time and energy to further Council efforts but could not be successful in our mission without the support provided by the DNR; support that starts with the Secretary's Office, and the Chief State Forester and includes experts from a multitude of DNR teams.

The Council also greatly appreciates participation and values the input offered by a wide variety of other forest stakeholders and would like to thank those who serve on Council 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)*

Chair Hittle and Vice Chair Dallman would like to recognize the service of all Council members including a special acknowledgement to those that left the Council during this period including Paul Strong, Michael Bolton, Kenneth Price, Gary Halpin, and Representative Beth Meyers.

Member Name	Representing	Terms Served
Tom Hittle (<i>Chair</i>)	Forest products company that manages forest land	2021 & 2022
Matt Dallman (<i>Vice Chair</i>)	Nonprofit conservation organizations	2021 & 2022
Henry Scheinebeck	Timber Producers Organization	2021 & 2022
Senator Janet Bewley	Wisconsin Senate	2021 & 2022
Senator Mary Felzkowski	Wisconsin Senate	2021 & 2022
Representative Jeff Mursau	Wisconsin Assembly	2021 & 2022
Representative Beth Meyers	Wisconsin Assembly	2021 & 2022
Representative Katrina Shankland	Wisconsin Assembly	2022
Kenneth Price	Forestry consultants	2021 & 2022
Jason Sjostrom	Industry that uses secondary wood	2021 & 2022
Jordan Skiff	Urban and community forestry	2021 & 2022
Paul Strong	U.S. Department of Agriculture	2021 & 2022
Jenn Youngblood	U.S. Department of Agriculture	2022
James Hoppe	Pulp and paper industry	2021 & 2022
James Kerkman	Society of American Foresters	2021 & 2022
Rebekah Luedtke	County forests	2021 & 2022
Heather Berklund	Chief State Forester	2021 & 2022
Buddy Huffaker	Non-industrial, private forest land	2021 & 2022
William Van Lopik	Conservation education	2021 & 2022
Michael Bolton	Labor unions affiliated with the forestry industry	2021 & 2022
Adena Rissman	Schools of forestry accredited by the Society of American Foresters	2021 & 2022
Erik Rantala	Lumber industry	2021 & 2022
Gary Halpin	Lumber industry	2021

2021-2022 Council on Forestry Accomplishments

In the 2021-2022 biennium, the Council held 12 meetings with meeting locations in Madison, Wisconsin Rapids, Milwaukee, and Rhinelander. In May 2021, meetings transitioned from entirely virtual to either an in person or hybrid format. A variety of informational topics were covered over this period to inform Council members and their stakeholders, along with others who joined in the public meetings. Council past meeting agendas, minutes, and documents can be accessed on the Council's website here: <https://councilonforestry.wi.gov/Pages/MeetingsArchive.aspx>

Topics included (but not limited to):

- Forest Regeneration Monitoring
- Wisconsin Forest Practices Study
- Carbon – Emerging Opportunities
- Tour of the Wood County Solar Project & Sand Valley Conservation Easement
- Build Back Better Regional Challenge Grant
- Best Management Practices for Water Quality
- Silviculture Guidance Team Updates
- Forestry-related Funding Updates
- Workforce Innovation Grant
- Urban Forestry Economic Study
- Tour of the Ascent Mass Timber Building & Forest Exploration Center
- Wisconsin Initiative on Climate Change Impacts (WICCI) Report
- Bat Habitat Conservation Plan (HCP) Update

In November 2020, the Governor asked the council to lead an effort to convene a Regional Economic Diversification Summit (REDS) through the U.S. Economic Development Administration to develop a long term, sustainable strategy for Wisconsin's forest products industry. Following this, the Council developed a [visioning statement in March of 2021](#) and in May 2021, working with the DNR and the Wisconsin Economic Development Corporation (WEDC) facilitated public listening sessions to gather information on supporting, developing and diversifying Wisconsin's forest industry. To begin the sessions, opening remarks and industry perspectives were provided by a number of dignitaries including Governor Tony Evers, Lieutenant Governor Mandela Barnes, U.S. Representative Ron Kind, U.S. Senator Tammy Baldwin, DNR Secretary Preston Cole, WEDC Secretary Missy Hughes, Brian Brashaw - Assistant Director U.S. Forest Service Cooperative Forestry Wood Innovations and Forest Products Marketing Unit, Troy Brown - President, Kretz Lumber, Dr. Paul Fowler - Executive Director, Wisconsin Institute for Sustainable Technology, UWSP, and Crystal Rhode - Business Development Specialist, Northwest Regional Planning Commission. Over 200 individuals participated in 11 facilitated focus group discussions contributing their comments on five questions:

1. What's still working in the industry that has been working for years?
2. What are examples of where our forest-related industry is evolving successfully in Wisconsin?
3. What is considered the most critical challenge facing the industry that we can strive to overcome to maintain our forest-based industries?
4. What are key opportunities to pursue to help Wisconsin's forest-based economy thrive into the future?
5. What do we not know that would be good to know before we settle on any priorities to support, develop and diversify Wisconsin's forest industries?

Using the information gathered in the listening sessions, the council collaborated with the University of Wisconsin Extension, to develop a report on the Future of [Wisconsin's Forest Products Economy](#). The report's key findings were summarized under the headings of:

- What's working well in Wisconsin's forest industry
- Challenges facing the industry
- Opportunities for growth
- Recommendations (recommendations included sub-headings of: Policy, Communication, Collaborations with Education Institutions, Products, and Transportation and Infrastructure.)
- Food for Thought – Questions to explore in further discussions

Additional information on listening session recommendations can be found later in this report in Section 7 – Recommendations for Increasing the Economic Development of the Forest Industry and Employment in the Forest Industry.

Outcomes from the earlier listening sessions led to the development of initiatives originally envisioned to inform the development of a Regional Economic Diversification Summit. Four initiatives were summarized and reviewed with the U.S. Economic Development Agency (EDA) in January 2022:

1. Engagement and Marketing
2. Product Innovation, Research and Development
3. Infrastructure and Facilities
4. Policy and Legislation

Following review with the EDA and considering the evolution of the EDA's Phase 2 Build Back Better Regional Challenge grant effort (*Wisconsin Forest Products Cluster: A Catalyst for Sustainable, Enduring Transformation*), Council partners including the Wisconsin Paper Council, UWSP, WEDC, and DNR concluded that efforts should proceed on two initiatives:

1. Comprehensive Brand and Industry Marketing

Identified the need to transform perceptions of a dying, legacy industry to one that is vibrant, making products that are sustainable and in-demand and that will underpin rural economies and communities as well as help mitigate climate change. The centerpiece should be an ongoing campaign to engage with and tell our stories of the quality, sustainability, benefit, and the future of forest products to a broad audience including citizens, landowners, elected officials, (covered under elected officials), tribes, business sectors, customers and potential customers. Inherent in the campaign will be elevating awareness of the vast array of forest products manufactured in Wisconsin and used every day around the country and around the world.

2. Forest Industry Roadmap

The Council and their partners discussed and confirmed the value and need to create a strategic plan or "roadmap" for Wisconsin's forest products industry in the light of consequential changes occurring in our traditional markets, industry structure, and workforce. A roadmap will provide the direction and path to vitalize, diversify and sustain our large, often fragmented industry by improved coordination, partnerships, and collaboration with industry stakeholders and government. It will also identify the opportunities to effectively pivot, mobilize and compete in rapidly changing and new marketplaces that are developing regionally, nationally, and internationally.

Through additional discussion, the Council decided to focus attention on developing a Strategic Forest Industry-Wide Plan and Roadmap. An [overview of this effort](#) was provided by Chair Hittle at the November 2022 meeting. As 2022 drew to a close, the Council was pursuing funding for the Strategic plan in the State's 2023-2025 biennial budget process.

Over this two-year period, the Council also authored letters and weighed in on several issues. These included:

- April 15, 2021 [Forestry Funding](#) – Joint Finance Committee
- August 5, 2022 [Budget Priorities](#) – Wisconsin Dept. of Natural Resources
- August 29, 2022 [Budget Priorities](#) – Wisconsin Dept. of Natural Resources
- October 20, 2022 [Pelican River Forest](#) – Wisconsin Dept. of Natural Resources

The Council was also fortunate to have Wisconsin DNR Deputy Secretary Sarah Barry, Secretary Director Mike Thompson, and Secretary Director James Yach address the group during this period.

2021-2022 Report Content Required by State Statute

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

Forest Resources

Approximately 49% of Wisconsin, or just over 17 million acres of the state are forested. The U.S. Forest Service's National Inventory and Analysis (FIA) program suggests that Wisconsin's land area covered by forests has been increasing over the last few decades due mainly to the conversion of marginal agricultural land back to forests. However, observations from the forestry community in Wisconsin suggest that productive forestland has recently come under increasing pressure from land use conversions, with the quantifiable impact not yet evident in the backward-looking FIA data. Monitoring and assessing this current trend will be important to understand the ecological and economic impact caused by the loss of productive forest land to other land uses.

The amount of forested acreage available for timber management to supply raw materials for Wisconsin's forest industry is also limited by several factors. The [Wisconsin Wood Supply Assessment](#) completed in 2016 for the Wisconsin Forest Practice Study reported that about 30% of private forest acres were in forest tracts that are smaller than 20 acres and more expensive to harvest and more often belonging to those less willing to harvest. The overall assessment of timber availability showed that statewide about 62% of nonfederal forest acres were considered potentially available for timber production.

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 4.5 million acres followed by maple-beech-birch with 3.8 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 28% 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 11% (1.3 million acres) of the Northern Mixed Forest. Spruce-fir forests are 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 51% (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 similar percentages between the southern (10.5%) and northern (9.4%). However, the Northern Mixed Forest contains a larger acreage of this type (1.0 million acres compared to about 0.6 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 (0.3 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 7.5% are more than 100 years of age. The forest types proportionally most represented in the younger age class are aspen, oak-hickory, and pine; the latter two predominantly associated with dry sites. The forest types proportionally most represented in the over 100 age classes are oak-hickory, maple-beech- birch and spruce-fir.

Volume by species

In 2021, there were 23.6 billion cubic feet of growing stock volume, of which 6.8 billion or 29% were conifer and 16.8 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 2015 and 2021, average net annual growth exceeded harvests and other removals by 309 million cubic feet (mortality is taken into account when calculating net growth). Growing stock average annual mortality was 257 million cubic feet. During the period between inventories, average annual net growth was 580 million cubic feet. Average annual removals were 271 million cubic feet, about 47% of average net annual growth.

Changes in forest composition

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 2021, the percentage had increased to 55%. Forests more than 100 years old remained at about the same percentage: 6% (887,000 acres in 1968) and 6% (1,292,690 acres in 2021), an increase of more than 400,000 acres over a 53-year period.

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 the past 60 years.

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 2021 inventory (23.2 billion cubic feet).

Between 2003 and 2021, overall growing stock volume in Wisconsin's forests has increased by more than 19%, or over 3.85 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 over this extended period. It is expected that ash will show decreasing volumes over a shorter period as inventory data begins to reflect recent impacts of the emerald ash borer. Paper birch, elm, black oak, and jack pine volumes decreased between 2003 and 2021 inventories. Aspen species have remained relatively stable with similar volumes found between 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 is currently updating the UTC assessment.

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 975,000 trees listed in the database. While diversity across all taxonomic ranks is poor (for example, the three most common genera make up 52% of all trees), more recent plantings demonstrate a greater diversity (the top three genera compose 36% 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 have been established in census-defined urban areas of the state. Each of the sites will be revisited every seven years, enabling the assessment of composition, health, threats, and land use of the urban forest over time.



Photo © Jim Kujala

Fire Management

Wildland fire management in Wisconsin prioritizes the protection of human life, property and natural resources from unwanted wildfires while strategically using prescribed fires to enhance our natural communities and the ecosystems we manage. Education, safety and training programs and an extensive network of partners are utilized to suppress, manage and prepare for fires statewide. 2021 brought a more typical spring wildfire season, with fire activity starting in the southern portion of the state and moving north as snow disappeared. However, 2022

brought a cool and wet early spring with snow-free conditions statewide and light wildfire activity. 2022 also had multiple days with strong winds that resulted in several powerline fires. Below is a summary of wildfires and prescribed burns that occurred in 2021-2022.

<u>Year</u>	<u>Wildfires</u>	<u>Acres burned</u>
2021	1,086	2,582
2022	922	893
10 yr. average	822	2,427

<u>Year</u>	<u>Prescribed burns</u>	<u>Acres treated</u>
2021	278	29,066
2022	275	30,162
Annual goal	180	24,000

Forest Health

Detection, monitoring, and management efforts continued to address 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

The 2021 and 2022 statewide annual precipitation was on par with the 30-year average, in contrast with the exceptionally wet years from 2010 – 2020. Precipitation was unevenly distributed in Wisconsin in 2021 and 2022. In 2021, a belt of precipitation 6 to 12 inches above the 1981-2010 average extended from Green Bay, through Wausau, then south towards La Crosse contributing to another year of tree decline and mortality on wet sites. North and south of that belt, precipitation was average to a few inches low, allowing forests relief from the constant flooding stress. In 2022, rainfall continued close to the 1981-2010 average for much of the state, but drought developed in the fall in northern and western counties and was especially severe in Ashland, Bayfield, Douglas, Pierce, Pepin and St Croix counties.

While precipitation decreased, the lingering stress from the years of high water continued to contribute to forest decline and mortality in combination with pests including emerald ash borer and eastern larch beetle. In 2021, 60,000 acres of declining or dead trees were mapped, with an additional 45,000 acres in 2022.

Temperatures in the spring of both 2021 and 2022 were abnormal. In 2021, summer seemed to have arrived early in the third week of May with temperatures in the 70s and a high of 80 degrees Fahrenheit across northern Wisconsin. However, on the night of May 28, temperatures plunged into the mid-20s, damaging leaves on oaks in central and northern Wisconsin that had expanded in response to the warm weather. In 2022, temperatures were below average from January through April, leading to a later start to the growing season than in recent years.

The number of tornados in 2021 and 2022 was 31 and 28, respectively, both higher than the average of 23 per year. On May 9, 2022, high speed winds and golf ball-sized hail caused heavy damage to 96,000 acres of aspen and pine in Burnett and Polk counties. Forest health staff conducted aerial mapping of the extent and severity of some storms to assist in recovery planning and implementation.

Emerald Ash Borer

Emerald ash borer (*Agrilus planipennis*, EAB) continued its spread across Wisconsin; by the end of 2022, it had been found in 66 of 72 counties (Figure 1). DNR staff partnered with DATCP and UW-Extension to track the spread of EAB and municipal level confirmations are posted on the multi-agency [Wisconsin EAB website](#). EAB is common across the southern half of the state and has already caused extensive mortality in that area as ash has been largely eliminated from wetland forests. Widescale decline and mortality is still uncommon in the northern counties, but it will be dramatic when it starts to occur given the huge acreage of black ash swamp and the role it plays in the hydrology of northern Wisconsin.

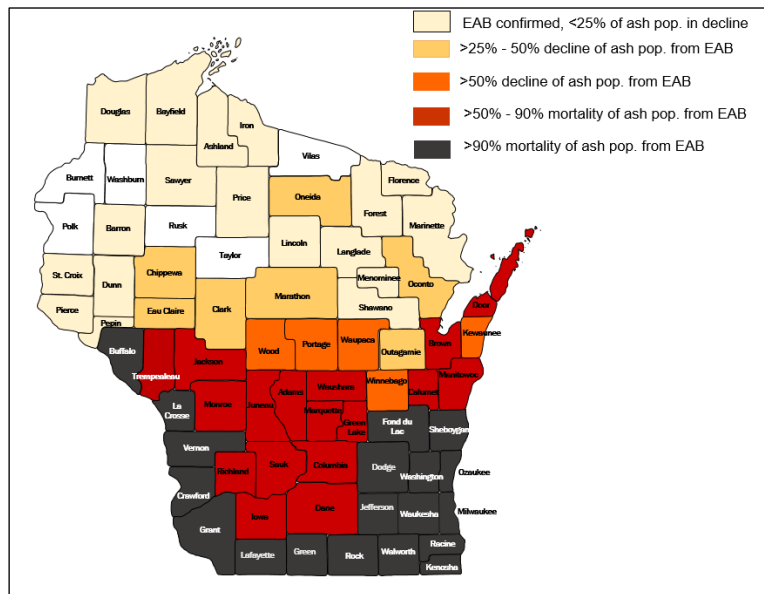


Figure 1: Map of presence of EAB and level of damage to the ash resource at the county level in WI 2022.

Biological control efforts for EAB continued in 2021 and 2022 on state and municipal properties in 25 counties (Figure 2). USDA APHIS now manages the releases, but DNR assesses and selects introduction sites and conducts recovery surveys three years after introduction. The biological control parasitoids are tiny parasitoid wasps that specialize on EAB: *Tetrastichus planipennis*, *Spathius galinae* and *Oobius agrili*.

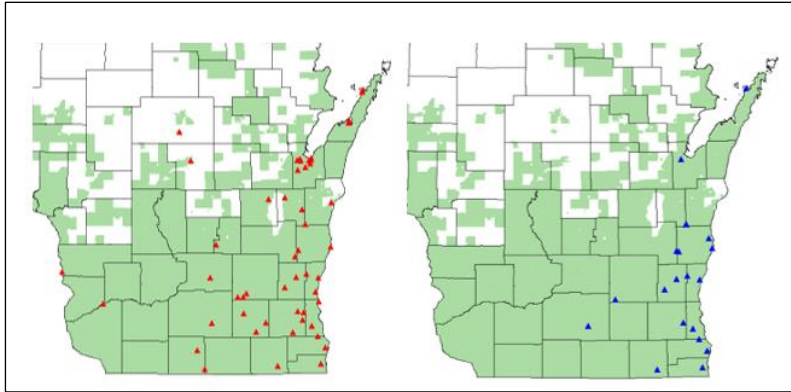


Figure 2: Locations where parasitoids of EAB have been introduced from 2011 - 2022 (left map with red triangles) and locations where parasitoids were recovered from 2016 - 2022 (right map with blue triangles). Green-tinted areas are where EAB has been confirmed.

One of the species released, *T. planipennis*, has been recovered from 17 release sites and two others where they weren't released, indicating successful establishment and spread. Native *Atanycolus sp.* parasitoids have also been found parasitizing EAB larvae at some surveyed sites.

The federal quarantine of EAB ended in January 2021. The Wisconsin quarantine of EAB is in the process of being rescinded and the insect will no longer be regulated by the state in 2023. EAB

is still listed in NR 40 as a Restricted species, which prohibits knowing movement of the beetle. NR 40 is in the process of being updated, and EAB is proposed for removal from the law. After the state quarantine on EAB is ended, DNR does not plan to enforce regulation of movement of EAB through NR 40 until the update of the rule is complete. Because EAB is present across most of the state, the cost of regulation exceeds the benefit.

Spongy Moth, formerly known as gypsy moth

In 2021, the Entomological Society of America (ESA), adopted new rules for common names for insects that no longer allow references to ethnicities, races, or people groups. In response to a request from the Roma people, to which the racial slur “gypsy” is applied, the ESA started the process to change the common name for *Lymantria dispar* used in the US, which had been gypsy moth. The DNR forest health program played a critical role in ensuring input from forest health managers and other applied stakeholders from around the country was included in the selection of the new name, spongy moth. DNR and other Wisconsin state agencies have transitioned to using the new common name.

Spongy moth has been detected in all Wisconsin counties. It is not considered established in the far western counties and therefore not federally quarantined in those locations. In 2021, Eau Claire and Richland counties were added to the quarantined area, Eau Claire and Richland, for a total of 52 contiguous quarantined counties in the eastern two-thirds of the state (Figure 3). DATCP is working with USDA APHIS to determine the possible addition of Douglas County to the quarantined area.

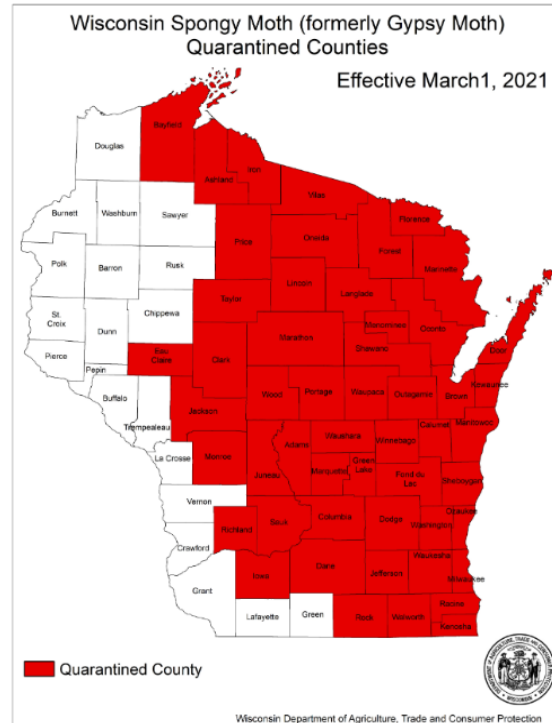


Figure 3. Counties federally quarantined for spongy moth as of 2021.

Spongy moth goes through population cycles and the last outbreak was in 2010. Region-wide outbreaks typically occur about every 10 years. Between 2014 and 2020, the spongy moth population was low, and defoliation was inconsequential. Drier spring weather in 2021 and 2022 increased caterpillar survival and an outbreak phase began in 2022. Aerial sprays of bacterial insecticide, *Bacillus thuringiensis kurstaki* (Btk), and targeted ground-based treatments were done over high public use areas of Devils Lake State Park and the Southern Unit of the Kettle Moraine State Forest in 2022. These treatments were conducted to suppress very high populations of spongy moth and prevent catastrophic defoliation and potential tree loss. In other parts of the state, a total of 85,013 acres of defoliation were mapped in 2022, much of that severe. Approximately 80,000 acres of contiguous defoliation was mapped in aspen in Bayfield County. In the Baraboo hills of Sauk County, 1,852 acres were damaged, primarily oak. Scattered stands dominated by oak in Walworth (1,126 acres) and Jefferson (971 acres) counties were completely stripped of leaves.

High numbers of egg masses in these areas and others around the state indicate continued high populations in 2023 and expansion of defoliation into new areas. If dry spring weather continues in 2023, defoliation may be extensive across the area where spongy moth is established. Outreach to landowners, foresters, and communities and public land managers has emphasized the need to conduct egg mass surveys in areas they would protect if threatened with defoliation and to act if high numbers are present. While 2022 treatments were successful in preventing heavy damage, the population of the pest remains high in those sites and has developed in additional state lands. DNR plans to aerially spray outbreaks at Kettle Moraine State Forest – Southern Unit and Big Foot Beach, Devils Lake, and Gov. Dodge State parks in spring 2023.

Oak Wilt

Oak wilt (*Bretziella fagacearum*) has been found in 65 of Wisconsin's 72 counties. It has not yet been found in seven counties: Ashland, Calumet, Door, Iron, Kewaunee, Manitowoc, and Taylor. Oak wilt continues to be a significant, though scattered, source of mortality for oaks, especially among red oaks. Management of oak wilt focuses on prevention, as containing underground spread through a stand is difficult and expensive. Harvesting in oak stands is restricted on state lands from April 1 – July 15 in southern Wisconsin and from April 15 – July 15 in northern Wisconsin to prevent new introductions from overland spread. This period corresponds to when beetle vectors are active, spores are being produced, and wounds on oak are susceptible to infection. Spring weather is delayed some years and every day that can be added to the harvesting season greatly benefits the logger. For this reason, the Forest Health Program funded research on oak wilt vector activity and development of a growing degree day (GDD) model for spring emergence. Based on this model, harvesting restrictions may be relaxed if the beetles are unlikely to be active in an area. In 2022, spring was very late, and the model informed the decision to extend harvesting by three weeks in some north-central counties. This was a good example of using a model and a modification in restrictions, as several timber sales were completed in the extra time allowed.

The forest health program was also active in testing a new technique to contain the underground spread of oak wilt infections. Oak wilt pockets can be contained by breaking root grafts to uninfected trees, which was previously done by expensive and difficult trenching or uprooting. Anecdotal evidence from forest managers showed success with a girdle-herbicide technique that killed potentially connected trees. The Forest Service funded a 5-year study in 2015 to formally evaluate the effectiveness of this method. Results from the study conducted by the DNR showed the technique can be used successfully and consistently to contain pockets of oak wilt consisting of three or fewer visibly affected trees. The method is less consistently successful with larger pockets but is still a viable and more cost-effective

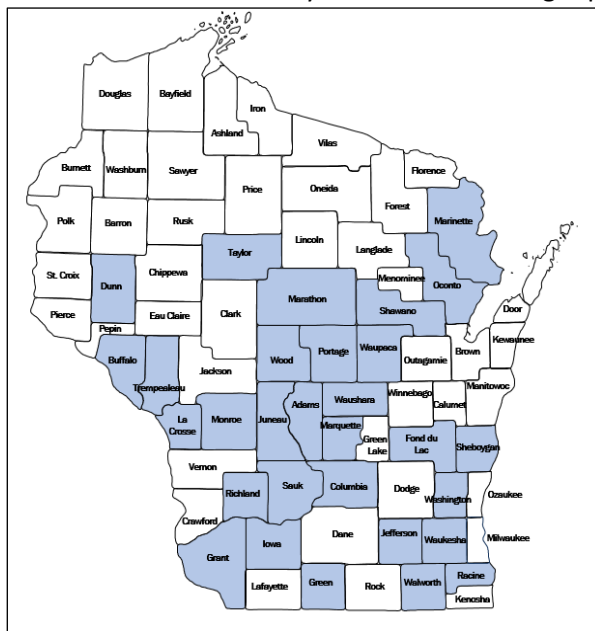


Figure 4. HRD has been confirmed in counties tinted blue.

solution in many situations. As a result of this research, the girdle-herbicide treatment was approved for Forest Service cost-share funding and is currently being used with the DNR oak wilt suppression program. This program treats infections on qualifying private lands in Bayfield, Douglas, Langlade, Oneida, Sawyer, Vilas, and Washburn counties.

Heterobasidion Root Disease

Heterobasidion root disease (*Heterobasidion irregulare*, HRD), is one of the most destructive conifer diseases, and was first detected in Wisconsin in 1993 in Adams County and has since been found in 30 counties (Figure 4). 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 not possible to control once in a stand. The revised “Stump Treatment Guidelines to Reduce the Risk of Introduction and Spread of HRD” allow flexibility in implementing preventative treatment based on some stand-specific situations. State land managers are required to consider infection risk and treatments to prevent 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. The forest health program is currently engaged with cooperators in two research projects related to the management of HRD: study of the efficacy of the fungicide RotStop™C in preventing spread of HRD and an assessment of the susceptibility of red pine stumps created in the winter to infection by HRD when exposed in the spring.

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. Staff also assisted property managers with invasive plant surveys and control efforts on State Forests and other forested state properties to promote forest regeneration. Species controlled include buckthorn, wild parsnip, garlic mustard, black and bristly locust, Japanese knotweed, and Japanese stilt grass. A special project in 2022 utilized goats to control buckthorn in the Brule River State Forest. This was part of an integrated pest management plan with additional mechanical and chemical control to be considered for future control. By deploying browsers instead of chemical herbicide, DNR staff reduced the amount of pesticide used to control invasive plants in the forest.

The Forest Health Program administers the Weed Management Area-Private Forest Grant Program (WMA-PFGP), which provides funding to groups for invasive plant management on non-industrial private forest land under 500 acres. Projects funded by the WMA grant included:

- conducting inventory, control, and follow-up monitoring on over 400 acres of private land, and
- various print and social media campaigns that reached over 44,000 people

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 70% of total roundwood production in Wisconsin.

The forest products industry in Wisconsin supports over 61,000 jobs and generates \$24.4 billion in value to the state’s economy. The industry stimulates additional economic activity through interindustry and household spending and is estimated to generate total economic contribution of \$38 billion. The pulp and paper sector is the largest employer with over 29,000 jobs, followed by sawmills and other wood products with over 27,000 jobs. Further, these businesses generate over \$2.9 billion in total taxes.

A steady flow of products from well-managed forests provides for a strong economy through the direct jobs that exist in the forest products 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 \$4.2 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. Outdoor recreationists annually spend approximately \$13 billion within Wisconsin communities. This spending stimulates the economy further and it is estimated that outdoor recreation is a \$20 billion-dollar industry (Wisconsin Department of Tourism, 2022). Well-managed forests provide carbon sequestration, combat climate change, as well as provide clean water, clean air and habitat for wildlife; all of these benefits are often difficult to quantify.

Urban forestry activities in Wisconsin directly contributed \$966 million in industry output by supporting 12,517 full- and part-time jobs in various businesses and activities. Including direct, indirect, and induced effects, urban forestry had a total contribution of \$1.6 billion in industry output to the state economy, employing 16,725 people with a payroll of about \$672 million. Every dollar generated in urban forestry contributed an additional \$0.63 to the state's economy. Every 100 jobs in urban forestry in Wisconsin resulted in another 34 jobs in other sectors of our economy. Urban forestry businesses and employees in Wisconsin paid over \$41 million in state and local taxes and about \$96 million in federal taxes.

Additionally, urban forests in Wisconsin provide myriad ecological, social, and economic benefits. Recent estimates show Wisconsin's urban forests annually remove 14,330 tons of air pollution valued at \$111 million, annually sequester 453,000 tons of carbon valued at \$85 million, store 11.4 million tons of carbon valued at \$2.1 billion and annually provide residential energy savings valued at \$55 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

Paper demand has historically grown with population growth but has experienced rapid change in the past two decades due to growth in e-commerce and digital communications, globalization and advancements in product development.

Although pulp and paper markets continue to be challenged by the growing presence of new facilities in countries such as China, India, 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 papers 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.

Packaging, specialty, and tissue paper manufacturing are regularly reporting stable, and in some cases, growing markets and continued profitability.

Demand has been growing for the high-quality paper and specialty products 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. Furthermore, the rapid decline of printing and writing paper markets due to the COVID-19 pandemic resulted in long-term idling of the Verso pulp and paper mill in Wisconsin Rapids in the summer of 2020, the state's largest market for pulpwood in terms of volume. Recently the state has seen significant investment and conversions into packaging 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 continued diversification into stable or growing market sectors, such as specialty products and packaging, 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 decades. During the COVID-19 pandemic, lumber prices and demand experienced rapid growth. As a result, Wisconsin's wood industries experienced positive market impacts. Kitchen cabinets, furniture, and wood flooring continue to provide steady markets for Wisconsin companies. However, these markets have seen increased volatility in the last year 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 mostly 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, in recent years, Wisconsin exporters have faced challenges 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 businesses take advantage of these opportunities and capture wider markets for their product offerings.

Pulpwood markets for paper production have steadily declined in Wisconsin since 1996, with a rapid decline occurring following the closure of the Wisconsin Rapids paper mill. On the other hand, industries involved in wood panel production (e.g. strand-based siding, oriented strand board) have experienced incremental growth in recent years which is expected to remain steady into the future given robust product competitiveness and housing market growth. Any future increases in demand for paper, biochar, wood energy, composite wood panel products, or other wood building materials would lead to diversification and market expansion of low-grade forest products.

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

Wisconsin's forests are owned by a variety of public and private entities (Figure 4).

Private Land

An estimated 70% of forest land in Wisconsin (11.8 million acres) is privately owned, with non-industrial private forest owners (individuals and families) 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.

Public Land

The federal government, including the U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, and the Department of Defense, manages approximately 1.6 million acres of forest land in Wisconsin. The National Forest land is comprised of over 1.5 million acres owned and managed by the U.S. Forest Service in the Chequamegon-Nicolet National Forest.

State lands are comprised primarily of land owned and managed by the DNR (over 1.6 million acres) and the Bureau of Commissioners of Public Lands (approximately 77,000 acres).

Local government in Figure 4 includes 2.4 million acres of land enrolled in Wisconsin's County Forest Law as well as other county owned forest land.

Wisconsin cities and villages cover 2 million acres, almost 6% of the state's total land area.

Number of Private Owners and Parcel Size

The 2019 Forest Inventory Analysis (FIA) and 2013 National Woodland Owners Survey (NWOS) data indicate approximately 414,000 private forest landowners hold an estimated 11.8 million acres of forest land. In comparison to previous inventories, the number of private forest landowners has increased, while the private forest land acreage has remained steady.

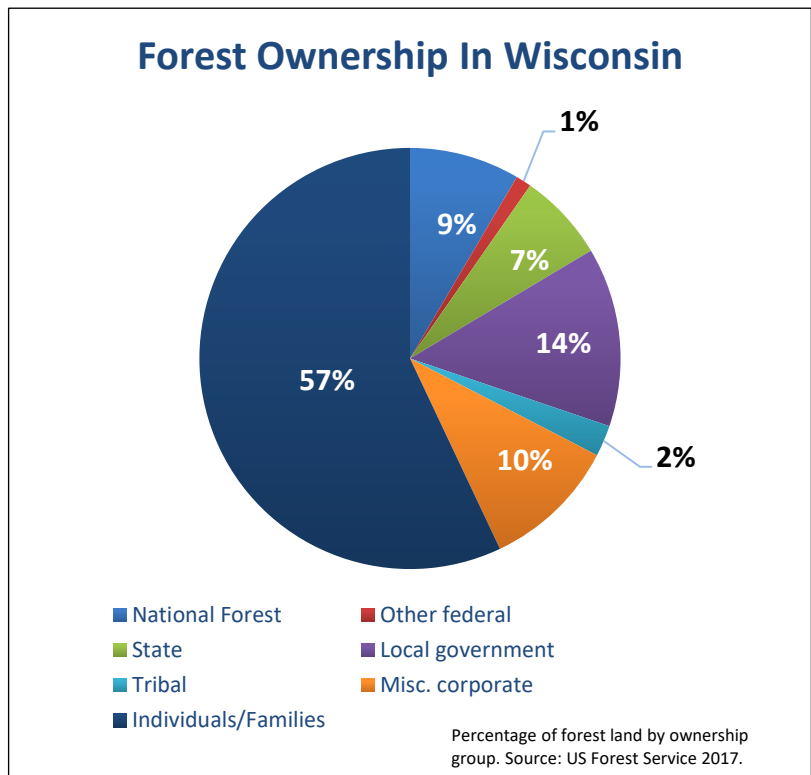
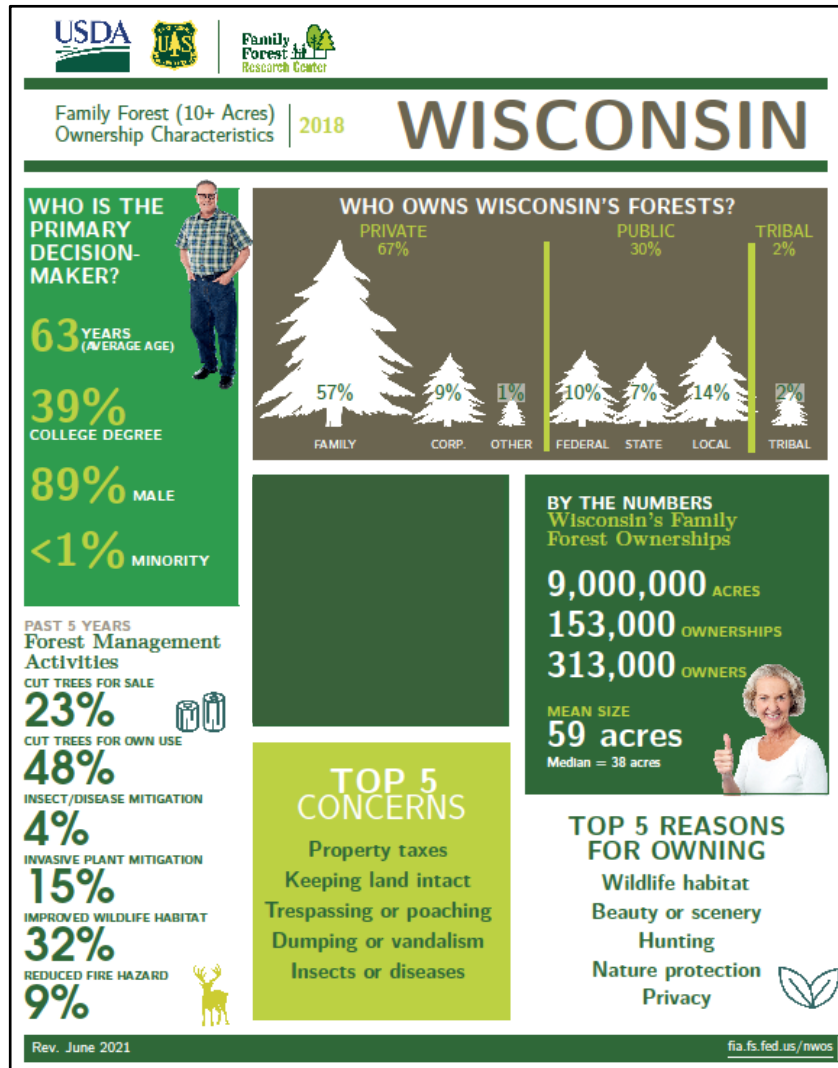


Figure 4. Ownership of the 17.0 million acres of rural forest land in Wisconsin.

The most recent NWOS data focused on landowners who own 10 or more acres; in total, about 153,000 owners hold 9 million acres. There are 189,000 landowners who own less than 10 acres; in total, these landowners own approximately 680,000 acres. During the period 1997 to 2018, the overall number of landowners increased 31%; landowners owning less than 10 acres increased 51%, representing the largest increase during that timeframe.

The greatest shift in acres owned occurs in the 1,000+ acre category, where there has been a precipitous and staggering decrease. While the number of landowners in this category has remained relatively steady, the number of acres owned has sharply decreased from almost 1.4 million acres to just 177,000 acres.



The average parcel size of family forest owners owning 10+ acres is 59 acres, while the average parcel size for landowners owning less than 10 acres is 3.6 acres. Conducting forest operations on small parcels is both economically and operationally challenging as operational costs increase as parcel size gets smaller. Other factors affecting forest management activities on small parcels include access, increased fixed costs of logging equipment (e.g., moving equipment) and low-value products. Foresters and other natural resource professionals are challenged with meeting individual landowner management objectives as more landowners own smaller forests.

Forest Industry Ownership

Forest industry and other companies own approximately 1.5 million acres of Wisconsin's forests. Private industrial ownership in Wisconsin declined as large private industrial landowners sold their lands to timber investment management operations (TIMOs) and real estate investment trusts (REITs). Since 1999, large ownerships (> 1,000 acres) enrolled in Wisconsin's Forest Tax Law has decreased from 1.1 million acres to less than 696,000 acres. TIMOs and REITs may over time sell portions of their land base to supplement timber income and capitalize on higher return on investment opportunities.

Wisconsin Landowner Demographics

Information about the demographics, interests, and management actions of non-industrial private forest (NIPF) landowners in Wisconsin comes from the 2018 National Woodland Owner Survey (NWOS), which provides a snapshot of landowners who own 10 or more acres.

45% of NIPF land in the U.S. is owned by individuals over the age of 65; almost half of the nations' NIPF owners will be deciding the future of their land (i.e., sell, convert to another use, parcel, conserve). Wisconsin forest landowners are not unique to this impending trend toward intergenerational transfer of ownership. The average age of NIPF owners in Wisconsin is 61 years with 41% of the family forest land owned by those who are at least 65 years of age. As landowners age, the way they transfer their land to the next generation will, at least in part, determine the future of Wisconsin's forests and how they are managed. Nearly 60% of Wisconsin forest landowners identify the opportunity to leave a legacy for their family as a reason for owning the land (U.S. Forest Service, 2017).

As Wisconsin's forest landowner demographics change, the values of new owners and how they may use their land and the management decisions they may make are also likely to change. For example, a shift toward more landowners coming from urban backgrounds and, conversely, fewer landowners from rural farming backgrounds suggests an accompanying shift from traditional land-use practices to uses focused more on amenity values such as recreation and viewing wildlife.

Understanding the characteristics, attitudes, and behaviors of NIPF ownerships is critical for developing and delivering effective programs, policies, and services. Landowner awareness and understanding of programs available to assist with their management needs continues to be low. For example, the majority (~75%) of NIPF landowners in Wisconsin do not have a written management plan to help guide their management decisions. Other factors influencing landowner management decisions include, but are not limited to the following:

- Lack of knowledge or experience with land management decisions
- Unfamiliarity with resources and services available to assist with decision making
- Government mistrust
- Conflicting management goals and objectives

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. With roughly 25% of private forestry landowners having a written forest management plan to guide their land management decisions, there are significant opportunities to help private forest landowners increase their engagement and stewardship of their lands through targeted outreach, marketing and increased use of social media platforms.

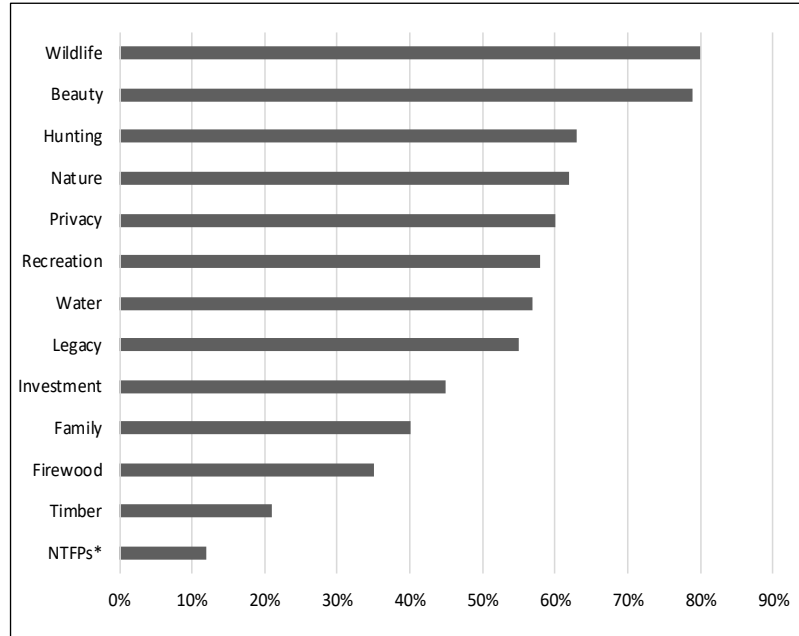


Figure 5. Wisconsin family forest landowners' reasons for owning land. *Non-traditional forest products. (Butler et al., 2018; in process)

Figure 5 depicts the primary reasons for owning land in Wisconsin, based on the most current NWOS data.

Timber Harvesting

Although many individual owners hold forestland for uses other than producing forest products, 88% of non-industrial private 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 7.7 million acres of forestland.

Forest Management Advice and Sources

Landowners who receive advice utilized the state forestry agency, university extension services and private consulting foresters. The most recent National Woodland Owner Survey data suggests family forest owners 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 email. Other notable findings include:

- 22% have received advice or information about managing their forestland in the last 5 years
Of the 22% that have received advice:
- 46% received advice from a private consultant
- 26% received advice from a family member or friend
- 14% received advice from another landowner and 4% received advice from others
- 19% of family forest owners say they do not need or want advice or information
- 35% who harvested timber consulted with a forester on the harvest

Note: the numbers above add to more than 100%, as the survey participants were given the option to list more than one source.

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 (87%), trespassing or poaching (77%), keeping the land intact for future generations (78%), misuse of their forest, such as dumping (69%), and unwanted insects or diseases (67%).

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

Technical Assistance

Wisconsin DNR Foresters

WI DNR integrated foresters are in nearly every Wisconsin county and provide professional planning and technical advice to Wisconsin's non-industrial private forest landowners. Throughout 2021 and 2022, DNR integrated 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.

Connecting with 20,000 Forest Landowners

Since the launch of DNR's "Connecting with 20,000 Forest Landowners" in 2018, nearly 200,000 landowners have become aware of their forests and learned more about forest management. Nearly 18,000 new landowners have taken the action to request a property site visit and walked their property with a professional forester, many of whom have decided to take additional actions to manage their woodlands.

My Wisconsin Woods

My Wisconsin Woods (MWW) is a partnership between Aldo Leopold Foundation and Wisconsin DNR. It has become a trusted source of information with a communications platform that empowers woodland owners with the knowledge and tools necessary to identify and start realizing their goals. MWW introduces landowners to sustainable forest management practices through inclusive offers and communications, connecting them to the wider forestry community's programs and services. MWW promotes all partners' educational offerings, from forester walk-throughs to workshops to field days to conferences. MWW is a trusted source of information with a social media following and public presence. The website features anticipatory content, low-threshold offers, and actively acquires e-



newsletter sign-ups to ensure ongoing engagement of woodland owners over time. MWW continually reaches and retains new woodland owners in its audience. MWW currently has 40,000 Facebook followers and 14,000 email subscribers. The brand is highly visible and the audience is engaged through “click and open” rates far exceeding national benchmarks. The MWW social media campaign has more than doubled its members across all platforms over the last 5 years and has been instrumental in engaging the audience for the 20K landowner initiative and raising awareness about sustainable forestry.

Cooperating Foresters

Established in 1989, the Cooperating Forester program is a cooperative effort between the DNR and private-sector consulting foresters focused on encouraging the practice of sustainable forestry on private forestlands in Wisconsin. Landowner requests for forestry assistance are referred to Cooperating Foresters. Cooperating Foresters are listed in the [WI DNR’s Forestry Assistance Locator](#) (FAL). There are currently over 200 private consulting businesses and nearly 300 individuals who participate in Wisconsin’s Cooperating Forester program.

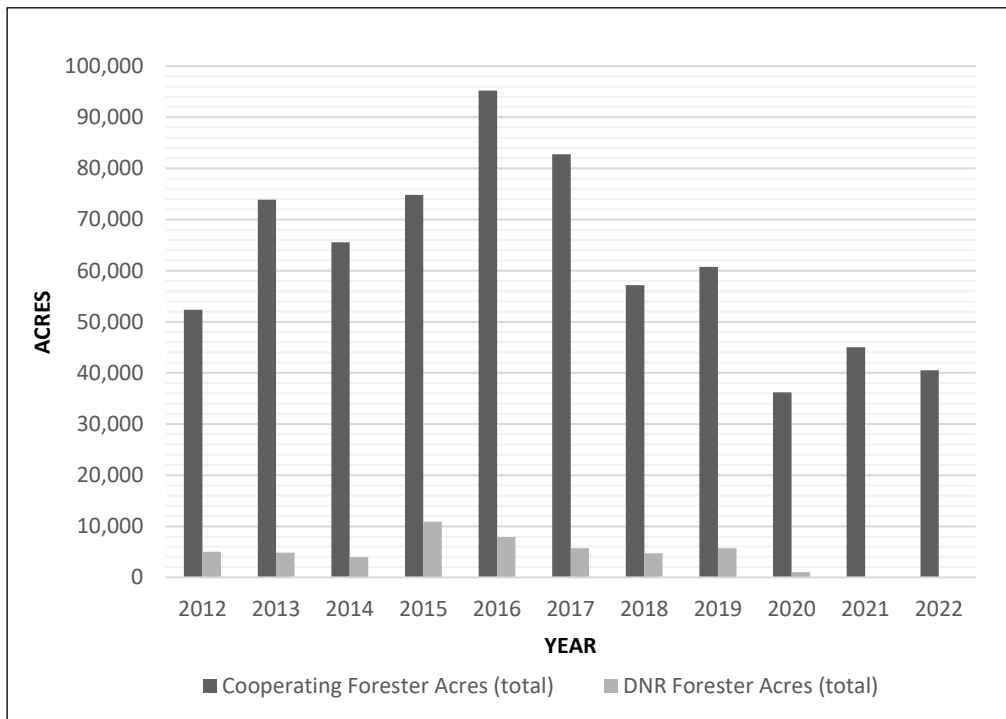


Figure 6. Timber sale establishment acres comparison between DNR foresters and cooperating foresters, 2012 - 2022

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 ceased 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 DNR Forester if CPW services are unavailable.

As of Dec 31, 2022, the program included 50,833 MFL entries covering 3,497,437 acres. Of those lands, 27.4% (959,618 acres) were open to public access for hunting, fishing, hiking, sightseeing, and cross-country skiing. There were 334 entries in the FCL program comprising 37,566 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	326	7,495
January 1, 2019	302	6,973
January 1, 2020	340	12,067
January 1, 2021	381	11,440
January 1, 2022	470	13,975
January 1, 2023	435	9,305

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 thinning practices. However, they may also include tree planting, release, site preparation and other practices to ensure that forests are healthy and actively growing. DNR, 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. The larger practice acreages in recent years are a result of the amount of time it takes for planned practices to be completed.

Year	Beginning Practices and Acreage		Remaining Practices and Acreage	
	Number	Acreage	Number	Acreage
Pre-2008*	9,639	129,502	6	75
2008	3,321	49,772	0	0
2009	2,210	31,502	0	0
2010	6,236	98,283	1	9
2011	3,023	50,459	0	0
2012	4,009	58,180	6	55
2013	4,312	65,344	10	61
2014	4,428	69,043	11	207
2015	7,130	117,810	14	169
2016	4,515	74,374	17	234
2017	5,635	77,550	30	345
2018	7,016	99,248	45	518
2019	5,674	85,060	55	1,196
2020	12,817	202,386	173	2,785
2021	7,081	114,232	211	3,666
2022	7,998	141,594	1,455	24,209
2023	7,666	129,003		

Conservation Easements

A conservation easement is a voluntary legal agreement between a landowner and a government agency or non-profit land trust that permanently limits specified current and future uses. Wisconsin’s Forest Legacy Program (FLP) identifies and protects environmentally important private forestlands threatened by conversion to non-forest uses that provide the highest conservation value and public benefit. Research on the economic contributions of land protected by conservation easements through the federal FLP suggests working forests that are conserved contribute substantially to rural economies. For example, for every 1,000 acres of FLP land protected by a conservation easement in northern Wisconsin & Michigan’s Upper Peninsula, the average annual value-added contribution is estimated to be \$126,912 and \$14,607 for timber and recreation, respectively (Murray, Catanzaro, Markowski-Lindsay, Butler, & Eichman, 2018).

Wisconsin leverages funding from the federal FLP and the Knowles-Nelson Stewardship Program (KNSP) to protect large blocks of unfragmented working forest landscapes for the purpose(s) of maintaining traditional uses and keeping forests as forest. Lands under a working forest conservation easement:

- remain in private ownership,
- remain on the tax rolls,
- continue to be managed sustainably for forest products and other important outcomes,
- are open to the public for recreational uses,
- protect important wildlife habitat and soil/water resources, and
- cannot be developed

Purchases of working forest conservation easements using a combination of federal and state source funds protect more than 300,000 acres of privately held timberland in Wisconsin (Figure 9), the most recent of which is the 12,420-acre Pelican River Forest (Phase 1) acquired in April 2022. The Division of Forestry is partnering with The Conservation Fund to acquire an additional conservation easement (Phase 2) on 56,259 acres leveraging funding from KNSP, FLP and private funding via the National Fish and Wildlife Foundation (NFWF). The Natural Resources Board (NRB) approved acquisition of the easement in October 2022. Later, with a letter dated November 21, 2022, DNR Secretary Cole was notified by the Joint Committee on Finance that an objection to the DNR’s funding request for the project had been raised and that the funding request was not approved at that time.

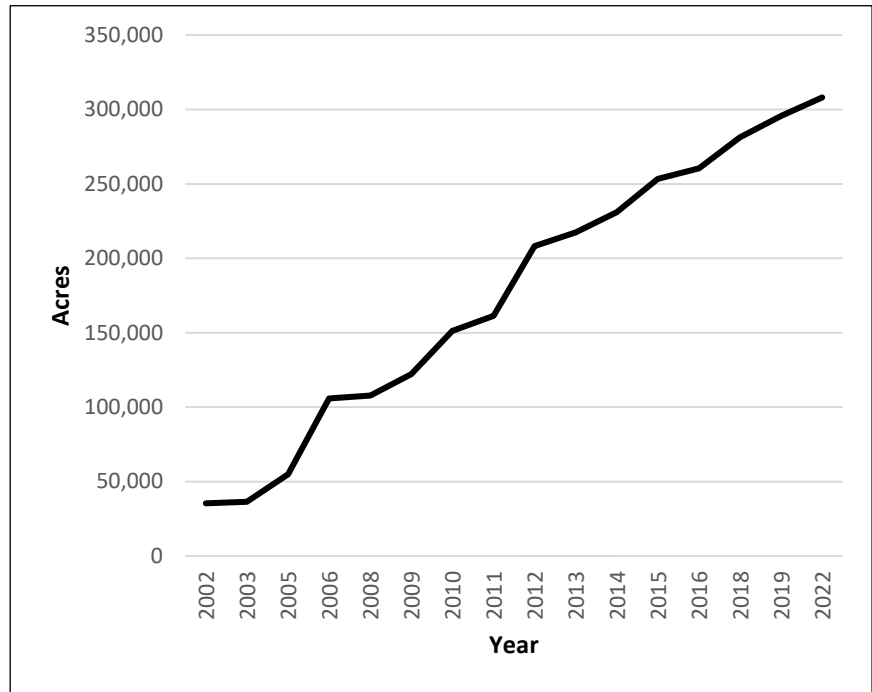


Figure 7. Acres protected by conservation easements in Wisconsin

Wisconsin County Forest Program

The Wisconsin County Forest Program provides a variety of incentives and assistance to encourage sustainable forest management practices and promote the social economic and ecological benefits of forests, including: comprehensive land use plans, cost-share, grants, and loan programs, technical assistance, and certification.

County Forest Comprehensive Land Use Plans (15-Year Plan)

The Wisconsin County Forest Program offers assistance in developing and implementing County Forest 15-year management plans. These plans identify and achieve management goals, which lay the groundwork of long-term planning in managing all aspects of the County Forest including timber production, recreation, wildlife/fisheries.

Cost-Share, Grants and Loan Programs

These programs offer cost-share, grants, and loans to help counties implement forest management practices, such as tree planting or timber harvest, land acquisition, and administrator grants. These programs can help offset the cost of implementing forest management practices.

Technical Assistance

The DNR provides direct technical assistance to counties to help manage their forests sustainably. This can include assistance with forest inventory, forest regeneration, timber sale establishment and administration, wildlife habitat management, and forest health assessments in addition to technical assistance with computer applications and management guidelines.

Certification

The DNR provides the group certificate for counties who choose to be third-party certified. This certification can help counties market their timber and other forest products.

Good Neighbor Authority

The Good Neighbor Authority (GNA) is a federal program that allows the DNR to enter into agreements with the U.S. Forest Service (USFS) to conduct forest management activities on national forest lands within the state. Overall, the Good Neighbor Authority provides several incentives to encourage cooperation and collaboration between the DNR and USFS, which can lead to: increased forest management activities, additional revenue, job creation, improved forest health, and improved access.

Increased Forest Management Activities

The GNA agreements allow the DNR to perform forest management and restoration activities on national forest lands, which includes such things as timber harvesting, forest regeneration, data gathering surveys, habitat management, invasive species control and infrastructure improvements, to name a few. These actions help implement the forest plan, improve forest health, and reduce the risk of wildfire.

Additional Revenue

Under GNA, the revenue generated from forest management activities on national forest lands is retained by the DNR, which it uses to cover costs of implementation. Funds left over after expenses are covered is then used by the DNR to perform a wide variety of restoration projects on the national forest. Restoration project selection and development is performed using a collaborative process between the DNR and USFS. These projects are subsequently implemented by engaging further with other partners and entities such as county forests, private consultants, non-profit groups and other DNR programs. This wide span of involvement by various forest management interests makes the program singularly unique and provides for a wide variety of benefits that would otherwise not be possible.

Job Creation

Forest management activities under GNA can create jobs in rural communities. This includes jobs in logging, road construction, and other related industries.

Improved Forest Health

GNA allows for coordinated efforts between the DNR and USFS to improve forest health, which benefits both agencies and the surrounding communities. Improved forest health can reduce the risk of catastrophic wildfire and enhance wildlife habitat.

Improved Access

GNA allows for improved access to national forest lands for recreational activities, such as hunting, fishing, and hiking. This benefits local communities and tourism industries.

Financial Assistance

Wisconsin Forest Landowner Grant Program (WFLGP)

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 state appropriation for WFLGP was \$1,087,900 each fiscal year. Maximum cost share is \$10,000 per landowner per year.

Wisconsin Forest Landowner Grant Program				
Number of practices and dollars encumbered by practice for fiscal years 2021 and 2022				
<i>(Dollars are based on the estimated cost of reimbursement (50% of practice cost) upon application approval. These are not actual amounts paid out to landowners.)</i>				
Practice	Fiscal Year 2021		Fiscal Year 2022	
	# of grants awarded	Dollars	# of grants awarded	Dollars
Stewardship plans and revisions	136	67,850	138	87,489
Undesirable species control	303	738,799	289	585,418
Site preparation	128	125,280	143	153,103
Tree plantings	114	195,390	130	191,900
Crop tree release	28	40,639	41	39,813
Exclusion fencing	11	19,290	8	12,792
Seedling protection	14	11,888	15	21,141
Pruning	3	2,672	10	3,975
Direct seeding	2	315	3	675
Erosion control	18	10,207	13	8,072
Total	757	1,212,330	791	1,104,378

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. Financial assistance is available for forestry practices such as conservation activity plans, tree planting, forest stand improvement, forest trails and landings and erosion control.

NRCS EQIP practices in Wisconsin - 2021 and 2022 forestry practices				
EQIP Practices	2021		2022	
	# contracts	Dollars	# contracts	Dollars
Forest Management Plans	197	\$324,165	152	\$175,375
Forest Stand Improvement	57	\$502,116	70	\$631,019
Tree/Shrub Site Preparation	29	\$254,084	43	\$669,845
Tree/Shrub Establishment	70	\$652,117	85	\$1,360,050
Forest Trails and Landings	5	\$76,886	4	\$26,717
Tree/Shrub Pruning	2	\$30,823	1	\$1,994

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 \$1,307,109.66 was awarded for priority projects in 2021 and 2022. Priorities in 2021 and 2022 included consideration of a canopy approach, directing efforts to both public and private trees (management plans, ordinances, staff training, public education, inventories, tree boards, and tree planting), and emerald ash borer (EAB) response (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 the last two years. In 2021, approximately 28% of eligible requests went unmet. In 2022, approximately 30% 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 125 proposed projects submitted in the last two years, the department awarded 35 Start Up grants and 65 Regular grants.

In the event of a declared State of Emergency, the DNR Urban Forestry Grant program allots 20% of its available annual funds to aid communities, non-profits, and tribes. The DNR Urban Forestry Catastrophic Storm Grant program funds tree repair, removal, or replacement within urban areas following a catastrophic storm event for which the governor has declared a State of Emergency under s. 323.10, Wis. Stats. A catastrophic storm means damage to urban forests caused by snow, ice, hail, wind, or tornado. Catastrophic storms do not include insect infestation or disease, forest fire, drought, or water saturation due to flooding.

In July of 2021, a State of Emergency was declared due to storm damage. Five communities submitted funding requests for a total amount of \$228,434.50. These communities shared \$104,920 of the 2022 state grant dollars to assist with the storm damage sustained during the State of Emergency proclaimed in Executive Order #128. The grants do not require a dollar-for-dollar match and typically range from \$4,000 to \$50,000. The catastrophic storm reserve amount of \$104,920 was deducted from 2022 regular and startup grant awards.

In February 2022, the Joint Finance Committee of the Wisconsin Legislature approved the DNR's request to seek supplemental funding in support of the Urban Forestry Catastrophic Storm Grant Program. An additional one-time transfer of \$123,600 in fiscal year 2022 from the department's forestry emergency reserve appropriation was approved to fully fund all five communities funding requests.

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, carbon storage benefits and captured value in underutilized urban and rural forest resources. Furthermore, strong, diverse forest product markets are closely tied to healthy, well-managed forests. The development of new products and markets hold promise as viable opportunities for economic growth, yet it is important to not lose

sight of traditional or established products and industries. Bio-refining, emerging applications for nanocellulose, and growth in specialty and 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.

Another area of economic growth is the expansion of wood product markets. Mass timber products (e.g., cross-laminated timber), urban wood, thermally modified wood, and engineered wood products (e.g., fiberboard) present opportunities for sawmills and wood manufacturers in Wisconsin to diversify their product offerings. In addition, the commercial availability of these products in the marketplace may lead to greater carbon storage and cost-savings for Wisconsin citizens and businesses involved in residential and commercial construction.

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 across the state and region. For example, the marketing of Wisconsin's forests as sustainable and certified serves to differentiate Wisconsin products in both domestic and international markets. These qualities also stand to attract new businesses looking for a stable supply of quality raw materials for production of their products.

Consideration should also 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. The expansion of thermal wood energy systems across the state presents opportunities for schools, businesses, and forest products firms to access affordable fuels while also creating markets for low or no-value waste streams. In addition, with many companies operating on a global scale, 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 DNR and DATCP staff, along with other forestry experts outside of 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 both existing and new forest businesses while also identifying opportunities to grow 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.

Wisconsin's business climate has potential for new and existing industries seeking a stable, high-quality supply of raw forest materials, including those sourcing third-party certified products. Market growth for forest products has a net benefit on the entire forestry supply chain: from landowners, forest managers, loggers, trucking firms, and mills. The adoption of new products and technologies across the state's industry presents an opportunity for economic growth. Market growth for forest biochemicals, urban wood, wood energy, mass timber, and other innovative building materials would have a positive impact on the state's economy and would also create new job opportunities. The growth of carbon markets and

alternative forest products also present value-added opportunities for businesses and forest landowners alike, though their impacts on traditional forest management are not yet fully understood. To stimulate these efforts, greater research and development is needed to investigate the potential for adoption and expansion in Wisconsin. Furthermore, businesses need access to affordable capital and financial incentives to overcome the cost of entry into many of these emerging markets.

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. In addition, Wisconsin's forestry industry would benefit from unified efforts to bring consumers, design professionals and producers together to foster awareness of the environmental, social, and economic benefits of locally produced Wisconsin forest products. This educational effort can increase the market share of Wisconsin products both domestically and abroad.

The forestry industry relies on a safe and efficient transportation infrastructure to deliver forest products to market. A cost-competitive supply chain allows Wisconsin businesses to compete at a global scale. Therefore, 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 forest businesses to access both domestic and international markets.

Workforce development has been an identified need in the forest industry for some time. Progress was made in 2022 addressing the need for skilled workers in the forestry industry. The Wisconsin Forestry Center at the University of Wisconsin-Stevens Point received a WEDC \$8 million Workforce Innovation grant to support education and create a pipeline to forestry careers for the next generation. It will fund a Forest Industry Workforce Recruitment and Development Initiative, led by the Wisconsin Forestry Center of the College of Natural Resources in collaboration with industry, education, and economic development partners across the state. High school students will be able to receive hands-on classes through their forestry education program, leading to certified skill development for workforce entry. The grant will also support post-high school training programs available through regional training hubs.

Northcentral Technical College's Wood Technology Center of Excellence also addresses workforce development needs with hands-on training and post-secondary wood technology educational opportunities. The Wood Technology Center of Excellence is a one-of-a-kind, 27,000 square foot facility dedicated to preparing students for careers in the forest products and woodworking industry. The facility also acts as a hub for industry-based training sessions for leading wood manufacturing companies. As a co-award recipient of the workforce innovation grant with the Wisconsin Forestry Center, Northcentral Technical College (NTC) will be putting in a \$4.5 million training sawmill. This expansion will include a new facility at the Antigo campus, filled with state-of-the-art commercial sawmill equipment. In fall of 2022, NTC completed the first Band Saw filing 4-week certification, the only one of its kind in the country.

In addition, the University of Wisconsin-Madison's Department of Forest and Wildlife Ecology is in the top six forestry research programs in the United States and has a forestry major accredited by the Society of American Foresters.

The Council's forest industry listening sessions referenced earlier in the 2021-2022 Council on Forestry Accomplishments section generated the following recommendations to support, develop and diversify Wisconsin's forest industry:

- Support industry and woodland owners by prioritizing sustainable forest management, fair taxation, and cost-effective practices, supporting ongoing success in the forest industry, and encouraging new investments.
- Promote and expand collaborations and communication between stakeholders towards improved work relations, productive discussions, and statewide commitment and involvement.
- Increase publicity and public awareness of the quality, sustainability, and benefits of forest products to people and communities.
- Invest in technical education, workforce development and youth outreach programs. Include parents and teachers in educational efforts and strengthen connections between industry and all levels of education.
- Promote scientific, research-based improvements and learn from local and global best practices.
- Diversify and upgrade production and product types. Follow market changes to remain competitive and be prepared to adapt to new disruptions including natural disasters.
- Improve infrastructure and transportation: Provide high speed internet, build more concentration yards, create shorter hauls, lessen road regulations, build more facilities.

Additional Recommendations:

- Expand opportunities for companies to access capital and incentives along with rural prosperity efforts.
- Support hardwood product utilization and exports with state assistance.
- Unify purchasers and suppliers to create awareness of the environmental benefits of utilizing Wisconsin-grown forest products.
- Promote proof of concept demonstrations of emerging wood technologies, such as mass timber, in state buildings.
- Maintain and improve transportation infrastructure for the forest supply chain.
- Support the Council's and stakeholder's efforts to engage in a forest industry-wide strategic plan and roadmap to support, develop and diversify the forest industry.
- Strengthen workforce training for the industry. Consider what the state can do to bolster existing college-industry partnerships and/or to expand them to additional locations in the state.
- Provide grants and/or low-interest loans for Wisconsin mills to invest in new equipment and other process improvements.

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

2021-2022 Legislation

<http://www.legis.state.wi.us/>

Below is a summary of bills that have been proposed and passed into law during the 2021-2022 legislative session that relate to forestry. A detailed list of those bills is also included below.

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
2019-20	3	2	3	2
2021-22	7	1	7	2

The following were passed into law:

[SB 607](#)/ AB 640 - the threshold amount of timber sold from state, county, or community forests above which certain approval and notice requirements apply

[SB 625](#)/ AB 642 - modifying the permit for certain oversize or overweight vehicles transporting forest products

[AB 909](#)/ SB 913 - the managed forest land program

The following bill was vetoed:

[AB 367](#)/ SB 369 - loan for the purchase of the Verso Paper Mill in the city of Wisconsin Rapids

The following bills did not pass into law:

[AB 492](#)/ SB 481 - loan related to the Verso Paper Mill in the city of Wisconsin Rapids; loan related to the Park Falls Pulp and Paper Mill in the city of Park Falls; funding for the University of Wisconsin System; special education funding and making an appropriation

[AB 682](#) - grant related to the Verso Paper Mill in the city of Wisconsin Rapids, loan guarantee related to the Park Falls Pulp and Paper Mill in the city of Park Falls, substance abuse prevention on certain public projects, and granting rule-making authority

[SB 712](#) - grant related to the Verso Paper Mill in the city of Wisconsin Rapids and loan guarantee related to the Park Falls Pulp and Paper Mill in the city of Park Falls

[AB 799](#)/ SB 769 - grants for planting trees to address urban heat islands, eligible recipients for urban forestry grants, providing an exemption from emergency rule procedures, and making an appropriation

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.

As outlined in this report Wisconsin's forest products industry is \$30+ billion economic driver for the state and employs a workforce of over 60,000. With other states investing millions of dollars into their state's forest product sectors, Wisconsin needs additional tools to attract and retain businesses and employees.

Funding for forestry programs in the State Budget are investments that support rural communities as well as the overall state economy. By keeping forests as forests, we can foster the additional benefits that forests provide for clean water and air, wildlife habitat, and outdoor recreation. Essential investments in forestry programs support the forestry community's ability to address threats to forest health and maintain and enhance a forest industry that directly and indirectly benefits every Wisconsin resident and visitor.

Last year, a diverse forest industry coalition sought a federal Build Back Better Regional Grant which made it through to the final round before ultimately not being selected for funding. This process created a blueprint for success for Wisconsin's forest products industry and showcased how partnerships help support and grow Wisconsin forest-based economy.

As discussed previously in this report, the Council on Forestry has taken a lead role in outlining the need for a Wisconsin Forest Industry-wide Strategic Plan and Roadmap designed to maintain existing businesses, identify new market opportunities, and drive innovation.

The Council, together with the coalition partners, are seeking \$1.5 million in the FY23-25 budget session to support Wisconsin's forest-based economy. The funding will support the:

- Development and implementation of a statewide talent attraction marketing plan
- Development of a Forest Industry-wide Strategic Plan and Roadmap
- Creation of a forest industry employment opportunity website and support apprenticeships and interns for high school, technical and college students
- Development of a wage/salary database for the industry

In addition, the following are specific Council budget recommendations:

- Maintain the current law provision that directs "an amount equal to 0.1697 mills for each dollar of the assessed valuation of the property in the state to be transferred from the general fund to the conservation fund for the purpose of acquiring, preserving and developing the forests of the state and for other specified forestry purposes". In 2017, legislators promised to maintain forestry funding from GPR when the budget committee voted to end the forestry mill tax.
- Increase spending authority by \$500,000 annually to improve management of private forests through the Wisconsin Forest Landowner Grant Program (WFLGP). This critical grant program supports reforestation, storm clean up, and other activities to improve forest health, sustainability, and productivity. Demand for this program exceeds current funding levels and

increasing availability is an important strategy to meet Wisconsin's goals to maintain forest health in light of increasing stressors from a changing climate and challenges with current wood markets for low grade fiber. This increase can be made by adjusting annual spending authority within Wis. Stat. 20.370(5)(av) from \$1,147,900 to \$1,647,900.

- Increase spending authority by \$300,000 annually to support forest Education and Innovative Curriculum Development to keep pace with an ever-evolving forest industry. Of the numerous challenges facing Wisconsin's forest industry, workforce recruitment and training remain among the most pressing. This funding will build upon the well-established programs developed by LEAF and ensure sustainability for the Wisconsin Forestry Center. This increase can be made by adjusting annual spending authority within Wis. Stat. 20.370(2)(cu) from \$350,000 to \$650,000 and modify Wis. Stat. 26.39(2) as needed to allow for this authority to also be used for innovative curriculum development.
- Provide \$250,000 in GPR funding for UW-Stevens Point's Wisconsin Institute for Sustainable Technology (WIST) to further support their critical work to ensure the long-term viability of the State's paper and forest products industry, and to develop new technologies and advancements in wood utilization and products
- Fund \$250,000 in GPR funding for Mid-State Technical College's Advanced Manufacturing, Engineering Technology and Apprenticeship (AMETA) Center to further support their critical work to ensure the long-term viability of our state's forest

In 2017, when the Forestry Mill Tax ended, legislators promised to maintain forestry funding from GPR. It is imperative to continue this funding. The current GPR allocation to the Forestry Account within the Conservation Fund supports public safety and forestry-related programs including the following critical functions:

- Urban forestry grant program
- County forest sustainability and habitat grants
- Forest management activities on public lands
- Wildland fire control operations and support for rural fire departments
- Supporting family forest owners Managed Forest Law
- Forest nurseries, forest health and forest conservation activities
- Forest recreation, campgrounds, trails, and forest facilities
- Support for community tree programs
- Debt service for Knowles-Nelson Stewardship

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. The Council's report, [The future of Wisconsin's Forest Products Economy – Summary of Focus Group Discussions](#), included communication as one of five recommendation category topics (others included policy, collaborations with education institutions, products, and transportation and infrastructure).

Communication recommendations were summarized in two statements, with a sample of a session contributor's actual comments below in italics:

- Promote and expand collaborations and communication between stakeholders towards improved work relations, productive discussions, and state-wide commitment and involvement.

"...The internal and external stakeholders of the forest industry must continue to collaborate to maintain what WI forest industry is already doing well..."

- Increase publicity and public awareness of the quality, sustainability, and benefits of forest products to people and communities.

"...Educate the consumer on the reality of this, this is a sustainable industry, this is that alternative to the plastic, and all the other good things that come with it..."

As noted earlier in this biennial report, the Council identified two key needs from the industry listening sessions: 1.) Comprehensive Brand and Industry Marketing, and 2.) Strategic Forest Industry-Wide Plan and Roadmap.

The Council's work to further refine the brand and marketing topic identified the need to transform perceptions of a dying, legacy industry to one that is vibrant, making products that are sustainable and in-demand and that will underpin rural economies and communities as well as help mitigate climate change. The centerpiece identified by the Council would be an ongoing campaign to engage with and tell stories of the quality, sustainability, benefit, and the future of forest products to a broad audience including citizens, landowners, elected officials, tribes, business sectors, customers and potential customers. Inherent in the campaign would be elevating an awareness of the vast array of forest products manufactured in Wisconsin and used every day around the country and around the world. The Council identified important next steps for a messaging campaign including: Defining the Lead, Identifying Partners, Defining the Goals and Scope, Defining the Audience, and Defining the Message. It is recognized that funding would be a necessary component of a campaign.

The University of Oshkosh and the WI Paper Council led a two-year effort beginning in 2019 to identify needed strategic actions for the industry. The project's initial focus was to address the talent shortage, and then was expanded to include challenges in messaging, which are identified in the [Strategic Framework for Wisconsin's Paper Industry](#). This study also identified several strategic recommendations for the need to increase the public's knowledge and awareness of forestry related issues for the paper industry that can be interpreted as relevant to the Wisconsin's broader forest industry including:

- The paper industry needs an image makeover and to shed decades old misperceptions.
- The paper industry needs a unified voice and common message.
- The paper industry must highlight a consistent message about their sustainability practices.
- Companies must engage with their communities to highlight their good works and promote opportunities.

Examples of ongoing efforts to communicate, educate and engage the public that should be supported include:

- **Log-a-Load events:** The Great Lakes Timber Professionals coordinate multiple Log-a-Load-For-Kids events. At these 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 DNR – Division of Forestry.
- **Forest Exploration Center:** The nonprofit Forest Exploration Center continues to develop forestry education opportunities on the 67-acre property owned by the DNR in Wauwatosa. The Council visited the center in September 2022.
- **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.
- **North American Forest Partnership:** Members of Wisconsin's forestry community supported and participated in a 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.
- **Connecting with 20,000 Landowners:** In 2018, the Chief State Forester of the Wisconsin DNR adopted the Wisconsin Private Forestry Advisory Committee's (WPFAC) [recommendations](#) that encouraged the professional forestry community of partners to collaborate toward a 5-year goal of connecting with 20,000 new non-industrial private forest (NIPF) landowners..
- **My Wisconsin Woods,** a partnership of the Wisconsin DNR and the Aldo Leopold Foundation, has become a trusted source of information with a communications platform that empowers woodland owners with the knowledge and tools necessary to identify and start realizing their goals. This program introduces landowners to sustainable forest management practices through inclusive offers and communications, connecting them to the wider forestry community's programs and services.