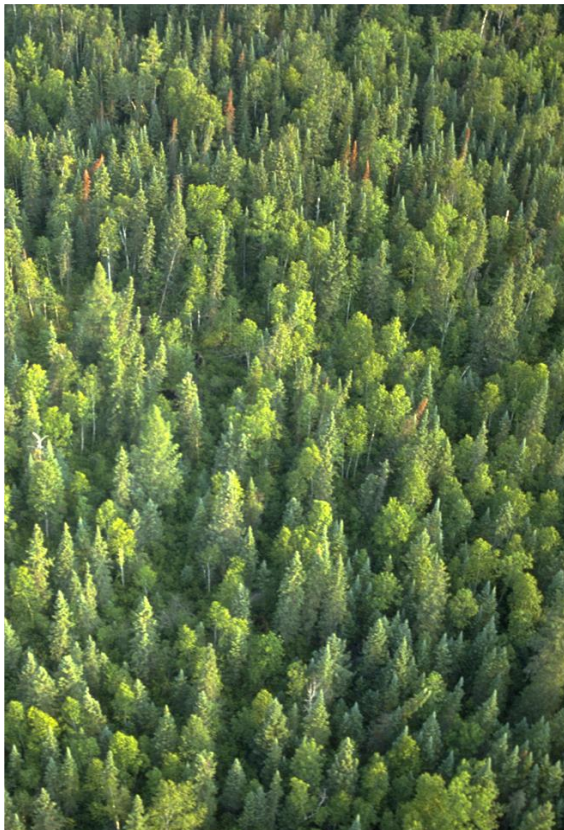




National Priorities Section
2015 Addendum

Minnesota Forest Action Plan Update



Minnesota Department of Natural
Resources
National Priorities Section
2015 Addendum

Submitted to USFS – November 16, 2015

This information can be made available in alternative formats such as large print, braille or audio tape by emailing info.dnr@state.mn.us or by calling 651-259-5016.



MINNESOTA DEPARTMENT OF NATURAL RESOURCES
CENTRAL OFFICE
500 LAFAYETTE ROAD
SAINT PAUL, MN 55155
651-296-6157
888-646-6367

November 16, 2015

Dear Interested Citizen:

I am pleased to present you the National Priorities Section Addendum to Minnesota's Forest Action Plan (FAP). As part of a 5-year internal review of the 2010 FAP, states are required to add a new section connecting FAP issues and strategies to the USDA Forest Service's three national priorities. Along with cross-referencing strategies and issues to the three national priorities, we have also highlighted a number of key success stories under each national priority and objective. We are proud to share our plan with citizens and other states throughout the nation.

In 2010, the Minnesota DNR developed the first Minnesota Forest Resources Assessment and Strategies documents (now known as the Minnesota FAP), in response to the 2008 federal Farm Bill requirements and priorities for USDA Forest Service State and Private Forestry (S&PF) programs. The Minnesota FAP was developed with a broad team of stakeholders and is intended to provide an expansive general overview of the main trends, conditions, and issues affecting Minnesota's forests. As they were developed as 'living documents', Minnesota's FAP represents a strategic roadmap for the state to direct limited federal resources where they are or will be needed most. Through current and future FAP iterations, Minnesota can demonstrate how federal investments are being used to leverage other resources and produce measurable outcomes that address national priorities and objectives.

The Minnesota DNR looks forward to continued collaboration with our partners and stakeholders to implement current and future strategies of the FAP to sustainably manage our valuable forest resources now and in the future.

Sincerely,

A handwritten signature in blue ink that reads "Forrest L. Boe". The signature is written in a cursive, flowing style.

Forrest Boe, State Forester

Division of Forestry

Acknowledgements

All strategies and related information in this document except Success Stories can be found in the original 2010 Minnesota Forest Action Plans.

To better align with National Priorities and Objectives, this addendum to the 2010 Minnesota Forest Action Plan (FAP) includes a status check of strategies that are currently in process, implementation or on hold. Success Stories have also been included to highlight the state's commitment to sustainable forest management. Except where noted, all Success Stories have been adapted from MN DNR sources.

This effort has been made possible with the help of several interested federal and state staff and stakeholder groups who provided insightful comments and Success Stories to help drive the linkage of state strategies to national priorities.

Thanks go out first to Forrest Boe – DNR State Forester who provided valuable insight and direction in this effort and to Jon Nelson – DNR Planning and Policy Supervisor for guiding the completion of this project.

Thanks go to the following state DNR staff for their contributions on reviewing the status of strategies and providing Success Stories: Richard Peterson-Forest Legacy Program; Gary Michael-Private & Forest Management Program; Tim Beyer-Forest Certification Program; Ron Stoffel-Fire Program; Linda Gormanson-Firewise Program; Sue Burkes-Invasive Species Program; Val Cervenka-Forest Health Program; Ken Holman-Urban and Community Forestry Program; Doug Tillma-Utilization and Timber Sales Program; Kent Jacobson-Timber Business Program; Anna Dirkswager-Biomass Program; Dick Rossman-Voluntary Forestry Guidelines Program; Amy Kay Kerber-Outreach and Legislative Program; Clarence Turner-Climate Change Program; Dennis Kepler-Resource Assessment Program.

Thanks go to Dan Steward-Board of Soil and Water Program (BWSR) and Jay Brezinka-Camp Ripley Environmental Program (ACUB) who both provided enthusiastic input and guidance to this project.

Thanks also go to USFS staff Carleen Yocum-Field Office Representative, Dennis McDougall-Forest Stewardship Program, Mike Conner-Forest Stewardship Program in St. Paul and Sherri Wormstead-Sustainability and Planning Coordinator in Durham, NH for their guidance and support in this project.

Finally, special thanks go to:

Elizabeth Bourquin – DNR Forestry, for her invaluable contribution to the final layout and graphics of this document. We couldn't have produced such a professional document without her knowledge and design skills.

Lindberg Ekola – MFRC Landscape Program Manager, who oversaw a large part of this process and provided leadership for the stakeholders and members of the six MFRC Landscape Committees. These stakeholder committees, along with state PFM programs, are in the process of implementing many of the strategies of the FAP now and into the future.

Helen Cozzetto – DNR Forest Resources Policy Planner, who managed this project and wrote and produced Minnesota's FAP addendum document for the new USFS S&PF National Priorities Section.

Introduction

The 2008 Farm Bill, under Title VIII – Forestry, amends the Cooperative Forestry Assistance Act of 1978, to include the requirement that each state develop a long-term, state-wide assessment and strategies for forest resources. The Minnesota 2010 documents were developed with a comprehensive team of stakeholders to address cross-boundary, landscape scale actions that would be the most efficient activities to address issues of concern developed for the strategies phase of the Forest Action Plan.

In September 2014 at the NASF annual meeting, a new requirement for all states was approved and passed regarding national priorities. As Minnesota had included a cross-reference of issues and strategies in the 2010 FAP, this addendum addresses that requirement by revisiting the Minnesota strategies portion of the 2010 FAP and strengthening the relationships between Minnesota’s strategies and the three national priorities:

- Conserve and Manage Working Forest Landscapes for Multiple Values and Uses
- Protect Forests from Threats
- Enhance Public Benefits from Trees and Forests

This addendum also seeks to provide select Success Stories to highlight each national objective.

Alignment of Minnesota FAP Strategies with National Priorities

Minnesota has a long and respected history of forestry excellence in managing forest health, protection of sustainable forests, and continued support for the commercial viability of the forest products industry. The state is committed to working cooperatively with all levels of government, tribal governments, private and public entities, businesses, and the public at large to align the state strategies with the national priorities.



A unique feature of managing and administering the state’s forest resources involve the cooperative work between State & Private Forestry and the

Minnesota Forest Resources Council (MRFC). Established by the Sustainable Forest Resources Act of 1995 (SFRA), the Minnesota Forest Resources Council (MFRC) is a 17-member organization working to promote long-term sustainable management of forest resources throughout the state. The SFRA directs the Council to:

- Pursue the sustainable management, use, and protection of the state’s forest resources to achieve the state’s economic, environmental, and social goals.
- Encourage cooperation and collaboration between public and private sectors in the management of the state’s forest resources.
- Recognize and consider forest resource issues, concerns, and impacts at the site and landscape levels.
- Recognize the broad array of perspectives regarding the management, use, and protection of the state’s forest resources, and establish processes and mechanisms that seek these perspectives and incorporate them into planning and management.

The MFRC provides a statewide forum where diverse interests discuss and resolve issues regarding the management of Minnesota's forests. The Council and its programs help to depoliticize forest management issues in Minnesota by emphasizing collaboration and science. Dr. John Fedkiw retired USDA senior policy advisor recognized the Council in his 2008 book, *Stewardship and Landscape Coordination for Sustainable Forests*.¹ "The MFRC has become an effective organization for framing and guiding a non-regulatory approach to the management, stewardship, and sustainability of Minnesota's forested landscapes and addressing related issues of forest resource policy."

The Council implements the SFRA by:

- Advising the Governor and federal, state, county, and local governments on sustainable forest resource policies and practices. Since 2001, the Council or Council staff has advised the Governor and/or legislature on the global competitiveness of the forest products industry, federal roadless areas, bioenergy, climate change, forestland taxation, and invasive species.
- Developing and periodically revising site-level forest management guidelines used by loggers and public and private forest owners statewide to assure sustainable forest resource management, use, and protection. These guidelines address wildlife habitat, soils, riparian areas, water quality, wetlands, aesthetics, and historic and cultural resources. Guidelines were produced in 1999, revised in 2005, amended in January 2008 and revised again in 2012, to include the first state-level guidelines in the U.S. for the sustainable removal of woody biomass for energy from forests, brushlands, and open lands.
- Supporting forest resources research. The Council coordinated the development of numerous research projects including studies relating to ecological and wildlife impacts of biomass harvest for energy, state timber sale policy, private forestland policy tools, climate change, modeling of native plant communities, and carbon sequestration.
- Via regional landscape committees, it develops and implements landscape plans for Minnesota's six major forested regions. Since 1997, regional forest resource plans have been prepared for each four to eight million-acre region. The plans describe desired future conditions for the region's forests over a long-term horizon (100 years or longer). The plans also include shorter-term goals and strategies to guide efforts by landowners, forestry professionals, and industry, tribal, and agency managers in the sustainable management of each region's forest resources.

Volunteer, citizen-based regional landscape committees are central to carrying out landscape management processes. Regional landscape committees provide an open public forum for diverse interests to cooperatively promote forest sustainability. By bringing together representative interests from landscape regions, the committees serve as springboards for effective forest management activities that address specific needs and challenges in each region.

With the first generation (and in some regions the second iteration) of planning processes in all six of the major forested landscapes completed, the Landscape Program is now focused on plan implementation. Regional landscape committees meet on a regular basis to guide implementation of landscape plans and coordination of land management activities. The six committees actively work to:

¹ Fedkiw, J. Rose, G.A. *Stewardship and Landscape Coordination for Sustainable Forests*. Washington, D.C. The Pinchot Institute for Conservation

- Encourage consideration of the landscape-level context by all agencies, organizations, industry, and private landowners when developing their resource management plans and implementation projects.
- Coordinate and support projects by partnering organizations that promote sustainable forest management practices in the landscape region.
- Develop and implement committee projects that proactively address the goals and strategies outlined in the regional forest resource plans.
- Monitor activities and outcomes of projects implemented by the committees, as well as those by partnering organizations and landowners across the landscape region.

The MFRC’s Landscape Program has been recognized nationally as a model for “integrating diverse interests across multiple ownerships for sustainable forest landscapes and desired long-term outcomes,” according to Dr. Fedkiw. “The *Minnesota Approach* clearly provides an effective democratic and decentralized enabling governance and societal integration of the diverse interests in sustainable forest landscapes. It is commendable to other states for adoption or adaptation... and is also worthy of federal encouragement and support to facilitate its extension to other states.”²

Implementing State Strategies through S&PF and MFRC Programs

Minnesota’s approach to implementing the state strategies in its state Forest Action Plan has focused on the collaborative work sponsored by the MFRC. The MFRC Landscape Program supports regional and local level forums where partners collaborate to bring about desired future conditions in each of six major forested regions in the state. Over 40 sustainable forest partnerships have been established and are represented on one or more of these six landscape committees.³ MFRC staff and partners have worked together to develop these demonstration projects that address specific issues germane to regional stakeholders interests. These projects advance the implementation of the landscape plans while at the same time these projects support the implementation of the state’s Forest Action Plan.

The MFRC landscape committees have been very successful in securing both federal and state grants and funding to implement pilot projects over the past ten years and are actively aligning current and future work to the Minnesota Forest Action Plan and State & Private Forestry national priorities, as outlined by the USFS Redesign Program. Over the past five years, the MFRC has helped landscape committee partners obtain \$20 million in federal, private and non-General Fund state grants to support their work.

These collaborative projects have also served as the conceptual foundation for improving and refining forestry programs. The Minnesota DNR Division of Forestry’s Private Forestland Management (PFM) Program is one example. While the state’s PFM Program is considered one of the premier private lands assistance programs in the country, budget cuts over the past ten years have seriously eroded the

² Fedkiw, J. Rose, G.A. *Stewardship and Landscape Coordination for Sustainable Forests*. Washington, D.C. The Pinchot Institute for Conservation

³ Regional Landscape Committee membership includes landowners, loggers/sawyers/foresters, forest industry/wood products manufacturing/environmental/conservation/sporting organizations, business and development communities, education and research communities, soil and water conservation districts, cities and townships, counties, tribal, state and federal representation.

program's capacity to serve private landowners. In response to this challenge, the Division of Forestry proactively sought out collaborative opportunities with partners on the landscape committees as well as with the US Forest Service.

In 2008, the US Forest Service created the Landscape Stewardship Initiative to address the increasingly complex challenges facing the management of private woodlands across the nation. A steering committee was formed with the mission of developing guidance tools, approaches and strategies that will enable the forestry community to dramatically expand the reach and effectiveness of services to private woodland owners. One of the main outcomes of this initiative was the publication of the US Forest Service document, "Landscape Stewardship Guide" [Landscape Stewardship](#). The work of the MFRC landscape committees through the collaborative projects was foundational to the development of landscape stewardship approaches for use and implementation across the nation.

Through the robust implementation of the Landscape Stewardship Initiative in tandem with the state Forest Action Plan, opportunities to significantly enhance a broad array of both private and public benefits can be more effectively provided from private woodlands. The Division of Forestry in conjunction with the MFRC and partners on the regional landscape committees has been working for over ten years to create and shape processes for implementing landscape stewardship approaches into its service delivery. Over \$3.5 million of federal, state and local funding resources have been secured since 2010 to support the coordination and implementation of twelve landscape stewardship projects across the state. These collaborative projects seek to increase and enhance services to private woodland owners while at the same time increase public benefits that come from public lands such as water quality protection and wildlife habitat.

Resource managers in Minnesota are uniquely situated to develop a set of integrated programs that will dramatically shape and influence forest land use, on both private and public lands, in ways that will optimize public benefits from forest resources for both current and future generations. This unique opportunity was created by the citizens of Minnesota. In November 2008, the citizens of Minnesota voted overwhelmingly for a constitutional amendment to increase funding for the outdoors and the arts by a 3/8ths of one percent sales tax increase over a 25 year period (2009 to 2034). Over 1.6 million voters stated they wanted funds constitutionally dedicated to preserving the state's outdoor heritage. The passage of the "Clean Water, Land and Legacy Amendment" represents the largest dedication to natural resources in the United States history by one state. It is estimated that over \$480 million will be generated for outdoor land and habitat protection, restoration, and enhancement every two years.

Federal funds from the US Forest Service are providing partners in Minnesota with critical coordination capacity to knit and weave together a collaborative infrastructure across multiple agencies and organizations. The federally funded projects are helping us develop integrated systems that will allow partners in the region to more effectively leverage millions of state, local and private funding focused on implementation to link forest and water quality projects. This critical partnership is resulting in a coordinated forestry/water quality protection strategy through landscape approaches that will bring partners together to coordinate and integrate efforts to maximize benefits to not only water resources in the state but to the management of forests, fish, wildlife, recreation and community development overall.

Landscape stewardship approaches are helping the Division of Forestry better address priority issues and opportunities and the related priority areas identified in the state's Forest Action Plan. These collaborative projects are also helping to reframe a series of programmatic issues and challenges facing the Division of Forestry PFM Program through the Private Forest Management System Framework, a

plan to guide the future delivery of services to private woodlands owners across the state. The growing partnerships supported by the MFRC Landscape Program are continually helping partners across the state accomplish their goals by encouraging collaboration among all stakeholders within a priority area, including private forest landowners, to achieve their objectives within the context of the State Strategy, leading to greater public benefits.

By working collaboratively through landscape stewardship approaches, the forestry community can more effectively keep forests as working forests, and ensure continued contributions to forest management, clean water, climate change mitigation, and the many other benefits forests provide. The Division of Forestry in partnership with the MFRC and its landscape committee partners are committed to proactively implementing the state Forest Action Plan in order to advance the successful implementation of national priorities in Minnesota.

National State and Private Forestry Priorities and Objectives

1. Conserve Working Forest Landscapes

1.1 Identify and conserve high priority forest ecosystems and landscapes

Historically Minnesota has enjoyed a large forest land base. However, recent multiple pressures including fragmentation, changes in land ownership patterns, increasing invasive pest pressures (forest health), economic changes in the timber industry and climate changes are demanding restructuring of forest management practices for present and future multiple needs. Collaboration with like-minded partners in tackling these many-faceted issues is a key to sustaining a healthy forest land base in the state. Two administrative programs to address these issues include the federal Forest Legacy Program, which provides matching federal funds to state funds for purchasing forest lands or conservation easements, and the state Forests for the Future program, which gives landowners a way to sell conservation easements on their land. Since 2000, public and private sources have provided more than \$92 million to protect more than 358,000 acres of forest with permanent easements and fee title. Over 60% has been state funds, 20% private funds and 18% federal funds.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Work with partners to identify opportunities for forest protection, enhancement, restoration	Private landowners, federal, state, local, tribal gov'ts, forest industry landowners	MFRC, USFS, NRCS, USFWS, DNR, FSA, NPS, BWSR, SWCD	Landscape stewardship projects such as FSP, DNR Working Lands Initiative, Forest Legacy Easement Program, EQIP, CRP, CREP, CSP), WHIP, BWSR - RIM, SWCD, ACUB project-Camp Ripley
Implement Forests for the Future (MFF) program	Private landowners, federal, state, local gov'ts, forest industry landowners	Outdoor Heritage Council, USFS, TNC, MLT, TCF, TLP, Forest Legacy Partnership	Conservation easement funding (L-SOHC, TNC, Blandin Fndn; Forest Legacy, Bonding, LCCMR), SWCD
Identify and acquire key priority forest lands through fee-title acquisitions	Federal, state, local gov'ts, citizens of MN	Outdoor Heritage Council, TNC, MLT, TCF, TPL	MN Outdoor Heritage Fund, Bonding, LCCMR, MFF

Promote and support landowner participation in tax law and incentive programs that support, encourage and reward forest land retention and enhancement	NIPF landowners, SWCD, private consultants	FSP, Tree Farm, Minnesota Forestry Association, SWCD, Dept. of Revenue, consulting foresters, U of M Extension, county land departments	FSP, SWCD, SFIA, 2c, Rural Preserves
Encourage retirement and reforestation of appropriate marginal, erodible farmlands (including riparian areas) and tie to MFRC regional landscape goals	Private landowners, MFRC regional committees, MFRP, federal, state, local, tribal gov'ts	NRCS, DNR ,FSA, SWCD	FSP,CRP,CREP, SWCD, RIM, CRP
Target forest stewardship services to critical watersheds as supported through federal, local programs & agencies	NIPF landowners, citizens of MN	USFS, EPA, MPCA, FSP, MM Forestry Association, SWCD	Clean Water Legacy, FSP
Ensure that forest stewardship plans include guidance for forest management, harvesting, regeneration	NIPF landowners	DNR, consulting foresters, SWCD, Stewardship Committee	DNR PFM database, FSP
Support and expand sustainable practices on working private forested lands	NIPF landowners	DNR, MFRC, SWCD, MLEP, loggers, private consultants, FSP, other private landowner assistance programs	FSP
Increase understanding of the magnitude, causes, and impacts of forest land parcelization in the state. Assess general public's understanding of issues and develop targeted education programs	Citizens of Minnesota	DNR, MFRC, MFRP, SWCD, U of M Extension	MFF, Wild Rice watershed project, MFRC
Assess and analyze a broad and integrated set of policy tools to mitigate the adverse effects of forest parcelization and provide recommendations to the state legislature	NIPF landowners, state legislature, citizens of Minnesota	DNR, MFRC, U of M, state legislature	MFF, ACUB project, MFRC
Provide forest products marketing assistance to private landowners in order to improve landowner income	NIPF landowners, wood industry	DNR, USFS, NRCS, U of M, State Technical Committee, SWCD	Undetermined: needs funds & technical assistance
Work with partners to identify opportunities for forest protection, enhancement, restoration	Private landowners, federal, state, local, tribal gov'ts, forest industry landowners	MFRC, USFS, NRCS, USFWS, DNR, FSA, NPS, BWSR, SWCD	FSP, DNR Working Lands Initiative, Forest Legacy Easement Program, EQIP, CRP, CREP, CSP), WHIP, BWSR - RIM, SWCD, ACUB project-Camp Ripley

Success Story: A Powerful Partnership: Protecting Minnesota's Northwoods

Among the shining stars in Minnesota's recent efforts to protect and conserve high priority forest ecosystems and landscapes for posterity is the Minnesota Forest Legacy Partnership which completed more than 330,000 acres of forest protection in northern Minnesota, far exceeding its initial goal of 75,000 acres. The partnership, which was made up of nine public, private and non-private entities including the Blandin Foundation, the Grand Rapids Chamber of Commerce, Minnesota Deer Hunters Association, Minnesota Forest Industries, Minnesota Forest Resources Council, The Conservation Fund, The Nature Conservancy, the Trust for Public Land, and the Minnesota Department of Natural Resources raised over \$24 million in private funds to match over \$56 million in state and federal grants since 2005. [Minnesota Forest Legacy Partnership](#)

Formed in 2005 with a lead grant of \$6.25 million from the Blandin Foundation, the Partnership worked with industrial forest landowners to purchase working forest conservation easements. The easements keep the land in private hands and on the tax rolls while ensuring it is harvested sustainably for timber and remains open for public recreation.

One of the highlights was the Upper Mississippi Forest project, the largest conservation effort in state history and a signature project for the Clean Water, Land and Legacy Amendment. With support from the Partnership, the Conservation Fund and the Minnesota Department of Natural Resources negotiated an easement which protected 188,000 acres of forestland in northern Minnesota.

Easements protect not only working forest lands but also protect many miles of undeveloped lake and river shoreline, thousands of acres of intact wetlands and include multiple recreational opportunities for the public including hunting, fishing, and trail access. These permanent easements are an enduring conservation legacy for generations to come.



Success Story: Wild Rice: The Shallow Lake Shoreland Protection Project



Minnesota has the most natural wild rice habitat in the lower US. In addition to the spiritual and cultural significance to the Ojibwe tribes, wild rice provides food and shelter for many fish and wildlife species. In fact, more than 17 wildlife species of greatest conservation need (SGCN), listed in the state's "[Comprehensive Wildlife Conservation Strategy](#)", depend on wild rice lakes as habitat for reproduction or foraging. Since one acre of wild rice can produce over 500 pounds of seed, migrating waterfowl and local wildlife rely on this rich food source for survival. No other Minnesota plant offers this level of cultural, economic or ecological importance in the state.

In an era when development, pollution, invasive species, fluctuating water levels and recreation



threaten sensitive wild rice shallow lakes, it is critical to protect and enhance these forested and riparian shorelands. In order to protect wild rice resources, baseline surveys were begun in the 1980's which involved the MN DNR and tribal interests. This resulted in the 2008 legislative report "[Natural Wild Rice in Minnesota](#)". In 2009, the creation of the Outdoor Heritage Fund (Clean Water, Land and Legacy

Amendment), provided an opportunity for several natural resources stakeholders to collaborate

and form the Shallow Lake Shoreland Protection Project with the goal of protecting wild rice habitats.

A partnership between the Board of Water and Soil Resources (BWSR), local Soil and Water Conservation Districts (SWCD), the Department of Natural Resources (DNR) and Ducks Unlimited (DU) was formed to

concentrate the project's work area in eight state counties that hold the lion's share of wild rice resources today.



As the project co-sponsors, BWSR and Ducks Unlimited wrote a \$1.9 million Outdoor Heritage Fund grant for 2012. The goal was to protect 700 acres of shallow wild rice lakeshore habitat on 17 critical lakes through permanent conservation easements and fee-title acquisition.

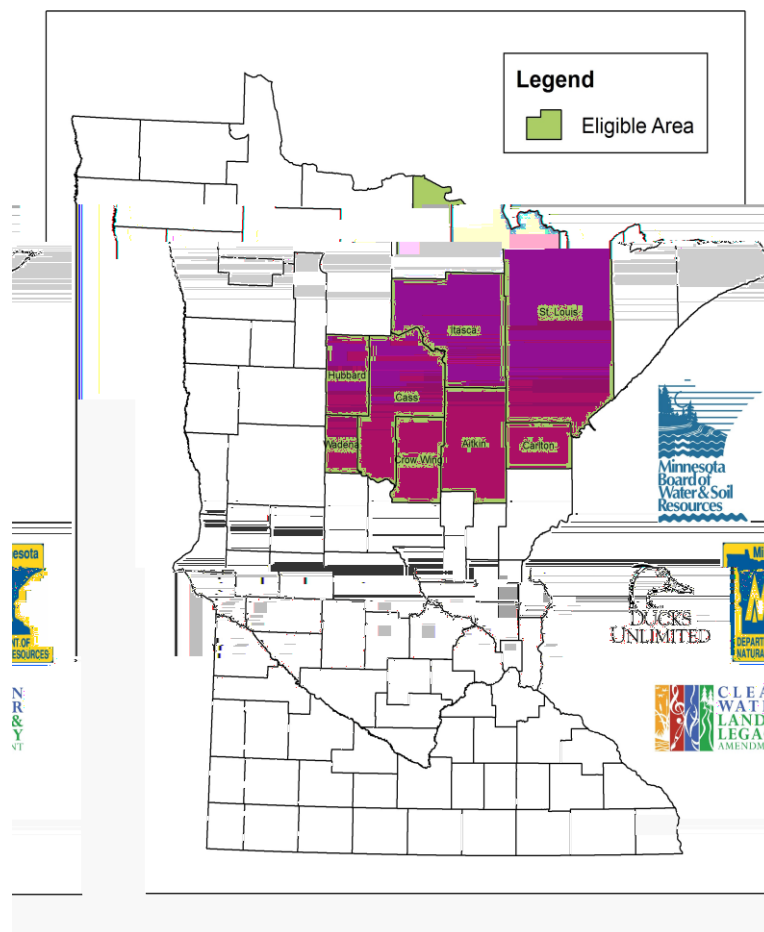
Phase I of the project had three pieces:

1. Permanent protection via Reinvest in Minnesota (RIM) easements acquired by BWSR. RIM has a long history of successfully protecting fragile farmland and wetlands in Minnesota. Expanding RIM to take forestland easements was a new idea that paid off in the protection of wild rice lakes from development.
2. Permanent protection via Ducks Unlimited easements for landowners interested in working with a non-government organization (NGO) instead of with a government agency.
3. Permanent protection via fee-title acquisition through the Minnesota DNR.

The outcomes of Phase I exceeded initial goals. Overall, 10 miles of shoreland (over 1,200 acres) were protected. Forestlands, riparian forests and other habitat corridors were protected from development and fragmentation. Waterfowl disturbance was kept to a minimum. In addition, public access was provided on over 400 acres. As of 2015, Phase II is now in review with the legislature.

[The Shallow Lake Shoreland Protection Project](#) shows how resource collaboration and planning work for the benefit of all. Not only is the cultural and traditional value of wild rice honored in its preservation, but Minnesota's wildlife has an ongoing source of food and shelter. That's good news for anyone who appreciates the legacy of our natural resources.⁴

Shallow Lake Shoreland Protection: Wild Rice Lakes 8-County Pilot Area



⁴ Adapted from MFRC project stories by author Jim Umhoefer 2013-14

1.2 Actively and sustainably manage forests

Minnesota forest agencies are among the nation's first and largest public land managers to have their lands certified by both the Forest Stewardship Council (FSC) and the Sustainable Forest Initiative (SFI). Minnesota has over 8 million acres of certified forests across private and public ownerships and now holds the largest single FSC Forest Management Certificate in the US. Certification provides unique market access to support and sustain healthy and diverse forests. These forests support industries that produce certified products including lumber, siding, office paper, magazines, windows, furniture and cabinets. To maintain certification, all certified owners go through annual audits for constant review and improvements to sustainable forest management.

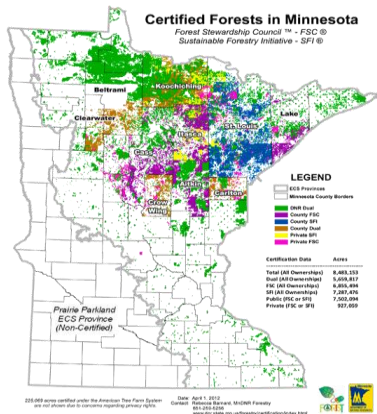
Strategies in process or implementation	Key Stakeholders	Partners	Resources
Work with partners to identify opportunities for forest protection, enhancement, restoration	Private landowners, federal, state, local, tribal gov'ts, forest industry landowners, NGOs	MFRC, USFS, NRCS, USFWS, DNR, FSA, NPS, BWSR, SWCD	Landscape stewardship projects such as FSP, DNR Working Lands Initiative, Forest Legacy Easement Program, EQIP, CRP, CREP, CSP), WHIP, BWSR - RIM, SWCD, ACUB - Camp Ripley
Identify and acquire key priority forest lands through fee-title acquisitions	Federal, state, local gov'ts, citizens of MN	Outdoor Heritage Council, TNC, MLT, TCF, TPL	MN Outdoor Heritage Fund, Bonding, LCCMR, MFF
Continue to implement Forest Certification programs for private landowners	NIPF landowners, Certification "chain-of-custody" businesses, SWCD, Tree Farm	FSC, SFI, U of M, consulting foresters	Aitkin County SWCD private certification program
Continue to implement Forest Certification programs for private landowners	NIPF landowners, Certification "chain-of-custody" businesses, SWCD, Tree Farm	FSC, SFI, U of M, consulting foresters	Aitkin County SWCD private certification program
Continue to support logger certification	NIPF landowners, forest industry, private consultants	MLEP, MMLC, MFA, MFI	MMLC, DNR
Maintain public and expand private land 3rd party certification	Wood industry, forest managers	Counties, MFA, MFRC, consulting foresters, SWCD	\$, Technical assistance
Maintain strong wood industry technical and wood supply information and assistance	Wood industry	USFS, U of M, NRRI, DNR, SWCD	\$, Technical assistance
Provide forest and forest-industry related information and education to the public and other key audiences	Industry, forest managers, citizens of MN	DNR, USFS, U of M, wood industry, SWCD	FSP, SWCD \$, Technical assistance,
Support collaborative development of new or improved markets and products	Industry, forest managers	DNR, U of M, NRRI	\$, Technical assistance

Provide wood marketing and utilization assistance to forest product companies to increase industry health and promote efficient wood utilization and greater use of underutilized species and resources	Industry, forest managers	DNR, U of M, NRRI	\$, Technical assistance
Assist with continuous development of skilled forest industry workers through engagement with partner training efforts	Industry	DEED, MLEP and U of M Extension	DEED, MLEP and U of M Extension
Strategically provide financial assistance to forest product companies that are important for maintaining forest management through markets	Industry, forest land managers	USFS	\$, Technical assistance

Success Story: Forest Certification – Minnesota’s Model of Leadership

In 1997, the Minnesota Department of Natural Resources (Minnesota DNR) and Aitkin County Land Department pursued and obtained third-party Forest Certification for about 150,000 acres of state and 220,000 acres of county-administered forest lands within Aitkin County. These were the first public forest lands to be certified to the Forest Stewardship Council in the United States, thereby establishing Minnesota DNR and Aitkin County as nation-wide leaders in Forest Certification.

Since 1997, interest, recognition and support for Forest Certification continued to grow among natural resource managers, forest product manufacturers, builders, policy makers, consumers of sustainable products, and the public. In response to this increased market demand and the [Governor’s Task Force Report on the Competitiveness of Minnesota’s Primary Forest Products Industry](#), Minnesota DNR committed to, and successfully obtained, dual (FSC and SFI) third-party Forest Certification on all MN DNR Forestry and most Division of Fish and Wildlife administered lands in December of 2005. Minnesota DNR currently manages nearly 5 million acres of certified lands, the largest single FSC certificate in the US, and one of the top ten in the world. In addition, over 3 million acres of certified lands are held by counties, industry and other entities in the state. In 2015, Minnesota became the first state to become a member of the Forest Stewardship Council.



Forest Certification of state-administered forestlands has led to a sustainable supply of forest products and services from healthy, diverse and productive ecosystems, independently recognized progress towards sustainability, continuously improved forest management practices, and improved interdisciplinary coordination and communication. Maintaining Forest Certification demonstrates and re-affirms Minnesota DNR’s dedication to sustainable and responsible forest management.

Given the current stresses of invasive species, climate change, and other factors, managing sustainably is crucial for ensuring a long-term flow of forest products and timber revenue from Trust lands and other DNR-administered lands. Forest Certification has not changed Minnesota DNR’s priorities or management objectives, but has rather focused attention on mission-driven work and prompted action on managing sustainably by addressing biodiversity, water quality, and other issues that Minnesota DNR was already committed to. In some cases, Forest Certification is likely to lead to increased future products and revenue as a result of improved ecological and forest health conditions. Minnesota DNR views Forest Certification as a license to practice forestry under the claim of sustainability.

In the recent tough economic times, certification helped improve the market competitiveness of Minnesota’s certified forest products. Forest Certification has helped ensure strong markets for Minnesota’s forests, thereby maintaining our ability to effectively manage our forests while also maintaining the economic vitality of many of Minnesota’s forest dependent rural communities.



As the standards have evolved, Minnesota DNR has shown leadership in continuing to improve the way we sustainably manage forests. An example to this is our recent High Conservation Value Forests (HCVF) decision. Instead of simply applying previously protected lands to this fulfill this charge, we utilized the Minnesota Biological Survey (MBS), which systematically collects, interprets, and delivers baseline data on the distribution and ecology of rare plants, rare animals, native plant communities, and functional landscapes. MBS set the premise to ultimately designate and/or manage 82 High and Outstanding sites, covering 262,000 acres of state-administered lands, to be managed as High Conservation Value Forests. These sites complement our existing HCVF framework.



The mark of
responsible forestry

2. Protect Forests from Harm

2.1 Restore fire-adapted lands and reduce risk of wildfire impacts

The state of Minnesota has extensive long-term experience to prevent and fight forest fires, which was borne out of historic deadly disasters in the early 1900s. Protecting life, property and natural resources on more than 45 million acres of public and private land from fire and other natural disasters is a core part of the state’s forestry mission. Minnesota has adopted the national Firewise Program including activities such as Community Wildfire Protection Plans with over 300 communities operating under these plans. The state is a major partner in the Minnesota Incident Command System (MNICS), which is a collaborative effort involving federal, state, county, local community and tribal fire-fighting personnel. Agreements with federal agencies including USFS, USFWS, BIA, DPS, and the NPS, allow for the sharing of personnel and fire-fighting equipment, resulting in quick initial responses to wildfires throughout the state. In addition, these partnerships are also called upon for prescribed burning management purposes. When fire danger is low in the state, crews are made available through the National Interagency Coordination Center and the Great Lakes Forest Fire Compact. In 2012, for example, the state provided an incident command team and chainsaw crews to help cleanup efforts in the aftermath of Hurricane Sandy. The state also provides the physical location for the Northeast Interagency Incident Support Cache, which supplies a wide range of firefighting equipment both in-state and for 20 northeastern states.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Develop and maintain an interagency workforce capacity to meet the wildfire needs of all cooperating agencies and tribes.	MNICS Agencies, State Fire Chiefs, Forestry Industry	USFS, USFWS, BIA, NPS, DNR, MN DPS-HSEM, GLFFC, NFFS, MN Fire Chiefs, MDH, FEMA	MIFC, Annual Fire Academy, Out of State Training and Wildfire Assignments, Cooperative Agreements
Maintain and enhance current interagency cooperative partnerships with other wildland fire and emergency management agencies.	MNICS Agencies, State Fire Chiefs, National Wildfire Mobilization System, NFFs, GLFFC	USFS, USF&W, BIA, NPS, DNR, MN DPS-HSEM, GLFFC, NFFS, MN Fire Chiefs, MDH, FEMA	Cooperative Agreements, Federal Excess Property and Firefighter Property Programs, MIFC
Monitor and adjust the scope of wildfire protection coverage, necessary planning levels and suppression resources required to support wildfire and all hazard missions.	MNICS Partners, Forest Landowners, Forest Industry	All above partners, MN Fire Chiefs Assoc.	MIFC Information and Intelligence units, MNICS partners, SEOC

Enhance wildfire prevention and enforcement efforts to reduce the risk of damage and loss due to wildfires and reduce the number of human caused ignitions. Educate prosecutors and the courts on impacts of arson on forests.	MNICS Partners, GLFFC, Forest Landowners and Industry, State Taxpayers	MN DNR Enforcement, County Sheriffs	Local, Regional, Statewide and National Prevention Programs, Firewise, CWPPs
Improve utilization of available technologies in wildfire prevention and suppression efforts.	MNICS Partners, GLFFC, NFFS	MN State Fire Marshall, GLFFC, MNICS	DNR and MNICS Agency GIS Specialists, RAWs, CFDRS, NFDRS, Resource Ordering and Tracking Systems
Develop or redesign business systems specifically to enhance fire management, accountability, and to reduce costs.	MN Legislature, USDA-Forest Service –NA, MN taxpayers, MNICS partners	MNICS, FEMA, GLFFC, NFFS	DNR Forestry Fire Business Manual, FEMA grants
Promote the role of fire in the ecosystem by strengthening all agency and tribes prescribed burn programs.	MNICS Partners, GLFFC, NFFS, TNC	USFS, BIA, USFWS, DNR, MNICS, Tribes, TNC	DNR Prescribed Fire Committee, MNICS Rx Fire WT, National Rx Fire Qualifications Standards

Success Story: Wildfire Academy a 'Glowing' Success

The 15th Annual Wildfire Academy was held on June 1-5th, 2015 with over 950 participants. This represents a substantial increase over the first year 2000, when 150 fire students attended. The week featured 27 nationally certified courses in wildland fire planning, operations, logistics, finance, dispatch, and leadership. The Academy was hosted by Itasca Community College in Grand Rapids, with field exercises located on a private acreage several miles north of the campus. The Academy was jointly managed by Advanced Minnesota (a training cooperative comprised of five community colleges) and the Minnesota Incident Command System or MNICS (a cooperative of six federal and state agencies).



Twenty-eight fire departments were represented in the student body. Camp Ripley, the National Park Service, National Weather Service, U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Indian Affairs, multiple tribal entities, several state governments, Conservation Corps Minnesota, The Nature Conservancy, counties, colleges, and other firefighters participated. Attendees traveled from as far away as Ohio and North Carolina.



The Academy presents opportunities for interaction between students of all specialties and skill levels. Rookies, seasoned professionals, and nationally certified (“redcarded”) resources mingle during meals and attend special activities. This type of interaction is difficult to find outside of an incident or an Academy setting. Students were exposed not only to specific courses, but also to a Minnesota Type 2 Incident Management

Team that managed the event. The Team transformed Itasca Community College into an Incident Command Post (ICP) housing the same functions and structure students will encounter on a wildland fire assignment. Instructors and students checked in, followed an Incident Action Plan, and accessed various services of the ICP.

The Incident Management Team itself was also a training exercise: Those who took previous NWCG training and are working toward national certifications could request participation as Team trainees for the week. Trainees gain real-world experience while being mentored by certified Team members. Over 30 trainees worked within the Incident Management Team at this Academy.



Minnesota Interagency Fire Center Training Coordinator Todd Manley noted, “Our cadre of instructors is recognized for their excellence in both firefighting and teaching. Academy students gain the benefits of that quality.”

In calendar year 2014 the Minnesota DNR/MNICS offered 44 fire related courses training to 1174 personnel over and above the participants enrolled in the Academy. These courses ranged from basic wildfire suppression courses to leadership and dispatch courses. An additional 1337 state employees attended annual fire safety refreshers and 1180 state employees took work capacity testing (WCT) in

2014, as part of their refresher training. Overall, this represents a total of 3461 fire personnel who are trained and ready to assist in local, state or federal fire emergencies and disasters.



Success Story: Sparking Firewise Interest in Minnesota Communities



The threat of a “natural” disaster looming in one’s vicinity seems to get a community’s attention like nothing else. The Firewise program works within communities before a wildfire threatens lives and property. And, Firewise in Minnesota has been diligently working with communities to make them safer and less vulnerable to wildfire.

The key to a successful Firewise program in a community is finding the “spark plug”, the person who will bring along those people less enthusiastic, those who may not see the need for any change in the landscape other than the natural growth of trees (fuel) to maturity and eventual death. This spark plug need not have all of the answers, he or she only needs to have the awareness that all may not be well in one’s surroundings. A Firewise program can begin on that premise.

That’s the case with the Firewise and Fire Adapted Communities program in Ely. The Blowdown event that occurred in 1999 in the Boundary Waters was a kickstarter for the area to learn about Firewise. Then the Fire Adapted Communities program was introduced in 2012 to the Ely area. With that grant, the creative minds began with a very active committee to hold homeowner workshops, educational events and in depth evaluations of high risk areas. And now, with high participation, the home demonstrations have become a huge hit.

Future Firewise grants will focus on other communities in the Ely area capitalizing on the momentum of these projects to help residents recognize the potential fire hazards and act to mitigate them in their landscape. This will all help to ease the burden on firefighting resources when homes and property are threatened by wildfire.



2.2 Identify, manage, and reduce threats to forest and ecosystem health

Minnesota's forests and trees are critical to the ecological health and financial economy of the state. Ensuring healthy ecosystems, productive forests and quality trees that will exist well into the future is a collaborative goal between federal, state, tribal and county agencies, and community partners both public and private, throughout the state. Forest health programs including the Forest Pest First Detectors and collaborations between agencies such as USFS (US Forest Service), DNR (Department of Natural Resources), and MDA (Minnesota Department of Agriculture) are vital to control infestations and the spread of invasive species. For example, the Emerald ash borer was first detected in the state in 2009 and within six years has necessitated quarantines in ten counties. This invasive pest is of urgent concern as Minnesota has over 1 billion ash trees, more than any other state. Ash trees make up 7% of the forest cover and 30% of urban tree cover. On-going education efforts both at the urban and rural levels are alerting the public to be vigilant and help to keep the state's forest resources healthy for future generations.



Strategies in process or implementation	Key Stakeholders	Partners	Resources
Identify high-risk, low-volume stands and create prescriptions to increase stocking and health	Public and private forest landowners, tribes	USFS, DNR, counties, industrial landowners, NIPF, U of M, SWCD, BIA, tribal natural resources departments	FMIA, Bonding, LSOHC, LCCMR, FSP
Reduce average age of even-aged managed cover types and promote vigorous young forest stands through harvesting	Public and private forest landowners, tribes	DNR, Counties, USFS, Industrial landowners, NIPF, U of M, SWCD, BIA, tribal natural resources departments	FMIA, Bonding, LSOHC, LCCMR, FSP
Develop and maintain a better balanced and complete age class distribution for plant communities managed primarily with even-aged silviculture systems, while at the same time allowing some stands to transition to older growth stages	Public and private forest landowners, tribes	USFS, DNR, counties, industrial landowners, NIPF, U of M, SWCD, BIA, tribal natural resources departments	FMIA, Bonding, LSOHC, LCCMR, FSP

Thin overcrowded stands to improve vigor and reduce competition	Public and private forest landowners, loggers, industry, tribes	USFS,DNR, counties, industrial landowners, NIPF, U of M, SWCD, BIA, tribal natural resources departments	FMIA, Bonding, LSOHC, LCCMR, FSP
Match tree species and management techniques to individual sites through use of Ecological Classification Systems (ECS)	Public and private forest landowners, tribes	DNR, Counties, USFS, industrial landowners, NIPF, U of M, SWCD, BIA, tribal natural resources departments	FMIA, Bonding, LSOHC, LCCMR, FSP
Promote species diversity in community and urban plantings	Public and private forest landowners, communities, tribes	DNR, USFS, MnSTAC, U of M, SWCD	Bonding, LSOHC, LCCMR, SWCD, \$, technical assistance
Use eradication, suppression, and outreach to respond to new and expanding EAB and gypsy moth populations in the state.	Public and private forest landowners, communities, tribes	DNR, MDA, S&PF, USFS Nat Forests, counties, APHIS-PPQ, SWCD, landowner groups, MFRC and MFRP, GMSTS, Co Ag Inspectors	Bonding, LSOHC, LCCMR, SWCD, \$, technical assistance
Identify and develop partnerships with public/private stakeholders and community groups to develop the relationships and infrastructure needed to support integrated early detection and rapid response efforts, a collaborative prevention approach, and a unified outreach effort.	Public and private forest landowners, communities, tribes	DNR, MDA, S&PF, USFS Nat Forests, USFWS, BIA, Tribes, NPS, counties, APHIS-PPQ, SWCD, landowner groups, MFRC and MFRP	USFWS, NEPA, USDA, Bonding, LSOHC, LCCMR, SWCD, \$, technical support
Develop new and expand existing markets for ash to provide the means and incentive to manage ash stands ahead of EAB infestation and to address ash mortality when EAB infests stands.	Public forest landowners and managers, wood industry	DNR, USFS, U of M, MFI, MLEP	Bonding, LSOHC, LCCMR, \$, technical assistance
Encourage communities and local governments to formally inventory their ash resource on public and private lands so they know what is at risk and more effectively take preventative actions where needed.	Municipalities and private homeowners	DNR, MnSTAC, MDA, USFS, S&PF	Bonding, LSOHC, LCCMR, \$, Technical assistance
Work with communities to help develop sanitation and utilization strategies.	Municipalities and private homeowners	DNR, MnSTAC, MDA, USFS, S&PF	Bonding, LSOHC, LCCMR, \$, technical assistance

Implement EAB mitigation strategies in ash stands to maintain forested communities in predominate ash types at risk from EAB.	Public and private forest landowners, communities, tribes	DNR, MDA, USFS , S&PF, USFS Nat Forests, USFWS, BIA, Tribes, NPS, counties, APHIS-PPQ, SWCD, landowner groups, MFRC and MFRP, SWCD, MLEP	USFWS, NEPA, USDA Bonding, LSOHC, LCCMR, SWCD, \$, technical support
Develop restoration guidelines for both urban and rural lands forests, and modify landowner assistance program to support restoration.	Public and private forest landowners, communities, tribes	DNR, counties, USFS, industrial landowners, NIPF, U of M, SWCD, BIA, tribal natural resources departments	FMIA, Bonding, LSOHC, LCCMR, FSP
Work with private campgrounds, resorts, and other agencies to explore and implement the means to minimize the movement of unregulated firewood.	Resort and campground associations, MN citizens	DNR, MDA, Aphis-PPQ, USFS, NPS	Bonding, LSOHC, LCCMR
Work with public and private nurseries to explore alternatives to growing and planting ash and explore how to replace ash in large blocks of forests	MNLA, other private nurseries	DNR, MDA, USFS S&PF, U of M	Bonding, LCCMR
Explore revenue sources and opportunities to ensure EAB preventative efforts are adequately funded.	Public and private forest landowners, communities, tribes	DNR, MDA, USFS , S&PF, APHIS-PPQ, MnSTAC, MFRC , MFRP, Tribes	USDA, USFS, USFWS, Bonding, LSOHC, LCCMR \$, Technical support
Support research into bio-control, chemical control, resistance, and “slowing the spread” for EAB and other threats.	Public and private forest landowners, communities, tribes	DNR, MDA, USFS , S&PF, APHIS-PPQ, USFWS, MnSTAC, MFRC , MFRP, GMSTS	USDA, USFS S&PF, USFWS, Bonding, LSOHC, LCCMR U of M, \$, technical assistance
Develop risk assessment for oak wilt in MN and prioritize outreach efforts based on risk.	Public and private forest landowners, communities	DNR, USFS , S&PF, Aphis-PPQ, U of M	USDA, USFS S&PF, USFWS, Bonding, LSOHC, LCCMR U of M, \$, technical assistance
Identify high-risk, low-volume stands and create prescriptions to increase stocking and health	Public and private forest landowners, communities, tribes	DNR, USFS, U of M, SWCD	USDA, USFS S&PF, USFWS, Bonding, LSOHC, LCCMR U of M, \$, technical assistance

Success Story: Forest Pest First Detector



The Forest Pest First Detector program has been active since 2008 and has trained 1,121 volunteer detectors to date (2015). The following text is from the 2011 report, which is used to highlight the success of this cooperative program across all boundaries and surrounding states.

2011 marked the fourth year of Forest Pest First Detector workshops taught by the award-winning Minnesota Forest Pest First Detector training team, comprised of representatives from University of Minnesota Extension (UM Ext), the Minnesota Department of Agriculture (MDA), and the Minnesota Department of Natural Resources (DNR). Minnesota is the first state to use the National Plant Diagnostic Network (NPDN) to focus on detecting forest pests. Using a step-by-step process to identify signs and symptoms of invasive forest pests, the first year of workshops focused on identifying and reporting infestations of emerald ash borer (EAB). While continuing to emphasize EAB, training in subsequent years expanded its focus to other forest pests such as gypsy moth, bur oak blight, Asian long-horned beetle, thousand cankers disease, and mountain pine beetle.

UMN Extension houses the database of Minnesota's First Detectors and directs calls from concerned citizens who think they've spotted a pest to a trained Minnesota First Detector. The First Detector can then determine if the call warrants a site visit. In addition, Minnesota First Detectors can contact the MDA themselves using the MDA's Arrest-the-Pest hotline at the first sign or symptom of EAB or other forest pests.

In the past three years, UMN Ext referred 463 out of 1,229 calls regarding potential forest pests to First Detectors. In 2010, First Detectors volunteered 1,316 hours and traveled 7,733 miles, which resulted in a total public value of nearly \$29,000. The discovery of EAB by a tree care worker in St. Paul in May, 2009 was a result of First Detector training, demonstrating the value of the Forest Pest First Detector program.

These popular workshops attracted 203 participants in 2011. Since 2008, 411 volunteers from 66 out of 87 Minnesota counties have committed to becoming First Detectors. Volunteers from Wisconsin, Iowa, North Dakota, and South Dakota have also attended the workshops.

In recognition of their efforts, in 2010 the First Detector team won five awards:

1. Dean's Distinguished Team Award, University of Minnesota Extension Dean's Office
2. Silver Award, Innovative Program, Association of Natural Resources Extension Professionals (ANREP)
3. Silver Award, Outstanding Team, ANREP
4. Innovation Award, Minnesota Association of Extension Professionals
5. Excellence in Natural Resources Programming, Minnesota Association of Natural Resource Extension Professionals

In 2011, the team was honored with the NPDN Outstanding First Detector Educational Training Award.

3. Enhance Public Benefits from Trees and Forests

3.1 Protect and enhance water quality and quantity

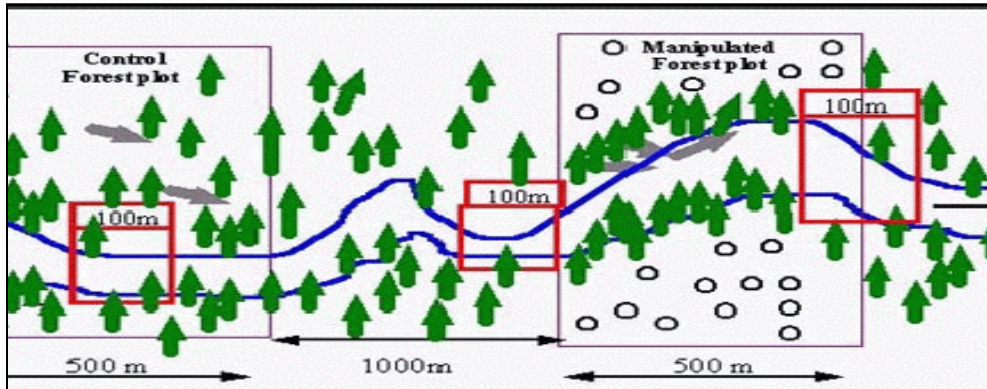
Minnesota has abundant water supplies in both surface and underground systems. However, demand for water is increasing faster than population growth, which presents challenges to balancing water quality and consumptive needs. Coupled with climate change threats of increased storm severity, runoff, flood damages and drought, the protection and sustainable management of the state’s forest lands are a critical component in ensuring that clean water supplies will continue to be available in the future. Changing land use and population growth also threaten aquatic habitats in the state. Protecting and maintaining high quality aquatic habitats and healthy water ecosystems, are essential for sustaining not only human water needs and quality of life, but also the multi-million dollar hunting and fishing industries that are large economic drivers for which the state is well known.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Protect and manage forests and wetlands in forested areas (ag/prairie excluded) under identified MPCA watersheds with key partners & stakeholders to ensure high-quality aquatic habitats and healthy eco-systems remain viable	NIPF landowners, adjacent landowners, citizens of MN	USFS, MPCA, BWSR, NPS, USFWS, BIA, Tribes, MFA, Watershed Managers, DNR, MFRC, NRCS, SWCD	EPA, State Clean Water Legacy Fund, FSP, Site-level Guideline monitoring program, USFWS Partners for Wildlife program, Ducks Unlimited, DNR Long-range Duck Recovery Plan, DNR Aquatic Mgmt Area Acquisition Plan, TNC MN Lake Conservation Portfolio, RIM, WRP, CSP, CREP, CRP, SWCD
Protect and enhance critical riparian corridors in key watersheds (to include water quality practices, conservation easements and erosion control)	NIPF landowners, adjacent landowners	USFS, NRCS, MPCA, DNR, MFA, MFRC, Inter-Agency work group (BWSR, MDA, Mn DOT, DNR, NRCS), SWCD	State Clean Water Legacy Fund, “Sustaining Minnesota Forest Resources” resource guide, FSP, CPR, CREP, RIM, NRCS (& GLRI), SWCD
Protect high-quality aquatic habitats within healthy watersheds	NIPF landowners, adjacent landowners, citizens of MN	USFS, MPCA, BWSR, NPS, USFWS, BIA, Tribes, Watershed Managers, DNR, MFRC, MidWest Glacial Lakes Partnership, SWCD	Outdoor Heritage Fund, State Clean Water Legacy Fund, National Fish Habitat Action Plan, MN Environmental & Natural Resources Trust Fund, Wild Rice Lakes project, NRCS (& GLRI)

Ensure protection of water resources in urban areas by evaluating and improving current programs (LID, BMPs, TMDL compliance)	Urban & rural communities	MnSTAC, LMC, DNR, FSA, SWCD, Interagency work group (BWSR, DNR, MPCA, MDH, MDA)	State Clean Water Legacy Fund, EPA, BWSR, SWCD, FSP, NRCS (& GLRI)
Enact a forest/water quality media campaign and education package	NIPF landowners, citizens of MN	DNR programs including "Healthy Rivers" & "Gateway Initiative", MN Master Naturalist, SWCD, MFI	State Clean Water Legacy Fund, EPA, BWSR, SWCD
Map and monitor forested watersheds for potential impairments (TMDLs)	NIPF landowners, citizens of MN	USFS, MPCA, SWCD	State Clean Water Legacy Act
Target forest stewardship services and conservation easements to critical watersheds as supported through federal, local programs & agencies	NIPF landowners, citizens of MN	USFS, EPA, MPCA, FSP, FLP, SWCD, BWSR, MFF	State Clean Water Legacy Act, FSP, FLP, MFF
Evaluate, refine and apply regulatory tools that conserve water supply and promote forest land and water-use practices that protect water quality	Forest land managers, private forest and shore land owners, citizens of MN	MPCA, BWSR, SWCDs, DNR, state legislature	State Clean Water Legacy Act, State Shore land Standards
Support research and programs that seek to increase public understanding, acceptance and implementation of aquatic habitat stewardship practices and their relationship to watershed protection	Forest land owners, youth, citizens of MN	State Shoreland Habitat Restoration Program, State MinnAqua Program, DNR, NPS, SWCD, Extension, public schools	U of M, Research Institutes <i>Undetermined: needs funds & technical assistance</i>
Promote and implement planning requirements for SFIA, Rural Preserves, Green Acres, and 2C.	NIPF landowners, counties, municipalities	DNR, SWCD, consulting foresters, Dept of Revenue	FSP, Technical assistance capacity, cost-share dollars
Support continuing monitoring of implementation and effectiveness of Site-Level forest management guidelines especially water quality guidelines	Forest land managers, MFRC, DNR	DNR, MFRC, U of Minnesota, SWCD, MLEP	<i>Undetermined: Needs ongoing funding for monitoring</i>
Support continuing ed programs like MLEP and SFEC which provide Forest Mgm't Guideline implementation training	Loggers, foresters, landowners, land managers	MLEP, SFEC, MFRC, DNR, MFI	MLEP, SFEC, DNR, MFRC

Success Story: Water Quality BMPs and Sustainable Forest Practices: The Minnesota Model

Minnesota has a rich history of maintaining water quality on over 16 million acres of managed forest composed of public and private ownerships. A robust voluntary program of water quality BMPs has



been integrated into a set of complementary site-level forest management guidelines (FMGs) that holistically address a multitude of forest resources including soil,

water, wildlife, riparian, cultural, and visual resources. This comprehensive approach is effective at maintaining clean water and sustainable forests. The voluntary approach has been successful as documented in a long-standing implementation monitoring program.

Interdisciplinary collaboration and stakeholder involvement were fundamental to the development of both the water quality BMPs and FMGs, resulting in a shared commitment among user groups to sustainable forestry and clean water. Training and outreach programs are a primary mechanism for implementation, with in-person and online programs offered annually to natural resource managers, landowners, and logging professionals through educational cooperatives. A central component of the Minnesota model is continuous monitoring of BMP and FMG implementation across all forest ownerships to maintain credibility of the voluntary approach and effectively target outreach and education. This program has monitored implementation on approximately 1,350 sites across the state of Minnesota since 1991. Monitoring results in combination with current research is used to periodically revise guidelines in response to new information, technological advances, and changes in forest management practices. The combination of stakeholder collaboration, monitoring, and mechanisms for program evolution has resulted in an effective approach for maintenance of clean water and sustainable forests that also contributes to forest certification of over 8 million acres. Future challenges include attaining sufficient funding to conduct monitoring and scaling site-level implementation rates to watershed scale responses.



Success Story: Protecting Forests for Fish: Forested Watersheds Matter

Minnesota is home to some of the highest quality lakes and fisheries in the U.S. It contains more deep, clear lakes with Cisco or tullibee (*Coregonus artedi*) than any other state in the lower 48. Cisco, a favored food of walleye and muskie, need deep, cold water with high oxygen levels, and these habitat requirements make them vulnerable to both a warming climate and impacts from changing land use. Increased runoff from disturbances on land can bring sediment, phosphorous, and more algae growth into these lakes. Decomposition of algae causes oxygen in the deep water to be depleted making the deep, cold water unsuitable for cisco.



There is a growing consensus on how to save not only cisco lakes in Minnesota but the state's highest and best water quality and fish lakes. The MN DNR Fisheries Research Unit showed that total phosphorus concentrations remain near natural levels if the watershed or catchment of a lake remains forested. Data from Minnesota lakes shows that if greater than 75% of the watershed can remain forested then the water quality and habitat for fish does not show significant decline. This approach can be applied to many of the 176 lakes identified as cisco refuge lakes, as well as other clear-water fishing lakes. "Protecting these lakes will allow their high quality fish populations to be sustained well into the future. And protecting the forests in these watersheds from further land development is critical for maintaining water quality in these lakes" says DNR Fisheries Scientist Pete Jacobson.

While land in much of the forested portion of the state is under public ownership, a considerable amount is owned by private individuals and companies. These private parcels are increasingly being "split up" and sold for land development or agricultural uses. Pete adds, "Significantly increasing forest management activities on private lands is THE key challenge we face in North Central Minnesota to protecting these lakes".

While the Minnesota DNR Private Forest Management (PFM) Program is considered one of the premier private lands assistance programs in the country, budget cuts over the past several years have impacted the delivery of services to private woodland owners. DNR Forestry staff needed to find new ways to get



more work done through partnerships to tackle landscape scale issues like the cisco lake watersheds. In response, DNR staff led an effort in 2011 to secure and coordinate funds from the Clean Water Legacy (CWL) funds to support water quality/forestry projects on private lands in the state. A partnership between DNR and the Minnesota Forest Resources Council (MFRC) Landscape Program was formed through the North Central Landscape Committee who had just reviewed a DNR Fisheries presentation on cisco lakes research and were interested in more private forest management involvement in these key watersheds. Protecting tullibee lakes was identified as a high priority by the

North Central Landscape Committee, which is comprised of broad array of stakeholders from a 10-county region. The committee partnered with the DNR to launch the Tullibee Lake Watershed Forest Stewardship Project.

Building from this initial collaborative effort through the MFRC Landscape Program, DNR Forestry staff next partnered with BWSR and SWCD's in 2012 to design the details of the overall project. Their mission

was to strategically use the Clean Water Legacy funds and apply DNR Fisheries recommendations in targeted ways with private landowners for the greatest impact on water quality habitat in these watersheds. Consulting foresters also became a part of the project team to work with private landowners.



Though the CWL funding originates from the DNR Private Forest Management Program, it is delivered through the BWSR to the SWCDs. The SWCD teams contact local landowners in the tullibee watersheds to address questions and to sign up interested parties for the program. Eligible applicants include private forest landowners in the target counties who own 20-1,000 acres. Interested landowners are provided a forest stewardship plan for their specific property. This work is completed by DNR, SWCD or private consultant foresters.

The project provides landowners with property tax relief and financial assistance for forestry projects that provide clean water protection. Once a forest stewardship plan is crafted, landowners may choose to enroll in the Sustainable Forestry Incentive Act (SFIA). This act provides an incentive payment to private woodlands to ensure at least 8 years of land protection from development or agricultural practices.



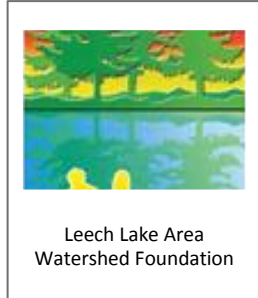
Another option for landowners in enhancing the management of their woodlands is conservation easements. Private forest conservation easements are a promising tool for preventing the detrimental ecological consequences of forest parcelization and fragmentation when prudently used. Fee title acquisition by counties or the state can also be considered if the landowner no longer wants to own the land. Project partners meet periodically to select potential parcels and to determine which conservation tools best meets the landowner's needs as well as help to promote multiple public benefits.

The growing suite of services available to private landowners provides them with options to help them keep their forests as working forests. These incentives are helping private landowners better decide how they can better manage resources on their own land while at the same time help improve water quality in our lakes. Since its inception, the Tullibee Lake Watershed Forest Stewardship Project has resulted in over 1,000 landowner contacts, 20,257 acres of new forest stewardship plans written, and approximately \$100,000 of cost share practices implemented.

“It’s been great to work with our partners on encouraging landowners to keep forested lands forested in these important watersheds” explained Dan Steward, Board Conservationist from BWSR. “We can stack public benefits for wildlife on top of the water quality and fish benefits if we keep these forested lands intact.” Peter Jacobson noted that, “The tullibee is especially vulnerable to two of the greatest threats for Minnesota lakes--eutrophication and climate warming. Healthy forests and undeveloped or minimally developed shoreline can help prevent tullibee die-offs by keeping nutrients on the land, slowing their oxygen-depleting impacts.”

Other groups are also targeting high quality MN lakes for protection. Leech Lake Area Watershed Foundation (LLAWF) received Outdoor Heritage Funds to protect private lands in the watersheds of 33 high quality lakes in north central MN. The Minnesota Land Trust is working with selected landowners to draft conservation easements that are individually tailored agreements through which landowners

limit the use and development of their property to permanently preserve its natural or scenic features. These features – called conservation values – might include significant wildlife and plant habitat, lake or river shoreline, wetlands or important scenic or cultural lands which benefit the public.



The DNR Fisheries Division has applied for funding through the Outdoor Heritage Fund to protect the forests in the catchment of 5 of state’s best tullibee lakes. DNR Fisheries also partnered with DNR Forestry to use Forests for the Future easements on private property to protect forests in the watersheds of these five lakes from development and agricultural conversion. Forest for the Future easements are a permanent easement that allow sustainable timber harvest on the private forests but do not allow development. These easements will help to keep forests on the ground protecting the water quality of North Central MN lakes.

Protecting Minnesota’s high quality lakes has become a combined effort from state, local and non-governmental agencies, and private citizens. The collaborative efforts are growing and the expanded funding opportunities through the Land and Legacy Amendment are a key to this work. Future work will expand to other watersheds and other strategies that will look beyond conservation easements which might include working with local water plans and reducing the loss of public lands. ⁵

⁵ Adapted from MFRC project stories by author Jim Umhoefer 2013-14

3.2 Improve air quality and conserve energy

Minnesota’s forests have one of the highest rates of carbon storage per acre in the nation at approximately 1.6 billion metric tons of carbon. In the future, carbon sequestration could be a new source of income for the state’s forests. Opportunities to boost carbon storage include creating new forests; using more harvested wood for furniture, lumber and other products that store carbon; planting faster growing trees; less disturbance of forest soils; leave trees on the landscape longer before harvest; planting more trees per acre.

Pressure to find local, renewable alternatives to petroleum-based fuels and chemicals provides the state with new opportunities, especially in light of the downturn of traditional lumber and paper demands stemming from the 2007-2008 collapse of the housing market. Sustainable use of the state’s forest resources can meet the demands of emerging bioenergy markets while supporting the traditional forest products industry. In addition to pulp and paper, trees can be used to make thermal energy, electricity, renewable chemicals, and liquid fuels. The development and harvest of woody biomass must be pursued as part of a broader strategy to create well managed, healthy and productive forests. The utilization of woody biomass and roundwood for bioenergy must be considered in the context of environmental economic and goals and policies for the state.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Through active industry engagement, facilitate the emerging woody biomass industry synergistically “fitting” existing industry and resources.	Industry, forest managers, citizens of MN	DNR Biomass & U&M Programs, USFS, U of M, wood industry, MLEP	\$, Technical assistance
Encourage utilization of tree species and other woody resources that both minimize competition with existing industry, and enhance the ability of forest landowners to achieve management goals.	Industry, forest managers, citizens of MN	DNR Biomass & U&M Programs, USFS, U of M, wood industry, MLEP	\$, Technical assistance
Follow Biomass harvest guidelines as laid out in the current version of “Sustaining Minnesota Forest Resources Guidelines.”	NIPF landowners, land managers, loggers, consulting foresters, MFA	DNR’s FSP, Minnesota Forestry Association, MLEP, MFRC, biofuels industry	FSP foresters and list of registered stewardship plan holders, MFRC site level FM Guidelines
Monitor the implementation and effectiveness of biomass harvesting guidelines	Industry, forest managers, NIPF landowners, citizens of MN	MFRC, DNR-Forestry, U of M, MLEP	Funds received through U of M. On-going funding for research and monitoring
Contribute to attainment of broad ambient air quality goals, including regional haze attainment goals for northern MN	Industry, forest managers, NIPF landowners, citizens of MN	MPCA, EPA, DEED-Green Enterprise Assistance	Contingent upon business development needs

Avoid increases in net demand for water in locations where water resources are not adequate to meet project demand	Industry, forest managers, NIPF landowners, citizens of MN	MPCA, EPA, DEED-Green Enterprise Assistance	Agency coordination
Minimize the thermal and chemical loadings on surface or ground water	Industry, forest managers, NIPF landowners, citizens of MN	MPCA, EPA, DEED-Green Enterprise Assistance	Agency coordination
Support community development goals and needs to pursue economic development and investments through partnerships to attract firms or expand biomass use for retention and expansion of jobs and future wealth creation	NIPF landowners, Minnesota Forestry Association, Tree Farm, rural communities	DNR, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, Chambers of Commerce	SS, Technical assistance, FSP
Encourage investors to pursue projects, that don't undercut the ability of existing value-added industries to procure wood fiber	NIPF landowners, MFA, Tree Farm, rural communities	DNR, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, Chambers of Commerce	Agency coordination and natural resource staff allocation to business development issues
Focus on applications (for woody biomass) for which other renewable energy resources are not well suited	NIPF landowners, MFA, Tree Farm, rural communities	DNR, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, Chambers of Commerce	Agency coordination and natural resource staff allocation to business development issues
Encourage applications that efficiently utilize the BTUs contained within the wood product	NIPF landowners, MFA, Tree Farm, rural communities	DNR, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, Chambers of Commerce	Agency coordination and natural resource staff allocation to business development issues
Create new income through working lands conservation opportunities for farmers	NIPF landowners, MFA, FSP	DNR, NRCS, FSA	FSP, NRCS (via Environmental Quality Incentive Program), FSA (via Conservation Reserve Program)
Exploit synergies and complimentary characteristics in systems that mix woody biomass and agricultural crops	NIPF landowners, MFA, FSP, Agricultural communities	DNR, NRCS, DEED-Green Energy businesses, Green Enterprise Authority	NRCS programs and practices that support agroforestry and silvipasture type farming systems

Support the use and development of BMPs for emerging forest products, including biomass and bioenergy products	Landowners, industry	DNR, USFS, NRCS, RC&Ds, SWCD, MLEP	NRCS has conservation practice standards cost-shares for harvesting biomass for energy in environmentally friendly ways
Develop, promote and facilitate market solutions to fuel management issues and needs, e.g., expanded markets for brush and small diameter material	Rural landowners, forest managers, wood industry, biofuels industry	USFS, DNR, counties, UMN	\$, Technical assistance, promotion

Success Story: Deep Portage –Wood to Gas: A New Look at an Old Heat Source



Deep Portage is a Minnesota non-profit residential environmental education and outdoor recreation center. Spread across 6,307 acres of glacial hills, lakes, rivers and bogs in Cass County, Deep Portage is a unique union of community and education in the midst of stunning natural beauty. Using wood to provide energy seemed an obvious choice. Deep Portage Learning Center’s switch to a biomass fuel system has slashed their heating costs, boosted the local economy and reduced their carbon “footprint.”

Deep Portage uses three wood gasification hot water boilers: a Garn WHS3200, a Wood Gun E500 and a Froling FHG-L50. The Wood Gun and the Garn wood boiler are both installed in a separate building and integrated with the prior LP hot water boiler system. Combined, they heat 56,000 square feet of facility space and provide domestic hot water. The LP boilers and heater are retained for emergency backup.

Wood gasification hot water boilers operate on the principal of burning wood in a firebox with controlled oxygen input to generate wood gas. This process is called pyrolysis. The wood gases generated are conducted into a high temperature combustion chamber, usually constructed of ceramics. This results in the near complete combustion of the gases at temperatures approaching 2000° F and at a burn efficiency of 98-99%. The super-hot gases are then directed through fire tubes surrounded by water where the heat is transferred to the water for use in space heating.

As Deep Portage is surrounded by forest, obtaining wood as a fuel source for the three boilers is not an issue. The facility uses regular wood (also called round wood), stove wood, or fire wood to operate the wood boilers. The wood is a mixture of both hard and soft woods: oak, birch, ash, maple, aspen, and pine are typical. Some of the cordwood is a lower quality brush product. Local loggers and wood suppliers provide the wood, supporting the area’s economy and employing local families. The wood purchased is cut, split, delivered and stacked at Deep Portage’s wood yard to specifications suitable for the boilers and handling by staff. Total wood costs are about \$12,750, burning a little less than 100 cords in an average winter.



To date, over 65,000 gallons of propane have been replaced by using biomass, and cost savings for the three boilers has been over \$70,000. The system is expected to be paid off in 10 years but the benefits of the wood gasification system go beyond financial to include helping the local economy and fighting climate change.

Perhaps the main lesson learned with this biomass fuel system is that a large facility can use wood for space and hot water heating while saving substantial costs over propane use. Wood is also considered carbon neutral and is a plentiful natural resource in Minnesota. Deep Portage’s commitment to biomass has resulted in more than just large energy cost savings. It has also enhanced their ability to provide quality environmental education and outdoor recreation for more than 10,000 children and adults each year.⁶

⁶ Adapted from MFRC project stories by author Jim Umhoefer 2013-14

Success Story: MN Secures State Wood Energy Team (SWET) Funding

Minnesota's State Wood Energy Team (MNSWET) was one of the first in the nation to be funded through the US Forest Service and strategically targets high potential commercial and institutional facilities for modern wood heat energy systems. MNSWET is a multi-tiered outreach and technical assistance program that seeks to provide economic and forest management benefits by installing wood energy systems at locations dependent on high cost propane fuel sources. MNSWET provides on-site project screening and will deliver engineering assistance to projects with a high probability of success. While MNSWET is supporting dozens of direct contacts, its greater impact is the organization and strengthening of Minnesota's informal network of advocates and supporters of clean wood energy systems.



3.3 Assist communities in planning for and reducing forest health risks

Minnesota’s urban and community forestry programs work cooperatively with other agencies and the public to manage urban trees and forests. There are over 900 certified tree inspectors in over 650 communities, who advise local governments and businesses on tree health. Federal grants are administered through these programs including face to face contact, printed materials, online resources and direct assistance. With the increasing threats of EAB, oak wilt, and buckthorn invasives (to name a few), the cooperative Minnesota Shade Tree Advisory Committee (which coordinates community forestry initiatives among state agencies and the University of Minnesota and advises state and local governments and citizens on community forestry issues), will play an ever greater role in addressing these problems. Technical assistance and education remain the top priorities for addressing threats to tree health and other environmental degradation issues.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Involve more statewide organizations to improve coordination with the MDA in monitoring and planning for greater state investments in exotic invasive pest control (Gypsy Moth, EAB, etc.)	LUGs, private forest land owners, green industry	MnSTAC, LMC, Webinar partners	DNR, MDA FRP funds, U of M EAB Rapid Response Project, DNR annual contract w. U of M, MDA, U of M staff
Clarify UCF role with Gypsy Moth, EAB, and MN Forest Protection Plans (do not overlap with USDA or MDA)	LUGs, Green Industries, MDA, DNR, U o M, USFS, USDA	USDA, USFS, MDA	State funds for invasives management, all stakeholder organizations
Involve more private and public tree practitioners in MSA efforts to improve the standards of practice among green professionals statewide	MSA, Green Industries, MNLA	MNLA, MSA	DNR contract w/U of M, MDA, U of M staff, MNLA
Increase promotion and expand the DNR-led statewide Tree Inspector Certification Program to include cities, townships, SWCDs in Greater Minnesota who are facing the greatest threat from EAB	LMC, SWCD, MN Assoc. of Municipalities, Townships	U of M, MnSTAC, LMC	DNR contract w/U of M, MDA, U of M staff
Use USFS “Midwest Community Tree Guide” to promote trees as public assets and identify pilot programs to promote urban forestry among municipalities	LUGs, Green Industries, LMC, SWCDs, MN Assoc of Municipalities, Counties, Townships	USFS, MnSTAC, LMC, APWA (Public Works), SWCD	DNR, MDA, U of M staff, DNR contract with U of M publications (eg. “Beyond the Suburbs” and “Best Management Practices”), SWCD
Renew efforts to engage and assist underserved	Ethnically diverse communities,	MnSTAC, non-profits,	LMC, large population centers

communities in local urban programs	large city neighborhood organizations, non-profits	DNR Southeast Asian program, LMC	
Promote and facilitate market solutions to UCF management issues and needs (eg. expanded markets for ash to treat EAB mortality)	UCF managers, Communities, Wood Industry	DNR, USFS, U of M	\$\$, Technical assistance
Educate, engage APL and city foresters in the use of Rapid Assessment for management planning. Promote use of "City Tree Guidelines" standards and codes in local and community planning efforts	Communities, SWCD, private consultants	DNR, MPCA, LMC, SWCDs	SWCD, MPCA storm water coalition
Build upon the partnership with the USFS iTree Team to promote the use of identified tools by public and private practitioners, and continue to build upon the awareness created by the "Trees Pay Us Back" publicity campaign to garner greater state and local investments in the Urban and Community Forest programs.	LMC, SWCD, Mn Assoc of Municipalities, Townships	USFS, USFWS/Backyard Wildlife Habitats	MDA, U of M staff, DNR FS UCF grant
Develop clean water strategy with MPCA Clean Water Council and USFS Watershed Team	LMC, SWCDs, MNnAssoc of Municipalities, Townships	USFS, MPCA, LMC, Clean Water Council	DNR FS UCF grant, Clean Water Legacy Fund, LMC Stormwater Coalition
Collaborate with MPCA staff on integrating CFM into pilot MN Green Corps and recognize communities implementing UF sustainability programs through MN Green Step Cities Program and support ALSA Green Streets for infrastructure design	Communities and green industry, APWA	MPCA, LMC, MSLA, MNLA	MDA FRP funds, U of M EAB Rapid Response Project, DNR annual contract w/ U of M, MSLA, MNLA
Expand efforts to recognize model exemplary programs and civic organizations through national Arbor Day foundation programs	Communities and civic organizations, local and regional utility companies	MNSTAC, MSA, NADF, local and regional utility companies	NADF (Tree City and Tree Line USA), MSA, LMC, local and regional utility companies

Success Stories: Emerald Ash Borer Partnerships



A FOREST HEALTH SUCCESS STORY

Coalition in Minnesota Working to Slow the Spread of Emerald Ash Borer

The Challenge

The emerald ash borer (EAB) is an insect native to Asia that is considered an invasive species here in North America. It was first detected near Detroit, MI, in 2002 and has since spread across 22 States and parts of Canada. In this short time the insect has killed millions of ash trees and currently threatens the entire North American ash family.

Minnesota has possibly more ash trees than any other State and features extensive black ash forests associated with wetlands in its northern half. Communities in Minnesota have large ash components, and many cities' urban forests, including those of St. Paul and Minneapolis, are comprised of 15–20 percent ash.



The Solution

A coalition of federal and State agencies working with local governments and nongovernmental organizations to:

- Slow the spread and population buildup of EAB;
- Assist time-poor local governments with and without EAB to begin to mitigate impacts and reduce their risk to this invasive insect; and
- Work with a number of groups within the State to achieve desired results.

The coalition's main goals are to create a healthier urban forest and to maintain functional forests in those areas now dominated by extensive stands of ash trees. The core group includes the following entities: Minnesota Dept. of Agriculture (MDA); Minnesota Dept. of Natural Resources (DNR); USDA Animal and Plant Health Inspection Service (APHIS); all three branches of the U.S. Forest Service; many cities including St. Paul and Minneapolis; University of Minnesota and University Extension; several Tribes in the State; and groups such as the Minnesota Shade Tree Advisory Committee.

Resulting Benefits

MDA led and coordinated a very active and aggressive management approach in the Twin Cities area that appears to have significantly slowed the spread of EAB there compared to other metropolitan areas. Much of the EAB work in Minnesota has been funded to date by the State and city. Minnesota DNR and the University of Minnesota took the lead on helping other communities prepare for the ash-borer's arrival. The Northeast Area State and Private Forestry unit of the U.S. Forest Service provided on-the-ground technical assistance and more than \$16,000 in grants in recent years to support the collaborative project. APHIS has also provided extensive support.

Sharing Success

MDA hosted frequent EAB updates and get-togethers that were well attended by representatives of metro communities. Participating organizations also maintain active outreach programs for residents. MDA and cooperators hosted a number of training sessions on identification of infested trees for neighboring cities. For more information, visit the MDA Website at <http://www.mda.state.mn.us/emeraldashborer>.

Collaboration helps communities at risk for EAB invasion gain valuable time.



1000 Lakeside
1300 Ross Street
State and Wildlife Forestry

1000 Lakeside, Room 1100
MN Department of Natural Resources
1300 Ross Street, St. Paul, MN 55104
Phone: 651-224-3000
E-mail: forestry@dnr.state.mn.us

1000 Lakeside, Room 1100
MN Department of Natural Resources
1300 Ross Street, St. Paul, MN 55104
Phone: 651-224-3000
E-mail: apahis@aphis.usda.gov

www.mda.state.mn.us/emeraldashborer
1000 Lakeside, Room 1100
1300 Ross Street, St. Paul, MN 55104
Phone: 651-224-3000

2/12

3.4 Maintain and enhance the economic benefits and values of trees and forests

Minnesota is a leader in timber production in the continental US, harvesting 2.4 million cords with a total economic output effect of \$16 billion annually. The forest products industry is the fifth largest manufacturing sector in the state by employment and impacts 63,200 jobs. However, recent upswings from a downturn in the 2007-08 economy necessitate the continued need for investments to maintain strong and diverse markets for forest products and maintain active sustainable forest management. State efforts in sustainable certification have given forest products a marketing edge, as have efforts to encourage private landowners to obtain certification for their land.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Provide marketing assistance to private landowners in order to improve management, increase wood supply for industry, and improve landowner income	NIPF landowners, wood industry	USFS, NRCS, State Technical Committee, DNR, RC&Ds, SWCD	FSP, \$, Technical assistance
Maintain public and expand private land 3 rd party certification	Wood industry, forest managers	Counties, MFA, MFRC, consulting foresters, SWCD	\$, Technical assistance
Maintain strong wood industry technical and wood supply information and assistance	Wood industry	USFS, U of M, NRRI, DNR, SWCD	\$, Technical assistance
Provide forest and forest-industry related information and education to the public and other key audiences	Industry, forest managers, citizens of MN	DNR, USFS, U of M, wood industry, SWCD	FSP, SWCD \$, Technical assistance,
Support collaborative development of new or improved markets and products	Industry, forest managers	DNR, U of M, NRRI	\$, Technical assistance
Provide wood marketing and utilization assistance to forest product companies to increase industry health and promote efficient wood utilization and greater use of underutilized species and resources	Industry, forest managers	DNR, U of M, NRRI	\$, Technical assistance
Assist with continuous development of skilled forest industry workers through engagement with partner training efforts	Industry	DEED, MLEP and U of M Extension	DEED, MLEP and U of M Extension
Strategically provide financial assistance to forest product companies that are important for maintaining forest management through markets	Industry, forest land managers	USFS	\$, Technical assistance

Market low grade wood material for increased income for private landowners and public land managers.	NIPF landowners, public land managers, DNR, U of M, USFS	USFS, NRCS, State Technical Committee, MFA, FSP, SWCD	FSP, SWCD
Strategies on hold			
Increase planting of short rotation woody crops on private lands, where appropriate, to improve wood supply <i>Not at this time</i>	NIPF and wood industry landowners	DNR, U of M, USFS, SWCD	SWCD tree sales programs

Success Story: Call Before You Cut



The Minnesota Private Forest Management program (PFM) has recently partnered with the USFS and the Minnesota Forestry Association (MFA) to provide a “Call Before You Cut” program in the state. The state is one of only seven states in the nation to offer this program. Minnesota is the first and only state to contract with another organization to administer the program through MFA. This has been done in response to work more cooperatively with partners and help reduce workloads for all organizations.

MFA has gone above and beyond to set up an excellent program. The “Call Before You Cut” program is designed to provide information to private landowners that are considering a harvest on their property. As Minnesota contains over 40 % private and non-industrial forests on over 6.8 million acres, this constitutes the largest forest landowner group in the state. The goal of the program is to reach and connect these 194,000 landowners with professional foresters, Master Loggers and MLEP members prior to harvest to ensure that forests are managed sustainably on private lands. The success of this program is helping to elevate the status of sustainable forest harvesting through collaborative work across public and private organizations.

Private landowners can call the following hotline and receive a packet of information at no cost:
<http://callb4ucut.com/>



3.5 Protect, conserve, and enhance wildlife and fish habitat

Minnesota is committed to identifying, protecting, monitoring and maintaining rare species and ecological systems that contribute to the state's biodiversity and viability of forest ecosystems. Efforts such as forest certification, the state wildlife action plan (SWAP), the DNR native plant community field guides, the DNR Minnesota county biological survey (CBS), plus efforts such as the ecological classification system (ECS), coupled with federal and non-profit identification and restoration efforts, provide guidance for preservation of rare ecological features and systems for the future of forests within the state.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Develop, maintain and continually improve tools necessary to clearly identify where rare ecological features and resources are located in forest systems to help forest landowners manage for them	NIPF landowners, forest managers, consulting foresters, citizens of MN	DNR, NRCS, FSA, Tree Farm, TNC, USFS, USFWS, Tribes	FLP, MFF, FSP
Identify Key Habitats for SGCN and apply management or protection efforts that complement the State Wildlife Action Plan to maintain or enhance viability.	NIPF landowners, forest managers, consulting foresters, citizens of MN	DNR, USFS, TNC, USFWS, Audubon, NPS, Tribes	USFWS, Outdoor Heritage Fund
Provide technical assistance on rare ecological features to interested individuals and organizations	NIPF landowners, forest managers, consulting foresters, citizens of MN	DNR, USFS, TNC, USFWS, Audubon, NPS	USFWS, TNC, FSP, Audubon, Outdoor Heritage Fund
Incorporate SWAP priorities (e.g. SGCN Key Habitat concerns) in existing forest management planning	NIPF landowners, forest managers, consulting foresters, citizens of MN	USFS, TNC, USFWS, DNR, MFRC, NPS, BIA, Tribes	DNR SFRMP Plans, FSP, OHV Recreation Plans
Manage to reduce the spread of invasive species ; manage to control and reduce existing invasive species populations (see also Forest Health and Productivity)	NIPF landowners, forest managers, consulting foresters, citizens of MN	USFS, TNC, USFWS, DNR, MFRC, NPS, BIA, Tribes	FSP, MIPN, CWMA's, existing laws (noxious weeds), best mgmt. practices
Protect and manage federal and state listed species to maintain or enhance their viability	NIPF landowners, forest managers, consulting foresters, citizens of MN	USFS, TNC, USFWS, NPS, DNR Div of Eco-Resources , BIA, Tribes	USFWS, Outdoor Heritage Fund
Identify and incorporate emerging issues affecting specific SGCN populations into management plans	NIPF landowners, forest managers, consulting foresters, citizens of MN	USFS, USFWS, NPS, BIA, DNR	USFWS, Outdoor Heritage Fund
Use prescribed fire and other practices to maintain habitat for rare ecological features associated with fire disturbance	NIPF landowners, forest managers, consulting foresters	USFWS, DNR, USFS, NPS, NRCS, Tribes	NRCS cost-share on prescribed burns within program guidelines

Encourage habitat restoration efforts	NIPF landowners, forest managers, consulting foresters, citizens of MN	DNR, USFS, NRCS, USFWS, BIA, USACE, Tribes, TNC	FSP, NRCS cost-share restoration programs for specific habitats (e.g. oak savannahs)
Enforce existing rare species laws	Citizens of MN	USFS, USFWS, EPA, MPCA, BWSR, Tribes	WCA, NEPA, State laws
Provide protection opportunities –selective acquisition of Key Habitats, SNA designation, Natural Area Registry Sites, old-growth	NIPF landowners, forest managers, consulting foresters, citizens of MN	USFWS, DNR, TNC, TPL, state legislature, counties	DNR, USFWS, Outdoor Heritage Fund
Research aspects of SGCN Key Habitat conservation necessary to more effectively maintain or enhance their viability	NIPF landowners, forest managers, consulting foresters, citizens of MN	TNC, Audubon, DNR, USFWS, U of M	U of M, research institutions
Assess the amount and quality of Key Habitats for SGCNs and map their locations	NIPF landowners, forest managers, consulting foresters, citizens of MN	TNC, Audubon, DNR, USFWS, U of M	DNR, USFWS, Outdoor Heritage Fund
Research important aspects of people’s understanding of SGCN	Citizens of MN	TNC, Audubon, DNR, USFWS, U of M	U of M, research institutions
Monitor long-term trends in SGCN populations and habitats and apply adaptive management that incorporates monitoring results into management plans on an ongoing basis	NIPF landowners, citizens of MN	USFS, USFWS, NPD, DNR, Div of Eco-Resources , Tribes	USFWS, Outdoor Heritage Fund, U of M
Maintain and update information management systems for inventory and monitoring of rare ecological features and delivery of such data to partners	NIPF landowners, forest managers, consulting foresters, citizens of MN	TNC, Audubon, DNR, USFWS, U of M	USFWS, Outdoor Heritage Fund

Success Story: We All Win with the Army Compatible Use Buffer (ACUB) Surrounding Camp Ripley



When a hawk wheels in the wind above Camp Ripley in north central Minnesota, it surveys a mosaic of rivers, lakes, forests and farmland, as well as the military base. That its next meal comes from such a mosaic is of no concern to the hawk. Yet it symbolizes a conservation success story on such a grand scale that it is recognized nationally.



Camp Ripley is located in the heart of the Upper Mississippi River Basin, where the

longest undisturbed stretch of the upper river borders the Camp's eastern boundary. The Crow Wing River forms the Camp's northern boundary. Lakes, rivers and wetlands abound both in and surrounding the Camp. From an ecological perspective, Ripley rests in the transition zone of Minnesota's three main ecosystems: northern conifers, hardwood forests and prairies.

Camp Ripley first opened to the Minnesota Army National Guard in 1931 as a 53,000-acre training facility in northwestern Morrison County. Its three-fold mission is to 1) train soldiers and units that support national security objectives, 2) provide public safety and protection resources for the state of Minnesota, and 3) participate in programs that add value to the community. Though the Camp excels in its national and state-wide service, it also shines as a neighbor to the surrounding counties of Cass, Crow Wing and Morrison. It is a regional economic force, both as an employer and as a year-round income generator for area businesses (\$314 million in economic activity annually).



Socially, the Camp hosts several community events including Boy Scout jamborees, the 6th Grade Water Festival (over 400 students each year) and training activities for a variety of state agencies. The Camp also sponsors youth archery hunts each fall in addition to special hunting and fishing outings for disabled veterans and veteran groups.

Perhaps its biggest community contribution is reflected in its conservation efforts. Camp Ripley is a State Game Refuge with one of the most comprehensive game and plant management programs in Minnesota. The Camp has earned national honors for its resource management efforts. In 2005 and 2008, the Camp Ripley Natural Resources Conservation Team won the Office of the Secretary of Defense Environmental Award. Within this natural bounty live 65 sensitive species, known as Species of Greatest Conservation Need (SGCN). This prime habitat is home to the Blanding's turtle, bald eagle, gray wolf, black bear and white tailed deer as well as trophy small mouth bass and walleye. The Audubon Society has identified Camp Ripley as an Important Bird Area (IBA). In short, the Camp maintains a balance between military mission and natural resources management.

Yet pressures exist. The same natural bounty that attracts waterfowl and wildlife also attracts human development. This encroachment, when close to the Camp, can cause sacrifices in the military's main

mission of training and soldier readiness, due to landowner and community complaints. Residential development on neighboring lands can conflict with military operations because of the accompanying noise, dust and smoke which spread beyond the Camp boundaries. It's like buying a house next to an international airport and then complaining about the noise and traffic.



In response to similar encroachment concerns at military installations around the country, the Office of the Secretary of Defense created the Readiness and Environmental Protection Integration (REPI) program. REPI's main job is to protect the military mission of a given installation. Its secondary goal is to preserve natural habitat that is compatible with the military mission. That's how Camp Ripley's Army Compatible Use Buffer (ACUB) program was launched in 2004. As the second of its kind in the country, Ripley's ACUB is considered the nation's best and a model for the almost 70 current programs across our country's military branches. As ACUB got off the ground, over 500,000 acres were studied within a 10-mile radius of the Camp. Although a 10-mile buffer is the long-range goal, ACUB currently includes 110,000 acres within a 3-mile buffer.

ACUB is a voluntary program for landowners within the buffer zone surrounding Camp Ripley. The Camp uses a proactive approach with willing landowners and partners such as The Nature Conservancy, the Minnesota DNR, Board of Water and Soil Resources (BWSR) and local Soil and Water Conservation Districts (SWCD). In addition to the ongoing support of Cass, Crow Wing and Morrison counties, over 350 landowners have signed interest forms.

The main land protection tools include fee title acquisition and conservation easements. To date, 156 land deals have been executed, resulting in over 17, 593 acres enrolled in the program. Another 8,955 acres within the buffer are already permanently protected (state and county land, The Nature Conservancy, etc.). Since no grand undertaking can be realized at once, a parcel selection process was developed. Using Geographic Information System (GIS) models and input from Camp Ripley's conservation partners, priority parcels were identified and scored within the 3-mile buffer zone. Parcel selections are ranked according to size, proximity to Camp and other factors. Military considerations are given more weight than natural resource ones.

This "rock around the clock" model represents a solid victory for all of us. Camp Ripley, the main stakeholder, preserves the integrity of its military mission, ensures environmental protection for the surrounding region and promotes positive community relations. The Camp's neighbors gain a great opportunity to preserve the rural character of the area. The state of Minnesota benefits from ACUB by forward-thinking conservation practices, in what The Nature Conservancy refers to as, "one of the last great places in the Midwest."⁷

⁷ Adapted from MFRC project stories by author Jim Umhoefer 2013-14

3.6 Connect people to trees and forests, and engage them in environmental stewardship activities

Minnesota has always had a strong tradition of nature-based outdoor recreation with participation in outdoor activities well above the national average, especially in hunting, fishing, boating, hiking, swimming, and skiing. These activities and increasingly bird and wildlife watching, geocaching, motorized and non-motorized activities all rely on access and interaction with abundant natural resources such as forest lands, lakes, rivers, blufflands, grasslands and parks and recreation facilities. The state is committed to preserving and enhancing outdoor recreational use for both present and future generations to enjoy. Training and education are key elements to accomplish these goals through programs such as the Play Clean Go, Arbor Month Program, Project Learning Tree and the Minnesota School Forest Program. Making forest stewardship accessible for increasing urban populations through these educational programs, creates a powerful connection between people and the state's natural forest resources.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Ensure that SAF address applicable regulations and landowner objectives for recreation, aesthetics and cultural resource protections	Forest landowners, citizens of MN	MFA, Tribes, federal and state agencies	<i>Undetermined</i>
Ensure that Forest Legacy Easement and Minnesota Forests for the Future Programs consider recreational access when ranking and scoring potential acquisitions	Various user groups (trail users, both motor and non-motor), hunters, hikers, skiers, etc., general recreational public	FSC, MN Forests for the Future Advisory Committee	Time and involvement of the private sector
Ensure that the state continues to have periodic public input discussions or meetings with a broad variety of user groups to listen to their ideas about improving recreational opportunities on forest lands	Mn Deer hunters Assn, All-Terrain Vehicle Assn of MN, Mn Audubon, Sierra Club, International Mountain Bike Assn, Other Assn's	USFS, county land dept's, Tribes	MFRC regional landscape committees, county recreation dept's
Improve connectivity of multi-agency trail systems and access to outdoor recreation opportunities	Citizens of MN, user groups	USFS, NPS, USACE, USFWS, BIA, Tribes, counties, municipalities	\$, Technical assistance
Ensure implementation of the 2007 MN DNR Trail Planning, Design, and Development guidelines	Citizens of MN, user groups	DNR, GIA partners, counties, communities	\$, Technical assistance
Invest Clean Water, Land and Legacy funds in high priority, sustainable projects that efficiently deliver a broad variety of recreational uses of forest lands	Natural resource management agencies, lakeshore owners associations, zoning authorities	State legislature, user groups	<i>Undetermined</i>

Pursue recreation investments that provide the basis for expanding wealth creation, ecosystem health, and job retention within the state of MN	Citizens of MN	State legislature, DNR, USFS, communities, Chambers of Commerce, user groups, counties	Adequate appropriations
Develop long-term funding that will assure maintenance and replacement of recreation infrastructure on all state forest lands (e.g. campgrounds, boat launches, trails, etc.)	Citizens of MN, user groups	USFS, DNR, USACE, state legislature	Adequate appropriations
Assure that large acreages of public land that are used for recreation remain public and are not sold into the private sector because of economic pressures on government agencies	Citizens of MN, user groups	DNR, USFS, congress, counties , state legislature, user groups, conservation organizations	<i>Undetermined</i>
Promote harmony among forest users by searching for ways to help exclusive use activities to co-exist with other activities that compete for the same space	Citizens of MN, user groups	User groups, natural resource management agencies, forest managers, DNR, counties, USFS, Tribes	<i>Undetermined</i>
Measure and monitor recreational use impacts to determine when ecosystems or recreation sites are being negatively affected	Citizens of MN, user groups	DNR, USFS, USACE, user groups, counties, Tribes	Adequate appropriations
Investigate partnerships among levels of government (federal, county , municipal for providing recreational opportunities)	Citizens of MN	USFS, USFWS, NPS, USACE, MDA, DNR, Tribes	<i>Undetermined</i>



ABOUT NASF

The mission of the National Association of State Foresters is to represent state and territorial forester interests by influencing forest policy and leading efforts to promote healthy and sustainable trees and forests.

ABOUT USFS

The U.S. Forest Service mission is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations.

Learn More:

www.stateforesters.org

www.fs.fed.us

www.playcleango.org

www.forestatctionplans.org



PlayCleanGo Protecting Forests from Harm with the Minnesota Division of Forestry



With support from the Forest Health Protection program of the USDA Forest Service, the Department of Natural Resources, Division of Forestry is achieving goals outlined in Minnesota's Forest Action Plan.

Minnesota's invasive outreach campaign PlayCleanGo (PCG) is informing people and organizations about the best way to disrupt the spread of terrestrial invasive species.

The invasive species outreach and prevention campaign received two, three-year competitive USDA Forest Service grants, one in 2008 to identify outreach needs through social research and one to launch in 2012 the branded campaign "PlayCleanGo: Stop Invasive Species In Your Tracks".

Since its launch, more than 130 public and private partners have adopted PCG as their invasive species outreach campaign with fun, accessible, consistent prevention messaging to disrupt the link between outdoor recreation and the spread of terrestrial invasive species.

"The PlayCleanGo outreach campaign has greatly increased our ability to engage recreationists in prevention measures that protect our forests," said Forrest Boe, State Forester.

In three years, PCG has garnered 130 partner organizations including the North American Invasive Species Management Association. In two years of social media, PCG has created 12.8 million impressions, 147.8 thousand actions (clicks, likes or shares) and 12.5 thousand YouTube viewings.

PCG has hosted two annual PlayCleanGo Days events at 13 park locations, three state fair events and booths at 12 sportsmen shows. At these events, volunteers speak to more than 20,000 visitors about the simple steps they can take to prevent the spread of invasive species in Minnesota and throughout the United States.

Federal funds allowed the campaign to hire a marketing firm to guide the advertising campaign and paid for the development of PCG social media and print materials.

Success Story: Standing Tall Magazine

In 2013 the Minnesota DNR Division of Forestry decided that citizens and legislators needed to better understand the role of DNR forestry in our state. After assessing current outreach products, desired



messages, and timelines, the Division of Forestry determined that a magazine-style publication with photo-rich layout and short articles would best meet these needs. The work of the Division of Forestry is complex and wide-reaching. To effectively share the story of forestry, [Standing Tall](#) was created by Division forestry outreach staff. The magazine focuses on key forestry programs in an article format highlighting key program outcomes and accomplishments important to the citizens of Minnesota.

A professional writer was hired to work with outreach staff to sketch out stories and construct the magazine. To ensure accuracy, all division program leaders were interviewed to develop stories and review/edit all articles. Many Division staff contributed photos to emphasize the impact of forestry on people and the landscape. Within 9 months of inception, the magazine was completed.

Standing Tall has been one of the Division's most successful publications to date. The initial 4,000 copies intended to last 3 years, were gone within 10 months! *Standing Tall* has proven to be a fantastic tool to communicate the outstanding work of the Division of Forestry to legislators and engaged citizens and to convey the importance of forests to the economic, environmental and recreation viability of the state.



3.7 Manage trees and forests to mitigate and adapt to global climate change

Climate change is a global phenomenon that has the potential to significantly affect Minnesota forest resources. Climate change will cause the greatest change in forests that are stressed with disease, pests, ground compaction or altered hydrology, and could result in reduced quality of wood, water, wildlife habitat. The state is committed to working with partners to mitigate and adapt to climate change. The state operates a state forest nursery with collected native seeds to guarantee genetic diversity and produces over 6 million native tree seedlings yearly for use in public and private forest plantings around the state. Each year, the state uses 2.5 million seedlings for reforestation, while 0.5-1 million seedlings are purchased by counties, tribal governments, and other public agencies. Another 2.5 million seedlings are purchased by landowners to reforest private lands. Demand for local, native tree seedlings is expected to increase as climate change increases tree loss due to fires, blowdowns, floods, droughts, and climate mitigation calls for more trees to be planted to store carbon. The state nursery is experimenting with new tree species that may be suitable for Minnesota under changing climate conditions and expanding genetic diversity by increasing the geographic size of collection zones.

Strategies in process or implementation	Key Stakeholders	Partners	Resources
Develop methods for quantifying and monitoring forest carbon pools	Forest managers, Forest landowners, future participants in carbon markets, U of M, AURI, citizens of MN	Operations Managers Climate and Energy Steering Team, Interagency Climate Change Mitigation Team, Biofuels Team, MN Climate Change Advisory Group, NRRI	LCCMR grant proposals, dedicated agency staff time
Evaluate and implement approaches for increasing carbon sequestration through improved forest management	Forest managers, forest industry, policy makers, U of M, DNR, USFS	Operations Managers Climate and Energy Steering Team, Interagency Climate Change Mitigation Team, Biofuels Team, MN Climate Change Advisory Group	LCCMR grant proposals, dedicated agency staff time
Develop tools to examine the effects of forest management decisions on forest carbon pools	Forest managers, policy makers, U of M, DNR, USFS	Operations Managers Climate and Energy Steering Team, Interagency Climate Change Mitigation Team; Biofuels Team, MN Climate Change Advisory Group, MFRC, MFRP	LCCMR grant proposals, dedicated agency staff time

Develop markets for biofuels that offset consumption of fossil fuels.	Forest managers, forest landowners, citizens of MN, RC&Ds, NRRI, U of M, AURI	Operations Managers Climate and Energy Steering Team, Interagency Climate Change Mitigation Team, Biofuels Team, MN Climate Change Advisory Group, DNR, MFRP, MFRC	<i>Undetermined: needs funds & technical assistance</i>
Develop, promote and facilitate market solutions to climate change management issues and needs, e.g., expanded markets for species of greatest adaptation likelihood	Landowners, forest managers, wood industry	DNR, USFS, U of M	\$, Technical assistance
Reduce fossil fuel consumption; quantify the carbon footprint of forest management and establish efforts to minimize the magnitude of the footprint.	Landowners, forest managers, wood industry, citizens of MN	State legislature, federal laws & programs, wood industry	Gas tax, min. mileage ratings
Maintain healthy, vigorous and viable native plant communities	Landowners, forest managers, wood industry, loggers, fish and game interests, citizens of MN	DNR, USFS, USFWS, TNC, Audubon, wood industry, biofuels industry, loggers	FSP, funding for non-commercial management activities; support for forest management infrastructure (loggers, working forests, industry)
Explore planting diverse tree species and genotypes from more southerly ranges to ensure healthy forests in the future	Landowners, forest managers, wood industry	USFS, DNR, Tree Farm, U of M	LCCMR, possible USFS funding
Continually monitor the rapidly growing body of climate change science and incorporate the best available science relating to climate change species viability when deciding which tree species and genotypes to promote or establish	Landowners, forest managers, wood industry	USFS, DNR, Tree Farm, U of M	LCCMR, possible USFS funding
Contribute to renewable energy and greenhouse gas reduction goals	NIPF landowners, MFA, Tree Farm, state legislature, citizens of MN	FSP, MFA, Tree Farm Program, NRCS	FSP registered stewardship plan holders, NRCS cost-shares for afforestation and reforestation (tree planting) projects
Conduct assessments of the vulnerability of native plant communities including native forest cover types and native animal populations to changes in climate	All landowners, (federal, state, tribal, county, municipal and private) forest managers, wood industry, fish and game interests	Operations Managers Climate and Energy Steering Team; Interagency Climate Change Adaptation Team, DNR, USFS, USFWS, TNC, Audubon	IIC website

Train and provide continual support to staff to address climate change as part of ongoing management efforts	All landowners, forest managers, wood industry	DNR, USFS, USFWS, S&PF	SFEC training programs, FSP
Modify resource management plans and management activities to help forest systems to (as appropriate) resist, be resilient to, or respond to the anticipated effects of changes in climate including planting tree species and genotypes from more southerly ranges to ensure healthy forests in the future	Landowners, forest managers, wood industry	MFRC, DNR, S&PF, USFS, USFWS, NRCS, U of MN, Tree Farm, Tribes, industry, counties	Update landscape plans to address climate change
Expand climate and climate impact monitoring and reporting efforts.	Landowners, forest managers	DNR, S&PF, USFS, USFWS, NRCS, U of MN, NRRRI, SWCD, MN State Climatologist	Rain gauge and temperature network
Strategies on hold			
Influence the development of national and regional protocols for creating marketable carbon credits in forest offset projects. <i>Not at this time:</i> <i>As the Clean Power Plan is implemented in MN, there may be an opportunity to establish carbon trading as a mechanism for meeting emission reduction targets.</i>	DNR, MDA	NRCS, Operations Managers Climate and Energy Steering Team, Interagency Climate Change Mitigation Team, Biofuels Team, MN Climate Change Advisory Group	RC&D councils
Identify opportunities for establishing new forests for carbon sequestration <i>Not at this time</i>	NIPF landowners, citizens of MN, carbon market participants	MFRC, NRCS, DNR, consulting foresters, industrial forest landowners, NIPF landowners	MFRC carbon study to state legislature, several NRCS programs cost-share afforestation and reforestation activities
Initiate a carbon sequestration aggregation program in Minnesota <i>Not at this time</i>	NIPF landowners	DNR and Tree Farm	FSP, Tree Farm Program
Conduct (fund) human dimensions research to better understand public attitudes about climate change <i>Not at this time</i>	Citizens of MN	DNR, U of M	LCCMR, possible USFS funding

Success Story: 2015 Climate Change Adaptation Workshop



An active hands-on training to help state DNR natural resource managers incorporate climate change considerations into their own field work and projects was held on September 22-23 2015 at the Minnesota Cloquet Forestry Center. The workshop was developed as part of the [Climate Change Response Framework](#), a collaborative cross-boundary approach to incorporate climate change into natural resources management. Specifically, participants were provided with training on climate change and its effects on forest ecosystems. The course used the [Forest Adaptation Resources](#) guide to consider how climate change may affect a real-world forest management project, identify challenges and opportunities for management under a changing climate, and develop actions to reduce risk and increase the ability of forests to cope with climate change. The

workshop was tailored to Department of Natural Resources employees who are responsible for managing forest resources. Participants were asked to **select a real-life forest management project** relevant to their job and location to use during the workshop.

Example projects could include:

- Revising a management plan for a State Forest, Park, Wildlife Management Area, or Natural Area
- Stand exam projects, particularly for sites tagged for site visits with multiple divisions
- Preparing a timber sale for a single stand or multiple stands
- Adaptive Forest Management (AFM) projects
- Specific actions within a Subsection Forest Resource Management Plan (SFRMP)

Twenty-seven field managers and project managers participated and brought forth 13 projects for implementation and climate change adaptation. Participants were taught how to:

- Describe regional and local effects of climate change on Minnesota's forests
- Understand adaptation concepts in the context of forestry and land management
- Use the [Forest Adaptation Resources](#) guide in real world management projects to **a.** identify climate change risks and opportunities and **b.** develop actions to help forests adapt to changing conditions
- Access post-training support from NIACS

Following the workshop, managers were encouraged to implement the adaptation actions that were identified in the workshop to serve as examples for other managers. The workshop was developed by the Northern Institute of Applied Climate Science (NIACS) with joint partnerships of US Forest Service, MN DNR and University of Minnesota Extension and is expected to foster further communication, implementation and monitoring of climate change adaptations in Minnesota.

Recent recognition for climate change efforts in Minnesota:

The multi-agency report, [Minnesota and Climate Change: Our Tomorrow Starts Today](#) was recently recognized by the National Conference of State Legislators, through the Legislative Research Librarian's staff selection as a Notable Document. According to the award announcement, "The award recognizes excellence in documents that explore topics of interest to legislators and staff, and present substantive material in an outstanding format."

