Management
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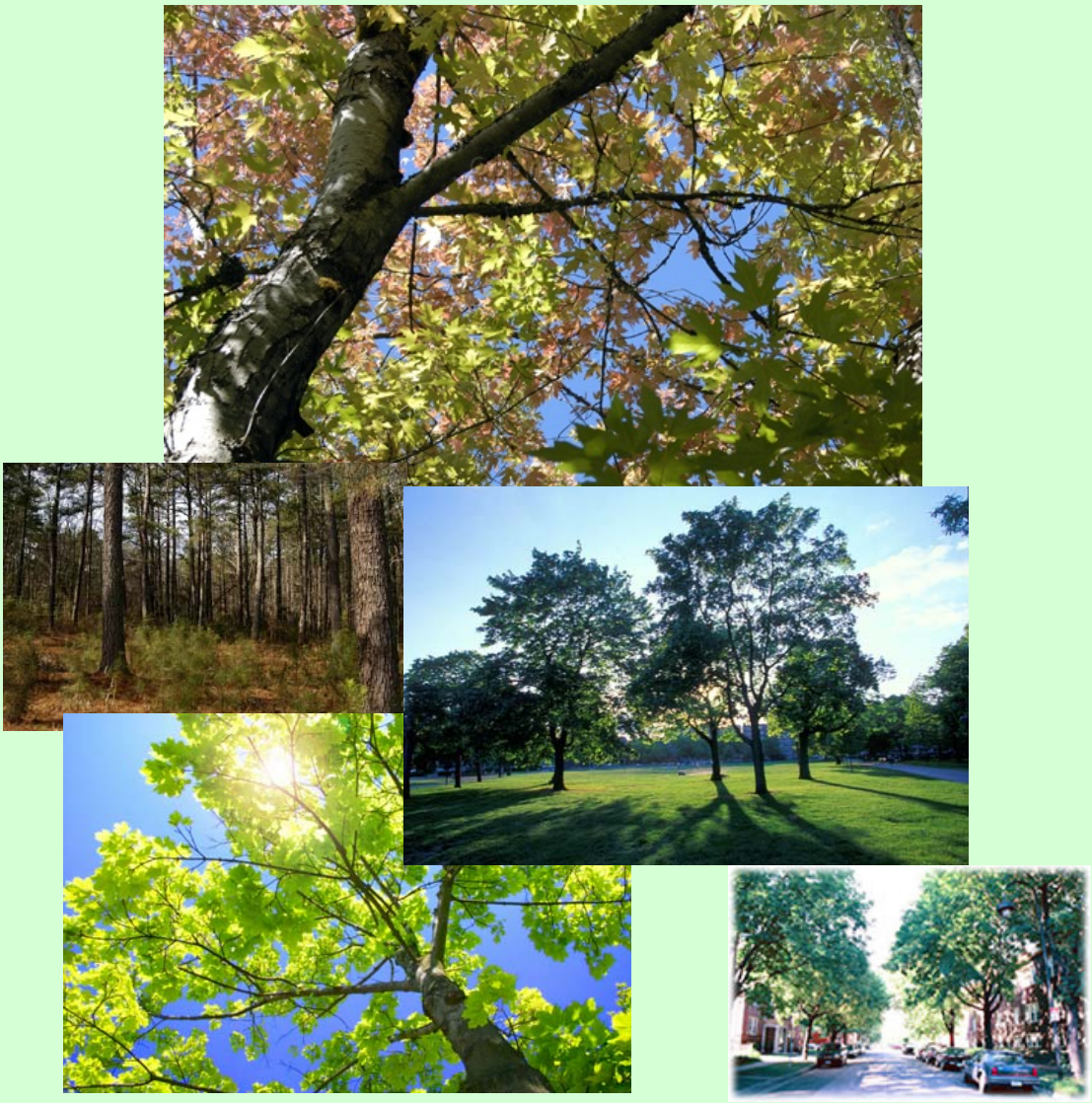
- **Forest Protection Plan Task Force**

Forest Protection Plan

January 2008



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Forest Protection Plan Task Force

Forest Protection Plan

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Executive Summary

Forest Protection Plan Task Force

The 2007 Minnesota Legislature directed the Minnesota Forest Resources Council to create a Forest Protection Plan Task Force to develop a plan to prepare the state for early detection, appropriate response, and educating the public regarding invasive pests that threaten tree cover in Minnesota. These pests include invasive insects, diseases, and plants. Also included in the legislation was language to address current storm damage response, how that might be improved for forest health, and to minimize vulnerability to pest infection. The task force included members from academia, tribes, local units of government, forest products industries, nursery and landscape businesses, arborists and tree inspectors, tree advocacy organizations, master gardeners, and shade tree groups. Key state and federal agencies involved in forest and tree protection in Minnesota served as ex officio members of the task force. While the input from the staff of these agencies was critical, their participation on this task force does not constitute an endorsement or formal approval of the recommendations by their departments, which have other formal processes for policy and budget development.

Task Force Key Findings

- Minnesota's trees and forests are critical to its economy and improve our environment.
  - The forest industry in Minnesota creates $7 billion in forest products annually. Tourism is an equally large part of our economy, and our forested areas are a major attraction. Together these two industries employ almost 200,000 Minnesotans.
  - Trees play a critical role in helping Minnesota meet its environmental goals and reduce adverse impacts of global climate change. Trees contribute by sequestering carbon dioxide, reducing energy usage, and reducing storm water runoff – an annual value estimated at $126 per urban tree.

- Because of global trade and increased travel, new pests threaten the health and survival of many tree species.

- Failure to quickly detect and eradicate invasive tree pests could cost hundreds of millions of dollars and result in serious harm to Minnesota's environment and economy.

- State and federal agencies work in partnership to address forest pests, and the interagency coordination among state agencies and between the state and federal government is strong. More work needs to be done, however, to maintain these partnerships and to extend them to critical stakeholders including counties, townships, cities, and various nonprofit associations to address the risk to Minnesota's trees and forests.

- Once a new invasive pest enters Minnesota, success in eradicating it is dependent on early detection, rapid response, and the involvement and cooperation of property owners.

- While the federal government has in the past been a strong partner in response efforts for certain pests, federal budget problems have left states and local governments more at risk.

- Minnesota does not currently have a source of emergency response funds to immediately access while negotiations begin with federal agencies about possible federal support.

- Active management and monitoring of trees for signs of invasive species is focused on known pathways for these pests which may leave certain areas of the state unmonitored and unprotected, creating a risk that an invasive species may become established and remain undetected for a period of time.

Task Force Key Recommendations

- Because of the many agencies involved, a clear "front door" to access information and report concerns needs to be established along with an ongoing public education and communications plan so the public can help identify possible invasions and actively participate in control measures and follow-up monitoring activities.

- To strengthen the forest protection system, more work is needed in risk assessment, further developing a statewide structure for response including clear definition and explanation of roles and responsibilities, and encouraging local governments to include forest and tree planning in their comprehensive plans.

- A desired next step is taking the awareness, planning, coordination, and early detection efforts to the local level by involving local units of government, tree advisors, and community volunteers.

- Ongoing and emergency response investments are needed to help avoid the hundreds of millions of dollars of costs that other states have expended in fighting major invasions. Funding is recommended for emergency response, statewide early detection and public education, community forest management, local tree removal and replanting, and management of storm damage and tree replacement.

- Ongoing forest protection planning is needed to further outline, explain, and clarify roles and responsibilities, engage all key stakeholders including local governments and the public, and form the overall framework for more invasive species specific plans such as the Emerald Ash Borer Plan.

Forest Protection Plan Task Force

The world is changing with sharply increased global trade. Although global trade has many advantages, a major disadvantage includes the pests that arrive with the products. The threat of new catastrophic pests on the horizon makes it wise to regroup and rethink the needs of Minnesota in order to protect our forests from invasive species.

In response to this growing threat and to increase the effectiveness of the current efforts to address invasive terrestrial species in Minnesota, the 2007 Minnesota Legislature directed the Minnesota Forest Resources Council to create a Forest Protection Plan Task Force (see Appendix A for legislation). With support from the Minnesota Forest Resources Council and the Department of Natural Resources (DNR), the Minnesota Department of Agriculture (MDA) contracted with Management Analysis & Development (MAD) in the Department of Administration to facilitate the meetings of the Forest Protection Plan Task Force and draft this report. The statutory charge to the task force was to develop a plan to prepare the state for early detection, appropriate response, and educating the public regarding invasive pests that threaten the tree cover in Minnesota. Also included in the legislation was language to address current storm damage response, how that might be improved for forest health, and to minimize vulnerability to pest infection. The overall Forest Protection Plan, as it evolves, is to be an overarching framework to facilitate fast and appropriate response to a broad variety of tree pests. It is intended to guide and complement the needed pest specific plans that the state agencies prepare.

The task force consisted of members from academia, tribes, local units of government, forest products industries, nursery and landscape businesses, arborists and tree inspectors, tree advocacy organizations, master gardeners, shade tree groups; the key state and federal agencies involved in forest and tree protection in Minnesota served as ex offico members (See Appendix B for task force members).

The task force met three times in the fall of 2007. The three meetings of the task force focused on reviewing current efforts to address invasive species in Minnesota, identifying the areas where the current efforts could be augmented (gaps), and then crafting recommendations to address these gaps. The outcomes of those discussions became the initial steps in a forest protection plan for Minnesota. The task force members reviewed and discussed various documents that included data and viewpoints that are included in this report. This report is the result of task force deliberations.

Potential Impact of Invasive Species

The Forest Protection Plan Task Force understood that invasive species are regarded as the fastest growing threat to biodiversity of forested lands in the United States. Invasive species are second only to habitat loss in human-related “causes of extinction.” In the United States, over $135 billion of preventive preparation and active response is spent every year to address the threat of invasive species. Invasive species have been identified

by the Chief of the U. S. Department of Agriculture (USDA) Forest Service as one of four significant threats to our nation's forest and rangeland ecosystems. The Forest Service characterizes invasive species as a "catastrophic wildfire in slow motion" because of the seriousness of the problem and its impacts, which have no boundaries.

For Minnesota, the establishment of invasive species will have major consequences, because of the significant economic impact of forests and trees, the large acreage affected, the loss of vital tree cover in urban areas, loss of windbreaks and shelterbelts, the degradation of native forested communities, and the inability to regenerate native tree species.

In Minnesota there are approximately 16.2 million acres of forestland. About 14.7 million acres are classified as "timberland" (lands capable of producing timber and not withdrawn from timber utilization or associated with rural or urban development). Forestland ownership includes 38 percent non-federal public lands, 36 percent non-industrial private forestland, 17 percent federal and tribal lands, and 9 percent forest industry and other corporate lands.

Two major industries depend on Minnesota's forestlands: forest industry and tourism. The forest industry is Minnesota's fourth largest manufacturing industry, employing more than 41,000 people. The value of the forest products manufactured in Minnesota is around $7 billion and accounts for 15 percent of all manufacturing dollars generated in Minnesota. In addition to the commercial interests, the non-timber forest products area focusing on indigenous culture and folk arts may be significantly impacted by loss of trees which people use to create products to supplement their incomes. The tourism industry is Minnesota's second largest employer, employing over 140,000 people and accounting for a payroll in excess of $3 billion. Gross receipts from tourism exceed $6 billion.

Two examples of the many invasive pests that threaten Minnesota forests are the emerald ash borer, an invasive insect from East Asia, and the gypsy moth, an invasive insect that has spread to Minnesota from the East Coast. Ash species in Minnesota constitute a significant portion of the tree resources in both the forests and developed areas of the state, and ash species are particularly vulnerable to being lost because of the threat of emerald ash borer. In Minnesota, the 2003 Forest Resources Inventory (see http://ncrs2.fs.fed.us/4801/fiadb/index.htm) estimates in excess of 821 million black, green, and white ash trees in Minnesota's forests. The ash species group is the second most abundant hardwood species group and ranks fourth overall behind aspen, spruce, and balsam fir. The ash species group makes up approximately 10 percent of all hardwood trees and 7 percent of all tree species in Minnesota.

Ash species are also a significant component of the tree resources in 800+ cities and 1800 townships in Minnesota's developed areas because ash species were widely planted in response to the loss of elms due to Dutch elm disease. An urban ash survey completed by the DNR in 2006 (Resource Assessment, 2007. MN Municipal Ash-Elm Survey, Summer 2006: Final report, tables and maps. Minnesota DNR, Grand Rapids MN. Compact disk.) estimated that there are approximately 3 million ash trees in the 800+ cities in Minnesota.

Because trees in developed areas provide environmental benefits and energy savings, and add to the quality of life, the USDA Forest Service has developed tools[1] to measure the environmental contributions of trees. Applied to the Minneapolis urban forest in 2005, the tools identified annual environmental benefits worth $126 per tree that included citywide a reduction of 55,125 tons in carbon dioxide emissions, energy savings of $6.8 million, 29 million tons of air pollution reductions, and 447.5 million cubic feet of reduced storm water runoff. In the DNR study, the value of the urban and community ash resource exceeded $20 million, and the increase in value of the ash resource as it ages over a 20-year period would result in a value of $1.3 billion dollars.

Based on the magnitude of the ash resource in Minnesota and its value in developed areas, the advent of the emerald ash borer poses a significant risk to Minnesota. To understand the potential loss to Minnesota's economy and environmental quality, look to Michigan's experience. Michigan, a comparable state in terms of its ash resource, estimates that at least 18 million ash trees have been lost to emerald ash borer, and the cost to state and federal governments for survey and eradication activities tops $50 million since EAB was first detected in 2002. (MI DNR, personal communication.)

Another invasive insect that is a threat to Minnesota's forests is the gypsy moth. The gypsy moth is ranked as America's single most destructive pest of trees and shrubs. A special federal grant program to slow the spread of the gypsy moth has been in place in Minnesota and demonstrated the value of immediate, adequate funding to stop invasions. Invasions of gypsy moths in northern Minnesota have been contained as a result of the concentrated effort this enabled.

All citizens of the state, producers, consumers, processors, exporters, and agricultural and forest industries benefit from an integrated invasive species strategy. State agency activities directly protect the marketability of forest products and the integrity of environmental resources within the state. In addition, a significant amount of regulated activities occurs in urban areas as community forests are pressured by importations of new global pests with increasing world trade. These pests then spread to threaten wildland forests.

Current Efforts to Address Invasive Species in Minnesota

The Forest Protection Task Force reviewed and discussed the current efforts to address invasive species in Minnesota. Currently, there are two state agencies and two federal agencies involved directly in invasive species prevention, control, and tree recovery in the forested, developed, and rural farm areas of Minnesota. The state agencies include the Minnesota Department of Agriculture (MDA) and the Minnesota Department of Natural

[1] Local communities that wish to value the economic and environmental value of their forests can access the research tools at http://www.itreetools.org/

Resources (DNR), and the federal agencies include the U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS) and U.S. Department of Agriculture USDA Forest Service (USFS). See Appendix C for a summary of the state and federal authorities and areas of responsibility with regard to invasive forest pests.

Minnesota's programs for invasive species generally follow the National Strategy and Implementation Plan for Invasive Species Management (commonly called the National Strategy), found at http://www.fs.fed.us/foresthealth/publications/Invasive_Species.pdf. The National Strategy contains four elements:

1) **Prevention:** Prevent new invasive species from entering Minnesota borders.
2) **Early Detection and Rapid Response:** Invasive species entering Minnesota are detected early, triggering a rapid and appropriate response to mitigate any further harm.
3) **Control and Management:** Established invasive species that are widespread should be suppressed as needed to mitigate harm.
4) **Recovery:** Resources damaged by invasive species or invasive species removal should be restored.

The task force was informed that MDA and DNR in Minnesota work in collaboration with federal agencies (APHIS and USFS), tribes, and other local government, private, and nonprofit groups to carry out the four elements identified above. Through this collaboration, Minnesota protects the environmental and economic interests of its forest resources.

MDA has primary responsibility for terrestrial invasive and exotic species exclusion, early detection for eradication, and rapid response in the state, and collaborates closely with the other agencies to prevent, detect, and respond to invasives on public and private forest lands, on private lands supporting windbreaks and shelterbelts, and in cities and towns. MDA activities include regional pest assessments, outreach to educate the public on actions to control the spread of pests, and convening interagency workgroups to identify and address emerging pests. The federal government partners take an active role in preventing the movement of pests between states and provide materials to assist states in cooperative prevention efforts.

Early detection is critical to prevent populations from building up and becoming established. MDA and APHIS conduct surveys on private and urban lands, while DNR and USFS conduct surveys on public lands. Additionally, routine inspections of high risk commodities are performed by both MDA and APHIS.

Rapid response is critical for preventing and delaying pest establishment. Eventually, some pests will overcome these efforts. Response may range from eradication to suppression, and may include biological control. Emergency response plans are written for many pests expected to reach Minnesota, and a generic response plan addresses those pests that arrive unexpectedly.
Further, it was noted to the task force that MDA and DNR work as partners to create criteria for defining when pests are considered established. DNR becomes the lead

agency when the criteria are met and a particular pest is determined to be established in Minnesota.

Once a pest is eradicated or controlled, recovery and restoration are essential for regaining and maintaining a healthy environment. DNR has primary responsibility for addressing recovery from invasive species and management and control of these invasive species after exclusion and early eradication efforts are no longer viable. Recovery may include various actions from urban shelterbelt tree replacements to native habitat restoration. Further, DNR researches and advises on wood utilization once trees are removed.

Federal funds are used to help carry out each of the four elements. For example, federal funds are used to collect forest health data in a standardized manner on an annual basis. Standardization and compatibility with data from other states in the region ensures that the information collected by the states is valid for regional reporting. Regular meetings with federal agencies at national meetings, cooperator meetings, and sponsored conferences keep state scientists informed of invasive forest pest threats from around the world or the state next door.

The task force discussed that local government staff and officials are just starting to become aware of the threat of new invasive tree pests and their potential roles should a major outbreak occur in their community. Because the standard response to emerald ash borer is to remove all apparently healthy ash trees in a half mile radius around an infected tree, responding to EAB will pose new and different problems with enforcement and public acceptance than encountered with past efforts primarily focused on Dutch elm disease.

See Appendix E: Summary of 2007 Invasive Species Activities for a more specific list of ongoing activities in Minnesota to address invasive species.

Forest Protection Plan Task Force Recommendations

The Forest Protection Plan Task Force had a very broad scope, little time, and minimal funds to complete its task. While there is work underway in a number of areas for protection of our forest resources, more work, especially in forging a coordinated partnership with the key parties, needs to be done. Further, the issue is complex and involves a wide variety of interested parties including multiple agencies from the federal, state, and local level.

The task force talked about the need for the federal and state agencies to communicate what they are doing for invasive species management to a broader audience of stakeholders including counties, townships, cities and various nonprofit associations. Further, the task force discussed the opportunity for federal and state agencies to work with key stakeholders to identify what needs to be done, develop partnerships to address these needs, and work cooperatively to improve overall invasive species management in Minnesota. The task force noted that a significant level of risk exists in Minnesota from invasive species activity. Without a partnership of these stakeholders, the protection for Minnesota's trees and forests is not sufficient to deal with the growing invasive species threat.

From these discussions, the task force developed recommendations that provide a broad outline for a plan. The task force reviewed and discussed these recommendations and proposed they be included in this report by informal consensus. The state and federal staff, as ex offico members, provided valuable input during these discussions, but their participation on this task force does not constitute an endorsement or formal approval by their respective agencies of the recommendations developed. The recommendations are based on a series of goals developed by the task force. The goals are:

- **Statewide Protection Using Oversight and Detection**
- **Effective Partnerships for a Flexible Comprehensive Tree Program**
- **Capacity Building Through Education, Training, and Outreach**
- **Clarifying Roles and Responsibilities for Prevention, Detection, Response, Control and Management, Rehabilitation, Outreach, and Education**
- **Integrated Planning and Implementation of a Forest Protection System**
- **Adequate Funding to Support Designated Roles and Responsibilities**

Using the above-mentioned goals to provide focus and direction, the task force forged a series of recommendations that became the first step in creating a Forest Protection Plan. It should be noted, however, that there is still much work to be done in working out the details of the plan and overseeing its implementation. (See Appendix C for the task force meeting notes that show how the goals were used to develop the recommendations and to provide more detail on the developed plan.)

A. Engage the Forest Protection System

1. **Create a Clear "Front Door" for Interested Parties to Enter the System**
   Because so many state and federal agencies are involved, the public and local officials are often uncertain as to whom to contact. Provide an entry point (1-800 number and web site) for the public and stakeholders to enter the Forest Protection System to report possible invasive species activity, raise concerns about forest protection issues, and gather information about forest protection in Minnesota. The information provided through this "front door" will be added to the state's forest protection database. Further, the database can be used to provide assistance to those contacting the state through this system to address a number of forest protection issues.

B. Strengthen the Forest Protection System

1. **Conduct risk assessment**
   Federal, state, and local agencies should work together to conduct a risk assessment determining the various forest and/or tree resources at risk and the potential for new pests, including their routes or pathways to Minnesota's forest and trees.

2. **Coordinate a statewide structure for action on invasive species**
   While much is being done statewide, more focus needs to be placed on coordination and strengthening of existing programs and services to effectively and efficiently address the invasive species issue. The statewide structure, inclusive of the wide variety of stakeholders involved, needs to clearly outline regulations, authorities, and enforcement for addressing terrestrial invasive species affecting forests in Minnesota. Further, the statewide structure should outline ways to communicate and coordinate among these stakeholders.

3. **Define critical roles in the system**
   One of the key steps in coordination of the statewide structure is to identify and define the various roles. These roles start with identification of the lead person/entity, the critical partners, and the supporting players on a specific issue or topic.

4. **Engage stakeholders for planning and implementation**
   There are a number of stakeholders that make up the forest protection system statewide. Officials from the federal government, state government, tribes, local units of government, various universities and colleges, and a collection of nonprofits all are critical players in the system. These officials need to be involved in developing the plan for the system and are critical players in its implementation.

5. **Build trust with stakeholders by coordinating as equal partners**
   With the wide array of stakeholders involved in Minnesota's forests and their protection, it is important to coordinate with them as equal partners, with respect to the various stakeholders' mandates and responsibilities. As the structure is developed, the plan will work toward making all stakeholders, including local governments, non-governmental organizations, and tribes, into equal partners and will give them "ownership" in the system.

6. **Incorporate protection for forest and tree resources at risk into local, state, and federal comprehensive plans**
   For this plan to be viable into the future, protection of our forest and tree resources needs to become a responsibility of all jurisdictions. Only by incorporation in the various plans of these jurisdictions do we ensure a long-term, dynamic system for the protection of these resources.

C. Establish a Communication Program for Forest Protection

1. **Develop a communication program**
   Establish a statewide communication plan to assure effective and timely communication with local, regional, state, and federal agencies, tribal governments, elected officials, academia, industry professionals, the media, the public, local emergency management, and other stakeholders about invasive species' threats to trees and forests. Prevent or control harm to plant health, human health, the environment, and economic health by providing consistent, timely, clear, and accurate information. Learn from other states impacted by invasive species. Identify a Public Information Office (PIO) who will serve as the communication manager and media liaison. Conduct "Train the trainer" seminars/workshops for stakeholders.

D. Finance Forest Loss Prevention and Protection

1. **Make clear that forest industries are a critical component of the state's economy**
   Forest industries (pulp and paper, engineered wood, lumber, lumber-based products, and secondary forest products) contribute around $7 billion a year to the Minnesota economy. While parts of the industry are currently in a difficult situation due to the housing market problems and other economic pressures, this has been a legacy industry that Minnesota should nurture.

   Further, trees can help to address global climate change. One of the greenhouse gases causing the most concern is carbon dioxide. Plants take this gas out of the air and use it in photosynthesis. Carbon is stored in the wood and living tissues of trees. When leaves fall and are composted, carbon is added to the soil. This improves the soil for plant growth and stores more of the carbon in the form of soil organic matter. Carbon can be stored for hundreds of years in the trunks of trees or in the form of lumber, furniture, and other wood products. With a sustained or increased tree cover, greenhouse gases can be reduced.

2. **Quantify the contribution of our forests to the state's environmental goals and annually calculate the gain or loss of this contribution.**
   Minnesota has stepped up to lead the nation with strong, tough goals in reducing the environmental impact of meeting its energy needs and dramatic goals in reducing its carbon footprint. Our industrial, natural, and community and urban forests are major natural contributors to those goals. Our forests also contribute to the state's Clean Water Goals by the role they play in absorbing stormwater runoff and stabilizing soils. The USDA Forest Service has developed tools to measure the environmental contributions of trees that have been applied to the Minneapolis urban forest, as mentioned above. The research tools available to local communities at http://www.itreetools.org/ should be adapted to quantify the contributions of both community and rural forests statewide.

   Valuation will be useful as the state and the nation seriously ponder how to implement a "cap and trade" system to help reduce global climate change. Based on this, a long term goal would be that a minimum of 1 percent of the total value to our economy and our environment should be invested in tree loss prevention and protection annually.

3. **Invest $1.5 million a year in a statewide early detection and public education efforts.**
   Hundreds of millions of dollars have been spent in other states taking down trees after an invasive pest has become established. In many cases the initial invasion and detection was in a developed area – the areas least likely to have ongoing professional monitoring and management. Protection and early detection is most cost-effectively accomplished by professional staff supporting a volunteer-based program throughout the state. Similar models have been established successfully for years in other states such as Wisconsin and Ohio.

   This is a small investment for the protection of a $7 billion economic impact in the forest industries and the major property, energy, and environmental contributions in developed areas.

4. **Establish a Community Forest Management and Re-leaf Fund of $30 million, of which up to 5 percent would be available for management of storm damage and tree replacement.**
   A more diverse forest will better withstand the increasing waves of destructive tree pests that have become a side effect of increased global trade and increased mobility of people. For example, some small towns could lose almost all of their trees if the emerald ash borer gets established. Effective responses to storm events and tree replacement offer opportunities for a strengthened community forest in areas hit by natural disasters. Struggling city and county budgets have resulted in curtailed investments in the detection, removal, and replacement of diseased trees and accelerate further loss. Wildfires that may result from insect and disease damage are extremely expensive to fight, risk loss of life and property, and release huge amounts of carbon into the atmosphere.

In the initial years of Dutch elm disease response, the state invested in the MDA Shade Tree Program fund nearly $30 million a year for six years in response and replacement funds. State partnership with local governments in this control of invasive species, such as Dutch elm disease, has dwindled to no state appropriation. Budget pressures on local governments have also resulted in reduced investment in forest management. These funds should be available to local governments and (through a county or regional entity) to small non-commercial woodlot or rural property owners.

5. **Establish an "Invasive Forest Pests Response Fund" with ongoing appropriation for its use in outbreak response. Funding at a level of $10 million is recommended.**
   We suggest exploring having these funds designated as a component of the state's "rainy day budget reserve" so they would not require new general fund appropriations. These funds would enable immediate response to an outbreak that occurs when the legislature is not in session to appropriate funds and while applying for federal funding participation. This fund would operate similarly to the state wildfire emergency response fund which has served Minnesota well over the years.

   Once an invasive pest is detected, a fast and immediate response is critical to its containment. Yet the financing of forest response is very fragmented and unreliable. While in the past the federal government has been a strong partner, federal budget cuts have reduced the federal role. Federal funding for most outbreaks is a negotiated participation with no assurance about the level or sustainability of federal support. Minnesota has not made funds available for an immediate major response, and current staff and response budgets are barely adequate for current workloads.

   The MDA program funded by state monies and some federal grant funds to slow the spread of the gypsy moth has demonstrated in Minnesota the value of immediate, adequate funding to stop invasions. Invasions of gypsy moths in northern Minnesota have been contained as a result of the concentrated effort this enabled.

   Response is not inexpensive. A single significant invasion of the emerald ash borer could cost as much as $1 million if in a developed urban area, and $2 million if in a more rural setting.

   Because of the preliminary nature of the work of the task force, the dollar amount for this fund is only an estimate. The nature and location of the outbreak, the response required, and the potential for a lag in obtaining federal funds complicate making a more definitive estimate of needs for an emergency response fund.

6. **Fund the Minnesota Forest Resources Council to continue to develop a more detailed forest protection plan in partnership with a broad array of stakeholders. Estimated cost: $75,000**
   This effort just touched the surface on many important issues and was not able to comprehensively assess any specific component. A broad stakeholder group with input from state and federal agencies and the University of Minnesota should develop and refine a comprehensive statewide prevention, detection, response, replanting, and management plan that further outlines roles and responsibilities, best practices, and strategic investments at a much greater level of detail than has been possible in this report.

Appendices

Appendix A – 2007 Legislation

S.F. No. 2096, 3rd Engrossment - 85th Legislative Session (2007-2008) Posted on May 07, 2007

A bill for an act

relating to state government; appropriating money for environment, natural resources, energy, and commerce; modifying provisions related to agency service requirements, land acquisition, authorized sales, railroad prairie right-of-ways, county and municipality comprehensive plans, off-highway vehicles, prairie plant seed production, invasive species, state recreation areas, canoe routes, timber sales, mineral payments, wetlands, individual sewage treatment systems, and genetically engineered organisms; providing for venison donation, plant and …

Sec. 159. **FOREST PROTECTION PLAN.**

Subdivision 1. **Task force plan.** (a) The Forest Resources Council shall create a task force to develop a plan to prepare the state for early detection, appropriate response, and educating the public regarding invasive pests that threaten the tree cover of Minnesota. The task force also may give advice on how to best promote forest diversity and the planting of trees to address environmental challenges with the state. The plan must address:

(1) current efforts to address forest pests, what geographic areas and property types have regular and active monitoring of forest pests, and gaps in the adequacy of the current oversight and detection system;

(2) how the state may establish a flexible, yet comprehensive, system of tree monitoring so that trees in all areas of Minnesota will be covered by active early pest detection efforts. In analyzing this, the task force shall consider possible roles for certified tree inspectors, volunteers, and state and local government;

(3) current storm damage response and how that might be improved for forest health and to minimize vulnerability to pest infection;

(4) the adequacy of the current response plan, the clarity of state and local roles and responsibilities, emergency communication plans, and the availability of needed funding for pest outbreak response and how to scale it up should a major outbreak be detected;

(5) recommendations for clear delineation of state and local roles in notifying property owners and enforcing remediation actions;

(6) the best approach to broad public education on the threats of new invasive tree pests, the expected response to an outbreak, the value of trees to our environment, and the promotion of a more diversified tree cover statewide; and

(7) an assessment of funding needs and options for the above activities and possible funding approaches to promote the planting of a more diverse tree cover, along with assisting in the costs of tree removal and replacement for public entities and property owners.

(b) A report and recommendations to the legislative committees with jurisdiction over natural resources and to the Legislative-Citizen Commission on Minnesota Resources shall be due on December 15, 2007.

Subd. 2. **Task force creation.** The chair of the Forest Resources Council and the commissioners of agriculture and natural resources shall jointly appoint the members of the task force, which shall include up to 15 members with representatives of the University of Minnesota; city, township, and county associations; commercial timber

and forest industries of varying size; nursery and landscape architecture; arborists and certified tree inspectors; nonprofit organizations engaged in tree advocacy, planting, and education; master gardeners; and the Minnesota Shade Tree Advisory Council and a tribal representative recommended by the Indian Affairs Council.

Representatives of the Departments of Agriculture and Natural Resources shall serve as ex-officio members and assist the task force in its work.

Appendix B – Task Force Membership

Member	Gary	Johnson	University of Mn Extension
Member	Kent	Sulem	MN Assoc. of Townships
Member	Ralph	Sievert	MPRB Forestry Division
Member	Bruce	Cox	Assoc of MN Counties
Member	Bob	Fitch	MN Nursery & Landscape Assoc
Member	Ken	Simon	MNSTAC
Member	Tim	O'Hara	MN Forest Industries
Member	Barb	Spears	MN Forestry Assoc.
Member	Mike	Benedict	Bureau of Indian Affairs
Member	Kathy	Widin	Plant Health Assoc's Inc.
Member	Janette	Monear	Nonprofit - tree advocacy
Member	Katie	Himanga	Master Gardener
Member	Chris	Brokl	Mn Assoc. of Consulting Foresters
Ex Officio	Terry	McDill MN	Dept of Agriculture
Ex Officio	Alan	Jones MN	DNR Forestry
Ex Officio	Luke	Skinner	MN DNR Ecological Resources
Ex Officio	Mike	Connor	U.S. For. Serv
Ex Officio	Kevin	Connors	USDFA, APHIS - PPQ
Ex Officio	Leann	Buck	MN Assoc of SWCD
Ex Officio	Jim	Lemmerman	BWSR
Legislator	Diane	Loeffler	House of Representatives
FRC	Dave	Zumeta	MN Forest Resources Council
Facilitator	Charlie	Petersen	MAD/Admin

Appendix C –
Meeting Notes of Forest Protection Plan Task Force

Forest Protection Plan Task Force

The 2007 Minnesota Legislature directed the Minnesota Forest Resources Council to create a Forest Protection Plan Task Force (see Appendix A for legislation). The statutory charge to the task force was "to develop a plan to prepare the state for early detection, appropriate response, and educating the public regarding invasive pests that threaten the tree cover in Minnesota."

Methodology

The Forest Protection Plan Task Force met three times from October 2007 through November 2007. The Minnesota Forest Resources Council contracted with Management Analysis & Development (MAD) in the Department of Administration to facilitate the meetings of the Forest Protection Plan Task Force and draft a report. The meetings were open to the public, and additional people attended to listen to the discussion and provide input. The task force, through a facilitated process, reviewed the current actions by the various federal, state, and local agencies, discussed gaps in the services provided, identified goals to address the gaps, and crafted a draft work plan to reach the goals. From the work plan, the task force reached agreement on the set of recommendations outlined in this report.

Rough Draft Strategic Plan

The Forest Protection Plan Task Force had a very broad scope, little time, and minimal funds to complete its task. The task force conducted the strategic planning process under these constraints. The task force determined that work underway in a number of areas for protection of our resource, however more work, especially in forging a coordinated partnership with the key parties, needs to be done. Further, the issue is complex and involves a wide variety of interested parties including multiple agencies from the federal, state, and local level.

To best use the time, some of the development of the plan was done by small groups and individual members. While a format for the plan was provided, it occasionally did not meet the needs of the members or the topic. This did not deter the work of the task force for they developed their own format to present the data. Because of this, the draft plan has an inconsistent format.

The plan is not finished and more work needs to be done to review and complete the plan. It provides an initial step and foundation for continued effort to improve and coordinate the forest protection efforts between the multiple parties involved in Minnesota.

Forest Protection Plan Task Force What do we need for a strong Forest Protection system?						November 1, 2007
How do we create this system?	**A. Statewide Protection Using Oversight and Detection**	**B. Effective Partnerships for Flexible Comprehensive Tree Program**	**C. Build Capacity Through Education, Training & Outreach**	**D. Clarify Roles & Responsibilities (Prevention, Detection, Response, Aftermath, Outreach & Education)**	**E. Integrated Planning & Implementation of Forest Protection System**	**F. Adequate Funding to Support Roles & Responsibilities**
PREVENTION • **Planning** • **Implementation** • **Fiscal** **EARLY DETECTION & RAPID RESPONSE** • **Planning** • **Implementation** • **Fiscal** **CONTROL & MANAGEMENT** • **Planning** • **Implementation** • **Fiscal** **REHABILITATION & RESTORATION** • **Planning** • **Implementation** • **Fiscal**	• Geographic disparities with the state in detection and response capacity • Staffing for identification help: assist private landowners, rural land owners, and municipalities • Establish statewide network of financial and technical assistance • Regulations – penalties • Incentives (funds to city to include natural resources in comprehensive plan)	• State transfer of information to local units of government • Clarity of role and model response plans (best practices) • Comprehensive plans need natural resources component; access to experts • State and federal government centric – little reference to roles, engagement and partnership with others – LGUs, NGO, private • State/federal versus private, municipal, county, tribal, etc. • Local government funding • Identify and engage all stakeholders – shared resources and expertise	• Capacity (resources in agency) for education and outreach • Public education strategy and implementation plan • Communication Plan to identify target audiences (i.e. land managers, land owners, youth groups such as Scouts, etc.) • Provide a unified and coordinated message from all agencies to Mn citizens • Link this to the value of trees (especially water quality) • Acceptance of pesticide use for control • Legislative and congressional knowledge and support • Visibility of the issue, risks, needs • Citizens: define role, need to be convinced • Involvement of key players – resort owners, tourism industry • Coordinate and support existing educational efforts such as Master Volunteer programs (Woodland Advisor, Master Gardener, etc.) and private efforts (industry, non-profits, etc.) • Fund statewide Education/Outreach coordinator • Awareness of risk	• Create a comprehensive plan including an implementation strategy and timeline • Clarify responsibility between MDA & DNR as to when an invasive pest becomes "established" • Full understanding of current efforts • No clear "front door" Ex. Interagency Fire Center, 1-800-number • Clarify and communicate roles and responsibilities among all levels of government in Mn and between state and federal agencies involved in invasive species efforts • Coordination among agencies (save money, detection, education) – MIFC	• Statewide tree protection plan • Create a comprehensive plan and implement • Aftermath response (if prevention & early controls fail) • Capacity to maintain tree health • County and local government input into planning & priority setting coordination with local efforts • Adequacy of current survey efforts • Regulations – penalties • Incentives (funds to city to include natural resources in comprehensive plan) • Quarantine issues; timelines and costs • Build on existing planning efforts such as MISAC Statewide Plan, GMPAC, etc.	• State funding constraints across fiscal years & biennia • Consistent & stable state funding • Timely state funding to meet needs • Capacity to implement plan • Appropriation dependent – need on-going emergency response funds • How federal funds are allocated to the state agencies • State match for federal funds • Timing of when federal funds are available Competition for funds – all budget levels • Adequacy of outbreak funding (scalability of funding & human resource needs in a timely way) • Identify alternative funding sources for outreach/education materials or other needs from corporations dependent on tree resource or foundations.

GOAL A: Statewide Protection Using Oversight and Detection

General Strategy: Develop a statewide structure for oversight and detection	***Who*** ***MDA, DNR, LUGs***
1. PREVENTION	Who
• **Planning – Assess resource at risk (tree inventories)** **- Incorporate protection for resource at risk into city comprehensive plans** **- Incorporate Best Practices into city operations. Best practices can include preparing a response plan, updating ordinances, policies and procedures, identifying a lead tree person and outlining his/her authority……**	**DNR, LUGs**
• **Implementation– Risk assessment for new pests and pathways……** o **Inspections……** o **Quarantines……**	**MDA** **MDA, PPQ** **MDA, PPQ, tribes**
• **Fiscal - Fund outreach and technical assistance to statewide groups of city administrators, public works directors, elected officials and individual cities.**	**MDA, DNR, Ext.**
2. EARLY DETECTION	Who
• **Planning - Develop statewide structure** o **Reduce geographic disparities within the state in detection and response capacity. NOTE: might include tabletop testing and fine-tuning the response plan for various regions……**	**MDA, DNR, PPQ, FS, LUGs**
• **Implementation – "Front door"/1-800-# (same as item in column 4)** o **Detection trees……**	**MDA, DNR, PPQ, FS**
o **Outreach……** o **First detector training ……**	**MDA, DNR, U of M**
• **Fiscal - insure that front line partners have adequate staff to provide identification help to private landowners, rural land owners, and cities**	**U of M, DNR, MDA**
and RAPID RESPONSE	
• **Planning – Develop structure (ICS/NIMS based?) for LUG response……....**	Who
• **Implementation – Staffing for ID help: assist rural & private landowners and LUGs……..**	**MDA, DNR, LUGs**
• **Fiscal**	**MDA, DNR, FS, certified tree inspectors**

3. CONTROL & MANAGEMENT • **Planning – Develop statewide structure with a clear outline of authorities, regulations and penalties that can stand up to legal scrutiny** **- Assess resources for tree removal, disposal……** o **Develop utilization plan……..** • **Implementation – Provide assistance and incentive……** • **Fiscal - NOTE: This is the level at which cities may need direct financial assistance. Some pests will overwhelm city financial resources**	Who **MDA, DNR, FS, LUGs** **MDA, DNR, FS, LUGs, industry** **DNR, FS**
4. REHABILITATION & RESTORATION • **Planning – Develop silviculture Best Practices……** **- Restoration program (e.g., ReLeaf)……** • **Implementation – Provide assistance and incentive……..** • **Fiscal – Identify emergency funds……..**	Who **DNR, FS, LUGs, industry** **DNR, DOT** **DNR, FS, DOT, LUGs** **DNR, DNR, DOT, FS, LUGs**

Goal B: Effective Partnerships for Flexible Comprehensive Tree Program

- Information should be transferred from a central Office that is shared by State and Federal Agencies to make it seamless to the public.
- State, Federal and specifies exactly what they can do based on their mission, policy and laws that guide their operations. Can work from this template to see how each can work together.
- Use existing into each expertise of each, agency, university etc. This seems to have already been done on a professional level.
- State and federal government coordinate as equal partners, with respect to their mandates and responsibilities; to provide technical assistance, plans, funding. Work towards making other local governments, NGO's and tribes into equal partners and work towards giving them "ownership".
- Encourage non state and federal groups to either develop their own plans, adopt plans already in place.
- Centric – little reference to roles, engagement.
- Acceptance of pesticide use for control(Federal and State Environmental regulations)
- Clarify responsibility between MDA & DNR as to when an invasive pest becomes “established”
- Aftermath response (if prevention & early controls fail)
- Quarantine issues; timelines and costs

Goal C: Build Capacity through Education, Outreach, and Training

General Strategies
• Establish a statewide **communications plan** to assure effective and timely communications with local, regional, state, and federal agencies, tribal governments, elected officials, academia, industry professionals, the media, the public, local emergency management, and other stakeholders about invasive species' threats to trees and forests. • Prevent or control harm to plant health, human health, the environment, and economic health by providing **consistent**, timely, clear, and accurate information. • Learn from other states impacted by invasive species. • Avoid panic. Prepare for social impacts (resistance) of tree removal and other significant impacts and reactions.

Prevention Strategies	**Who**	**When**
Planning:		
• Identify a Public Information Office (PIO) who will serve as the communications manager and media liaison. The PIO will report to the person overseeing the response. o Support staff will assist the PIO with writing press releases and talking points, gathering facts needed to respond to requests for information, and monitoring the Hotline (see next point).	MDA	**6/30/08**
• Appoint an independent, statewide Education Coordinator to help implement the statewide communications plan. This person could "learn from other states" and ensure efficiencies and consistent messages.	**Interagency Team**	**6/30/08**
• Establish a Hotline ("the front door" or 1-800-TREE) as a one-stop source of information on invasive species threats. o Post updated information on MDA's web site.	**MDA**	**9/30/08**
• Develop a detailed checklist of internal, interagency, and external communications functions.	**PIO**	**8/31/08**
Implementation:		
• Develop an emergency contact list for agencies	**MDA MISAC**	**10/31/08**
• Also, develop a **dissemination list** for various audiences with which to communicate (*e.g.,* media, industry, nurseries and landscapers, arborists, pesticide applicators, other stakeholders)		
• Conduct "Train the trainer" seminars/workshops (agency field staff, foresters, arborists, CTI's, etc.) o Seminars/workshops for next tier (landscapers, nurseries, tree care advisors, tree boards) o Seminars/workshops for non-professional associations associated with the environment (*e.g.,* Trout Unlimited, Audubon Society, etc.)	**DNR w/UMN**	**2008**
• Conduct a "campaign of awareness" to the public and other stakeholders to put them on alert o Billboards, inserts with fishing licenses, hunting	**MDA**	Roll out during sesquicentennial

licenses, camping permits, professional license renewals, public service announcements timed with popular camping holidays, State Fair) • Develop a list of informational materials to meet the needs of various impacted groups (posters, pamphlets, fact sheets, videos/DVD's, agency publications, web sites, "most wanted" pest posters at Post Offices, etc.) • Create an Advocacy Advisory Team, consisting of reps from agencies, private organizations, some state departments (such as Health, Tourism), and provide them with information about trees and their impacts on their respective missions and goals. This team could help garner support for funding.	**PIO** **Education Coordinator**	Events 10/31/08 12/31/08
Fiscal: Legislature to fund the Public Information Officer, support staff, Education Coordinator, and Hotline	**Legis. (via MDA)**	6/1/08

Early Detection & Rapid Response Strategies	**Who**	**When**
Planning: • Inform agency staff and prep them on Public Information strategies • Develop and distribute a clear, consistent message • Distribute press packets	PIO, **MDA, Education Coordinator**	
Implementation: • Notify the Governor's office, legislators, and local elected officials • Develop talking points for the Governor and elected officials • Hold a press conference within 12 to 24 hours of positive identification of invasive species in Minnesota • Conduct public meetings in impacted areas • Distribute informational materials to groups identified on the **dissemination list.**	PIO **& staff and DNR**	
Fiscal: • Provide funding for press packets, public meetings, and other outreach, as needed. • Seek funding to minimize/mitigate the effects of invasive pests in order to reduce the costs associated with these pests if and when they impact MN.	DNR	

Control & Management Strategies	**Who**	**When**
Planning: • Update and modify the Communications Plan as needed	PIO and interagenc y team	
Implementation: • Follow the Communications Plan as modified • Follow the Incident Command System (CIS) protocols	PIO and interagenc y team	
Fiscal: Seek matching funds (federal) for control and management	DNR	

Rehabilitation & Restoration Strategies	**Who**	**When**
Planning: • Identify reforestation and rehabilitation needs in impacted areas	**Interagency team**	
Implementation: • Provide tree-planting and reforestation information, resources, and assistance to private landowners • Conduct training sessions and workshops on reforestation strategies	**PIO and staff** **Interagency team**	
Fiscal: • Seek funds for reforestation in impacted areas. • Reinstate ReLeaf funding to build capacity for urban forestry programs in cities, so that they can better manager their resource. There is historical precedent for ReLeaf.	DNR	

Goal D: Clarify Roles & Responsibilities: (Prevention, Detection, Response, Control and Management, Rehabilitation, Outreach & Education)

Strategies:

1. Coordinate and communicate actions between stakeholders

- *Stakeholders include: state, federal and some municipal agencies; local governmental units (counties, cities and townships); tribes; industry; non-governmental organizations; private land owners*
- *Goals of seamless interaction between stakeholders*
- *Use models where appropriate to create a successful common framework*

A. Determine and define what is each stakeholders' role in the areas of:
   i. Prevention
   ii. Early detection and rapid response
   iii. Control and management
   iv. Rehabilitation and restoration

B. Identify contact number and/or person in each area
   i. Prevention
   ii. Early detection and rapid response
   iii. Control and management
   iv. Rehabilitation and restoration

C. Develop a plan for information sharing and general communication in the following areas
   i. Prevention
   ii. Early detection and rapid response
   iii. Control and management
   iv. Rehabilitation and restoration

2. Create a "clear front door" for entering forest protection system

A. Using stakeholders identify a clear front door (network and response) for forest invasives in Minnesota
   i. 1-800- "invasive species" as initial contact
   ii. Network includes but not limited to: state urban forester responsible for region or area; state tree inspector program at DNR; Board of Soil and Water

B. Data collection and technical information to establish information files and ability to respond to a variety of issues (consider a flyer that includes what each agency/entity does)

C. Review and develop appropriate response – identify area for possible enforcement action and incentives (may need policy directive)

D. Address capacity issues
   i. Response plan including resources

ii. Test for appropriate capacity level(s)
iii. Ongoing evaluation
iv. Surge
v. Non-environmental response (i.e., legal issues or other support issues)
vi. State agencies ability to respond, including education

E. Educate, train, and develop outreach for first responders on who to contact and proper response

i. Best practices
ii. Campaign of awareness to public and other stakeholders (inform)

F. Review, evaluate and grow network – where to route an issue with case number for tracking purposes

GOAL E: Integrated Planning & Implementation of Forest Protection System

GENERAL STRATEGIES	WHO	WHEN
Identify all stakeholders that are connected in some way to invasive species affecting trees and forests. Use the communication strategies to contact and begin involving the stakeholders.	**MISAC**	7/1/08

PREVENTION STRATEGIES	WHO	WHEN
Develop generic prevention plans and species-specific plans for invasive species likely to affect MN trees and forests.	**MDA**	12/31/08
Stakeholders review and input into plans.	**MISAC**	3/15/09
Develop invasive BMPs to protect forests on state administered lands.	**DNR**	6/1/08
Review BMPs and work to expand them to other stakeholders.	**MISAC & MFRC**	12/31/08
Make presentation to MISAC & others on regulatory actions to meet threats	**MDA**	12/31/08
Review proposed quarantines (except emergency quarantines), provide input, and support through the stakeholder networks the proposed regulatory actions.	**MISAC**	As needed

EARLY DETECTION & RAPID RESPONSE STRATEGIES	WHO	WHEN
Develop generic EDRR plans and species-specific plans for invasive species likely to affect MN trees and forests.	**MDA**	12/31/08
Stakeholders review and input into plans	**MISAC**	3/15/09
All staff to complete ICS training hold one table top and one mock exercise a year, in order to identify stakeholders that would play a role, set up a communication network for identified members, and practice response.	**MDA**	12/31/08
Coordinate monitoring/survey needs and current plans among agencies and stakeholders (MISAC), and seek review and assistance to fully implement efforts.	**MDA**	3/1/08

CONTROL & MANAGEMENT STRATEGIES	WHO	WHEN
Develop species-specific control & management plans for invasive species likely to affect MN trees and forests including clear criteria when the invasives becomes established and DNR takes over.	**DNR**	12/31/08
Stakeholders review and input into plans	**MISAC**	3/15/09
Identify funding needs; seek support of stakeholders.	**DNR, MDA**	6/1/09
Coordinate monitoring/survey needs and current plans among agencies and stakeholders (MISAC), and seek review and assistance to fully implement efforts (yearly).	**MDA, DNR**	3/1/XX
REHABILITATION & RESTORATION STRATEGIES	WHO	WHEN
Develop species-specific rehabilitation & restoration plans for buckthorn as a model for future restoration plans.	**DNR**	12/31/08
Stakeholders review and input into plan.	**MISAC**	3/15/09
Identify funding needs; seek support of stakeholders.	**DNR**	6/1/09

Goal F: Adequate Funding to Support Roles & Responsibilities

A critical component of the state's economy

Forest industries (lumber, lumber based products, paper, and nursery stock) contribute over $7 billion a year to the Minnesota economy. While currently in a difficult market due to the housing market problems and other economic pressures, this has been a legacy industry that Minnesota has advantages in and should nurture.

A critical contributor to the state's energy and global warming goals

Minnesota has stepped up to lead the nation with strong, tough goals in reducing the environmental impact of meeting its energy needs and dramatic goals in reducing its carbon footprint. Our industrial, natural, and urban forests are major natural contributors to those goals. Our forests also contribute to the state's Clean Water Goals by the role they play in absorbing stormwater runoff and stabilizing soils. (cite recent Minnesota based study here that quantifies the value of one mature tree in CO2 sequestration, energy savings, stormwater runoff). Biofuels may create new opportunities.

Recommendation: Quantify the contribution of our forests to the state's environmental goals and annually calculate the gain or loss of this contribution. Valuation will be useful as the state and the nation seriously ponders how to implement a "cap and trade" system to help reduce global warming. Based on this, a minimum of 1% of the total value to our economy and our environment should be invested in tree prevention and protection annually.

Protection and early detection – a cost effective investment

Hundreds of millions have been spent in other states in taking down trees after an invasive pest has become established. In many cases the initial invasion and detection was in a developed area – the areas least likely to have ongoing professional monitoring and management. Protection and early detection is most cost effectively accomplished through a combination of professional staff supporting a volunteer based program throughout the state. Similar models have been established successfully for years in other states such as Wisconsin and Ohio.

Recommendation: Invest $1.5 million a year in a statewide early detection and public education effort. This is a small investment for the protection of a $7 billion economic impact in the forest industries and an estimated $ billion value in property, energy and environmental contributions in developed areas.

On-going tree replacement and effective management will build a more resilient forest

A more diverse forest will better withstand the increasing waves of destructive tree pests that have become a fact of global trade and increased movement. For example, some small towns could lose almost all of their trees if Emerald Ash Borer gets established. Effective management of storm blow down and replacement offers opportunities for a strengthened community forest in areas hit by natural disasters. Struggling city and

county budgets have resulted in curtailed investments in the detection, removal and replacement of diseased trees and accelerates further loss. Forest fires like the recent Ham Lake fire are extremely expensive to fight, risk loss of life and property, and release huge amounts of carbon into the atmosphere.

In the initial years of Dutch Elm response, the state invested $30 million a year in response and replacement funds. State partnership with local governments in this has dwindled to $ in DNR Releaf funds. Budget pressures on local governments have also resulted in reduced investment in forest management. These funds should be available to local governments and (through a county or regional entity) to small non-commercial woodlot or rural property owners.

Recommendation: Establish a Community Forest Management and Re-leaf Fund of $ million, of which up to 5% is available for storm response.

Immediate access funds critical to containing pest invasions

Once an invasive pest is detected, a fast and immediate response is critical to its containment. Yet the financing of forest response is very fragmented and unreliable. While in the past the federal government has been a strong partner, federal budget cuts have reduced their role. Federal funding for most outbreaks is a negotiated participation with no confidence about the level or sustainability of their support. Minnesota has not made funds available for an immediate major response and current staff and response budgets are barely adequate for current workloads in response.

The special federal grant program to slow the spread of Gypsy Moth has demonstrated in Minnesota the value of immediate, adequate funding to stop invasions. Invasions of gypsy moths in northern Minnesota have been contained as a result of the concentrated effort this enabled.

Response is not inexpensive. A single significant invasion of Emerald Ash Borer could cost as much as $1 million if in a developed urban area, $2 million if in a more rural, country setting.

Recommendation: Establish an "Invasive Forest Pests Response Fund" with on-going appropriation for its use in outbreak response. The state forest fighting budget is a similar model that has well served the state over the years. Funding at a level of $10 million is suggested but it could be designated as a component of the state's "rainy day budget reserve" and not require new general fund appropriations.

Failure in detection and containment will be enormously expensive

Some states have had to remove millions of trees after Emerald Ash Borer became entrenched. Hundreds of millions of dollars have been spent by some states. Because the economy and environmental health of the entire state is put at risk if any one community or geographic area fails to adequately detect and respond to a new pest invasion, a comprehensive statewide system of monitoring, management and forest diversification is needed. First response funding should be primarily state and federal funded. Just as the

state and federal government step up to assist with public costs after a natural disaster such as a flood or tornado, the burden of response should not be on local property tax payers.

Recommendation: Fund the Forest Resources Council to continue to develop a more detailed Forest Protection Plan in partnership with a broad array of stakeholders. Estimated cost:

This effort just touched the surface on many important issues and was not able to comprehensively assess any specific component. A broad stakeholder group with input from state and federal agencies and the University of Minnesota should further develop and refine a comprehensive statewide prevention, detection, response, replanting and management plan that further outlines roles and responsibilities, best practices, and strategic investments at a much greater level of detail than this report.

Appendix D – State and federal authorities and areas of responsibility with regard to invasive forest pests

Area	APHIS	MDA	FS	DNR
Manage invasive pests not yet permanently established in MN (like gypsy moth & emerald ash borer)	●	X		
Manage invasive pests permanently established in MN (like oak wilt & Dutch elm disease)			●	X
Regulate interstate trade including nursery & wood products	X	●		
Regulate intrastate trade including nursery & wood products	●	X		
Survey for invasive pests not yet permanently established in MN	X	X	●	●
Survey for invasive pests permanently established in MN			X	X
Eradicate isolated infestations of invasive pests not yet permanently established in MN	X	X		
Treat spreading populations of invasive pests not yet permanently established in MN	●	X	X	
Manage general infestations of invasive pests permanently established in MN			X	X
Educate public and stakeholders	X	X	X	X

This matrix describes:

primary responsibilities (X) and
traditional partnerships (●).

This matrix is not intended to provide a comprehensive summary of everything each agency does. In reality, all four agencies work closely together in all aspects of invasive species management (APHIS = USDA Animal and Plant Inspection Service, MDA = Minnesota Department of Agriculture, FS = USDA Forest Service, and DNR = Minnesota Department of Natural Resources).

Appendix E:
Summary of 2007 Invasive Species Activities

PREVENTION

Emerald Ash Borer Prevention

MDA has conducted an intense outreach campaign for emerald ash borer, especially during Emerald Ash Borer Awareness Week, from May 20 to May 26, 2007. MDA sponsored tree signs saying "Caution: Emerald ash borer beetles have destroyed 20 million trees and billions are at risk…" on ash trees at county and other local units of government parks, and provide information through news stories and press releases. MDA convened a Readiness Planning Team that meets monthly (last Thursday of each month), an interagency group that addresses readiness issues regarding emerald ash borer. General outreach materials include a wallet-sized plastic identification card, usually targeted for tree care/plant health professionals or interest groups. For the general public, MDA developed a tent card on emerald ash borer info and a poster of emerald ash borer information. In addition, emerald ash borer surveyors contact city and county personnel (from foresters to public works directors) to work with them as cooperators with trap trees, thereby raising awareness of the possible impacts of this pest.

The "Don't Move Firewood" Campaign

Firewood movement is a high-risk pathway for long-distance spread of a number of invasive tree pests including emerald ash borer, gypsy moth, Asian longhorned beetle, Sirex wood wasp, and possibly the sudden oak death pathogen. Moving firewood is part of our culture and behavior change requires long-term, extensive outreach. To help prevent the introduction of invasive tree pests into Minnesota, we have advised people to sell or obtain firewood at or near the location where it will be burned rather than moving it. This message has been in letters, posters, brochures, billboards, and bookmarks that have been mailed or delivered throughout the state. Since January 2007, over 170,000 "Don't Move Firewood" bookmarks have been distributed. Campground owners and staff, firewood dealers, loggers and truckers, the Minnesota Forest Resources Council, tourism and recreation organizations as well as the general public have been targeted by our outreach efforts and, in turn, have participated in further outreach

Regional Pest Risk Assessments

MDA has explored the advantages and disadvantages of pest risk assessments, which could help MDA determine which pests are most likely to invade and cause problems in the state. Resources can then be focused on the pests with highest risk. Pest risk assessments are done on a national basis by APHIS for foreign pests that present a high level of risk for entry. Some risk assessments are for pests that are not of concern to Minnesota such as citrus canker and citrus greening. Therefore, MDA worked with FS to develop state specific semi-quantitative pest risk assessment that could indicate the relative probability of pests invading and causing harm in Minnesota. Four risk assessments were completed. Each pest risk assessment took about one month to complete. The process could probably be shortened to two PRA's a month, however, the time requirements were too onerous to continue with the limited staff.

MDA Regional Pest Risk Assessments

Score	Pest
170	Emerald Ash Borer
121	Sirex Wood Wasp
121	Swede Midge
63	Siberian Moth

Federal Permit Review
Federal permits, administered by APHIS, are required for interstate movement and release of plant pests (e.g., plant feeding insects, mites, snails, slugs, etc., and plant pathogenic bacteria, viruses, fungi, etc.), biological control organisms of plant pests and weeds, bees, parasitic plants and federally listed noxious weeds. This permitting process includes a step for state concurrence on the permit. MDA reviews the federal permit applications pertaining to Minnesota. If the organism and the specific permit conditions pose negligible economic or environmental risk, MDA will concur. However, if MDA has concerns about the organism or specific permit conditions, recommendations will be made to decrease the risk of economic or environmental impacts. From January 1, 2007 to September 10, 2007, MDA has reviewed over 82 federal permits.

EARLY DETECTION OF AND RAPID RESPONSE

Early Detection

Emerald Ash Borer:
Emerald ash borer, a significant threat to all native ash species, has invaded the Great Lakes states, but is not yet known to occur in Minnesota. Traps are currently not available for this pest, so survey efforts rely on the use of detection trees. Detection trees are girdled to make them attractive to the beetle, and later peeled to search for signs of infestation.

Allocation of detection trees has been optimized by MDA efforts to model and map areas of Minnesota with the greatest likelihood for introduction of this pest. MDA has 1,350 detection trees in place (1,225 from 2007 and 125 from 2006). Of these, all the detection trees from 2006 and up to 800 of the detection trees from 2007 will be peeled in autumn 2007 to look for signs of emerald ash borer infestation. The remainder will be peeled in 2008 with additional detection trees set that year.

DNR detection trees are established on state land, specifically in state parks, in areas of declining ash, and in areas where there is a significant component of ash in the stand. Twelve detection trees on four sites established in spring 2006 will be felled and peeled in fall 2007, and twelve new detection trees will be established in 2007 to be peeled during the fall 2008. In addition to detection trees, DNR conducts aerial detection surveys for this pest. Establishments that handle wood products and considered high risk for pest introduction are identified by APHIS will be inspected from the air during general detection aerial sketch mapping flights. Locations of trees with dieback located within a two-mile radius of the mills will be highlighted and ground checked if accessible. Twelve sites were targeted and APHIS will ground check based on the results of the aerial detection.

In Chicago and many other areas where emerald ash borer has been discovered, members of the public called the local department of agriculture to report a suspect beetle, which was later confirmed to be emerald ash borer. Calls to the MDA for suspect emerald ash borer have increased dramatically since the outreach campaign described in Appendix II. From August 2005 to August 2006, 11 phone calls were received to report suspect beetles to MDA. From August 2006 to August 2007, 114 phone calls were received. Each call is investigated and documented until completed.

Sirex wood wasp:
The Sirex wood wasp, a significant pest of pines, has invaded New York, Pennsylvania, and Ontario, but has not yet been detected in Minnesota. Despite receiving funding from separate entities, MDA and DNR coordinate their surveys with each other and federal partners to minimize overlap of effort and to maximize the likelihood of detecting an early infestation by trapping near sites with higher risk for introduction of the pests.

MDA traps for the Sirex wood wasp survey were placed at 27 locations, with three traps per location, near the Twin Cities, St. Cloud and Duluth. DNR traps were placed at nine locations, with one trap per location, in Hibbing, Cohasset, Longville, Bemidji, Grand Rapids, Virginia, Brainerd and Baxter; northern Minnesota. APHIS PPQ placed 16 additional traps at 16 locations in the Twin Cities and environs surrounding the Port of Duluth.

Exotic bark beetles:
Non-native bark beetles and other wood-boring beetles are some of the most destructive pests impacting forests in the United States. As with the Sirex wood wasp surveys, exotic bark beetle surveys are coordinated among MDA, DNR and federal partners to minimize overlap of effort and to maximize the likelihood of detection by trapping high-risk sites. Targets for this survey include ten of the most threatening exotic bark beetles intercepted during port inspections: *Hylurgops palliatus, Hylurgus ligniperda, Ips sexdentatus, Ips typographus, Orthotomicus erosus, Tomicus minor, Tomicus piniperda, Trypodendron domesticum, Xyleborus* and *Xylosandrus* spp.

MDA traps for exotic bark beetle survey were placed at 26 locations, with two traps per location, near the Twin Cities, St. Cloud and Duluth. Traps for the DNR survey were placed in nine locations, with three traps per location, in Hibbing, Cohasset, Longville, Bemidji, Grand Rapids, Virginia, Brainerd and Baxter. APHIS PPQ placed 114 additional traps at 38 locations in the Twin Cities and environs surrounding the Port of Duluth.

Asian long horned beetle:
The Asian longhorned beetle, a threat to hardwood trees (e.g., maples, birch, elm and ash), has been detected and quarantined in New York, New Jersey and Ontario, where eradication efforts are underway. It was also detected in Illinois, but was eradicated. It is not known to occur in Minnesota. Movement of nursery stock is a potential pathway for spreading this pest to new locations. MDA visually inspects stock at nursery growers and dealers for this pest. The survey effort for 2007 remains to be tabulated. In 2006, 367 growers and 275 dealers were inspected, with no Asian longhorned beetles detected.

Sudden oak death:
Sudden oak death, caused by the fungus *Phytophthora ramorum*, has invaded the western U.S. where it attacks oaks and several other hosts. Movement of infected plants is a likely means for long-distance dispersal of this pest. MDA conducts visual surveys of hosts (*Rhododendron*, *Syringa* and *Viburnum*) at nurseries. Samples are collected and analyzed at MDA's plant health laboratory through ELISA tests and PCR.

Douglas-fir beetle:
Douglas-fir beetles have been transported to Minnesota on western larch logs from Montana and Idaho. This pest may pose a threat to eastern tamarack in Minnesota. Previous MDA regulation appears to have been successful. MDA issued compliance agreements and trap catches decreased from 140 beetles in 2002 to zero beetles in

2006. The status of this pest in Minnesota continues to be evaluated. MDA and DNR coordinate an effort to place traps around the area where the beetle was first detected in 2001.

Light brown apple moth:
The light brown apple moth, which invaded the continental U.S. in California in March 2007, feeds on over 120 plant genera in over 50 plant families, including numerous hardwood and softwood trees. MDA traps for light brown apple moth are placed at 16 locations (i.e., parklands, nurseries and apple orchards) in Minnesota, with 1 to 3 traps per location. Trap locations include nurseries and other metropolitan areas with high likelihood for introduction of this pest. In the past, light brown apple moth traps were set in 9 apple orchards, with no pests detected. This trapping may continue next year, contingent on federal funds.

Gypsy moth:
The gypsy moth is a leaf-eating insect that is currently ranked as America's single most destructive pest of trees and shrubs. It was brought to Massachusetts from Europe in 1869 as part of a failed attempt to breed a hardier silk worm. The insect escaped with disastrous effects. Since the turn of the century, the gypsy moth has slowly spread westward from New England. Female gypsy moths cannot fly and deposit their eggs on objects near the trees on which they were feeding as caterpillars. These objects might be picnic tables, car wheel wells, grills or any outdoor household article or lawn ornament. When these objects are moved from an infested area, the gypsy moth eggs "hitch-hike" into other areas, hence the name gypsy moth.

MDA, in cooperation with APHIS, has had an annual gypsy moth trapping program in place since 1973. This summer, MDA trappers set about 20,000 gypsy moth traps. Traps are placed on public property, public rights of way and private property. MDA authority allows for trapping on private land, however, private landowners are asked for permission to place a trap on their land as a courtesy. Traps placed on private property are immediately removed if the landowner objects. The MDA telephone number is printed on each trap so landowners can call if they have questions. Early detection of new gypsy moth populations that have arrived through human transport has helped to keep Minnesota free of gypsy moth for 30 years.

New Weed Pests:
A random point roadside weed survey was conducted in 72 of Minnesota’s 88 counties with targets including both common weeds and six new invasive plants. Roadside weed surveys will continue with cooperators, including Mn/DOT and county agricultural inspectors using a common sampling protocol. In addition to these surveys, a cooperative early detection network for new weeds is being developed with the county agricultural inspectors and roadside vegetation management crews from Mn/DOT. This network will be expanded to other groups who are already in the field and can report new weeds in their areas, for instance DNR and county forestry personnel. MDA has a web-based GIS reporting site for these personnel to report new sightings of weeds in a geo-referenced format which facilitates followup.

General Detection Survey:
DNR conducts a general aerial detection survey of the major forested areas of Minnesota, 13 million acres, from early June through mid-July each year. Follow-up ground verification is performed for selected aerial survey polygons where the causal agent was unknown so that sufficient confidence is gained as to what cause the damage

detected from the air. Survey maps are provided to the field staff during the growing season to provide managers with current forest damage information, and insect and disease incidence information. Additional aerial and ground surveys may be undertaken in response to new pest outbreaks. Survey data is digitized, and digital data layers of the aerial detection results are made available to FS State and Private Forestry. Survey results are posted on the FS web site.

Rapid Response

Gypsy moth treatments:
This year MDA did not conduct any treatments for gypsy moth in Minnesota. As localized populations of gypsy moth develop from year to year, they are eradicated or suppressed to extremely low numbers. Last year, treatments covered over 137,000 acres in the Arrowhead region and 58 acres in Brooklyn Park. Early detection makes eradication projects less expensive and more successful because gypsy moth populations are smaller geographically and there are fewer moths to treat. Early results from the 2007 survey indicate that treatments will be likely in 2008.

Emerald Ash Borer Response Planning
The Minnesota Emerald Ash Borer Response Plan was developed by the emerald ash borer Readiness Team, which consists of representatives from MDA, DNR, APHIS and FS, as well as the University of Minnesota, Minnesota Department of Transportation, municipal governments, private industry and non-profit groups. Development of the Emerald Ash Borer Response Plan has been aided by false emerald ash borer reports and staged exercises that have required implementation of the plan. Staged exercises for emerald ash borer include an internal MDA table-top held in 2006, as well as a table-top held on August 21, 2006 involving the entire Readiness Team. Table-top exercises are planning exercises with a given fictional scenario and responses are discussed. In this case, emerald ash borer was fictionally detected in Minnesota, and action steps were planned and assigned to team members, but not physically carried out. On June 28, 2007 a full response mock exercise was held, in which action steps were planned, assigned and carried out by teams of participants. This exercise was held in cooperation with the City of Bloomington at Moir Park, which served as the Operations Center while the MDA office served as the Command Center. A fictional emerald ash borer infestation was created in the park and teams of surveyors conducted a delimiting survey in and around the park in bordering neighborhoods. At the Command Center, all other incident command functions were practiced with all agency representatives attending, including the federal lead for emerald ash borer, Craig Kellogg, APHIS. The report developed from this exercise as well as the Response Plan are available on the web:
http://www.mda.state.mn.us/plants/pestmanagement/eab.htm

New Weed Pests
When new invasive plants are found, the site is surveyed intensely to delimit the infested area. Landowners are informed of the infestation and are requested by letter to eradicate the weeds, with enclosed information specific to the weed. The intent is to implement a cooperative eradication plan; however, the possibility of further enforcement exists if no or inadequate response to the request is received. Weed eradication may take several years (sometimes over ten), depending on seed bank viability of the species, and MDA tracks this with a regulatory file database. Control efforts and continuing survey by MDA are documented to ensure the eradication is successfully completed. Emergency control efforts may be undertaken by MDA and cooperating groups to ensure that seed is not produced while the longer term eradication plan is developed and implemented.

CONTROL AND MANAGEMENT

Studies to address specific pest issues:
DNR conducts short-term and long-term evaluation studies to address specific pest issues. Examples include:

Study of *Diplodia* spp. on Jack Pine: In the west-central counties of Minnesota, there is a history of jack pine regeneration problems. In Wadena County, foresters believe that problems have been occurring sporadically for at least 20 years. A study in 2001 identified deer and mouse browse, pine-oak gall rust and establishment losses as the agents responsible for losses in plantations. It is very likely that establishment losses were actually caused by *Diplodia pinea* infections that originated in the Nursery. Further north, in northern Hubbard and southern Beltrami Counties, problems have been occurring for the last 10 years in both natural and artificial regeneration. Deer browse, droughty weather and *Diplodia* infections were the likely causal agents in artificial regeneration problems. Causes of natural regeneration failure still need to be discerned. The proposed 2007 study would determine if *Diplodia* is having a deleterious effect on the survival of natural regeneration from northern Wadena County to southern Beltrami County.

Susceptibility of Improved White Spruce to Damaging Insects and Diseases: Nearly all white spruce planted on public lands in Minnesota are “improved.” Improved white spruce have been selected for improved height growth over local seed source white spruce. Anecdotal observations suggest that improved white spruce seedlings are more frequently damaged by winter burn and are more susceptible to frost damage than are local seed sources, and that differences in bud flush and bud set timing may be factors in the increased susceptibility to damage. To address these anecdotal observations, a statistically designed study would be designed to document phenology of bud break and bud set in established seed orchards where genetic families and their provenances are identified and well documented; analyze regeneration surveys to determine difference in performance and damage among improved and local seed sources; and determine the susceptibility of improved which spruce to damaging insects and diseases. The study would be done in conjunction with the Minnesota Tree Improvement Cooperative.

Technical assistance:
DNR provides assistance for management of oak wilt. Past surveys have identified 15,359 acres of active oak wilt in Minnesota. Most of the infections are found in the Twin Cities, in counties immediately north of the Twin Cities and in scattered locations in southeastern Minnesota. Since 1991, in excess of 7,000 oak wilt-infected acres have been treated by plowing root graft barriers around infection centers and removing spore-producing trees. DNR staff provides technical oak wilt control assistance to communities, private individuals, and resource managers in addition to assistance provided to communities involved in the ReLeaf oak wilt suppression program. In addition, grant awards are prioritized by control zone, focusing on the northern tier of the oak wilt range as areas of special concern.

Education and Outreach
General Tree Health Issues: A major emphasis of the program is outreach to train and educate Minnesota DNR staff and others engaged in forestry and urban shade tree

management. Outreach efforts also keep the general public informed about the health of Minnesota's forests and potential forest health issues which may interfere with their use and enjoyment of Minnesota forests immediately and over longer periods of time. Outreach is accomplished by a range of activities such as formalized training events centered on forest ecosystem health, and talks and presentations about tree and forest health to diverse audience such as fire training classes, garden clubs, foresters meetings, Woodland Advisor training, etc. An important outreach tool is the Forest Insect and Disease Newsletter that includes timely information on current tree and forest health issues during the growing season. Media outlets such as newspapers, TV and radio are also utilized to distribute information in a timely manner. Finally, important outreach occurs though the assistance provided to anyone who calls, writes letters or e-mails, or visits the offices of the forest health specialists.

Each year, the Forest Health program of MN DNR Forestry conducts about 30 presentations or training events, produces 4 Forest Health Newsletters (which can be accessed via the DNR web site, www.dnr.state.mn.us/forestry), and fields approximately 500 requests for forest health assistance.

RECOVERY AND RESTORATION

The DNR is the lead state agency for recovery from invasive species or invasive species control efforts for the state.

DNR has developed tools for inventorying trees and assessing risk at the community level. The absence of comprehensive statewide (or even municipal) data on street and yard trees posed a challenge for assessing risk and targeting limited resources to address lethal tree pests. In 2006, procedures were created for a rapid field tally and evaluation of residential ash and elm trees (at risk for emerald ash borer and Dutch elm disease respectively). This procedure has developed a low-cost data collection protocol that has been invaluable at both the local and state levels.

For established pests such as Dutch Elm, the costs of detection, removal and reforestation have generally fallen to tree owners and to property tax payers picking up local government costs.

Another aspect of recovery is wood utilization. If an invasive plant pest is anticipated to cause catastrophic tree mortality, DNR evaluates markets for excess wood, and conducts research on uses, markets, and economic as well as environmental impacts.