

**V(A). Planned Program (Summary)**

**Program # 16**

**1. Name of the Planned Program**

Forestry

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
123	Management and Sustainability of Forest Resources	40%		50%	
124	Urban Forestry	25%		10%	
125	Agroforestry	25%		30%	
133	Pollution Prevention and Mitigation	10%		10%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	7.1	0.0	90.8	0.0
Actual	8.4	0.0	39.8	0.0

**2. Actual dollars expended in this Program (includes Carryover Funds from previous years)**

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
457104	0	133347	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1535018	0	2062291	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
635089	0	3449091	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

The Extension Forestry Team works in urban and rural Minnesota to maintain the health and longevity of Minnesota's ample forestlands. Because much forested land is stewarded by private landowners, collaborative education with those owners is critical. The Forestry Team has created responsive educational programming to help private owners be more successful.

Two major efforts responded to critical issues this year. First, educational programming helped new Minnesota legislation effectively incent land owners to create viable plans for their forest lands. Through a collaboration with the Minnesota Department of Revenue, Minnesota Department of Natural Resources, and the Board of Water and Soil Resources, Extension designed and delivered educational training and on-line materials that described changes in property tax laws, and cleared confusion about an array of options woodland owners had available to them. Over 1,500 landowners were trained, and a vast majority reported taking steps to create management plans. Thus, Extension is responsible for helping the state achieve the spirit and intent of new legislation.

Second, the Emerald Ash Borer program about which we reported impacts last year continues to manage a multi-organization collaborative. Its name has been changed to the "Forest Pest First Detector Team" because its outreach and influence has moved beyond the emerald ash borer. The team has maintained its considerable public awareness campaign and technical assistance training that has helped to minimize the effects of emerald ash borer. No further outbreaks were detected this year, and the team focused on maintaining the collaboration and adding new disease management to the collaborative team's work.

MAES forestry research in 2010 focused on several threats to the northern forests of Minnesota due to invasive species and climate change, as well as opportunities to better manage forest land and both use and protect forest resources including its wildlife. Some of those opportunities relate to the Sustainable Energy issue, and are reported under that program in this report. Some examples of forestry research results in 2010:

- Researchers developed a landscape-level model of oak wilt spread and predicted the economic damage of tree mortality from oak wilt spread in the absence of management. Oak wilt is a significant disease of oaks in the central U.S. Research showed that without management efforts, over the next 10 years up to 266,000 trees will be infected and removal costs at discounted rates would be \$60 million.
- Collection of fungi species has allowed researchers to preserve a strain collected about 20 years ago that has had its genome sequenced as part of the Assembling the Fungal Tree of Life project. This genome is important in understanding the evolution of wood decay in Basidiomycota.
- Other genetic preservation work is collecting ash seeds from all across Minnesota to save the ash tree species in the face of the invading emerald ash borer. Minnesota's 900 million ash trees vary widely genetically and have evolved differently depending on location.
- One beneficial impact of invading insects was identified in research on the importance of recurring forest tent caterpillar and spruce budworm outbreaks in promoting species diversity within mixed-species aspen stands.
- Research in forest management and forest wildlife relationships has documented that proposed changes in forest management by the Minnesota Department of Natural Resources could have substantial negative impacts on ruffed grouse density if landscape composition is not considered in management decisions. The information has been provided to policymakers.
- An outcome of wildfire preparedness work has improved national and local communication about how to develop and implement Community Wildfire Planning Projects.

Reviewers may note that the difference between projected FTEs and actual FTEs for research are significant related to this planned program. However, the 2010 actual FTEs are consistent with 2009 actuals. Projections were based on assumptions that have changed. Several forestry research projects are reported under Sustainable Energy and under Climate change planned programs. Many of the peer-

reviewed publications are also counted under those planned programs rather than this one.

**2. Brief description of the target audience**

Forestry education and outreach influences all of those who work, live and own Minnesota's woodland acres.

Target audiences for MAES forest research include public and private forest land managers, state natural resources agencies, state and federal policymakers, other forestry researchers, Extension educators, Minnesota Tree Improvement Cooperative, and Native American nations.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	1750	12000	190	0
<b>Actual</b>	3175	23000	47	0

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2010  
 Plan: 0  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	4	70	
<b>Actual</b>	0	17	21

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Workshops, tours, and demonstration projects will increase awareness of landowners, volunteers, loggers, natural resource professionals and businesses involved in forestry, agroforestry, urban forestry and forest products. (Target expressed as the number of events.)/

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	80	108

**Output #2**

**Output Measure**

- Print and digital publications will provide answers to questions about sustainable management of Minnesota's natural resources. (Target expressed as number of publications distributed.)

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	10000	22000

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Landowners will implement new forestry, agroforestry and urban forestry management practices. (Target expressed as number of acres on which new land management was improved.)
2	Landowners that implement new management practices will improve management of a significant number of acres. (Target expressed as number of acres on which management was improved.)
3	Natural resource-based businesses will become more profitable. (Target expressed as dollars earned or saved by natural resources enterprises.)
4	Minnesota legislation will be more effective in providing incentives forest land owners to create management plans. (Target expressed as percentage of participants who acted to create management plans.)
5	Research will provide information on costs and benefits of public forest land to guide public policy decisionmakers.
6	Research will provide information to support strategies for control of invasive species in vulnerable northern forests.

**Outcome #1**

**1. Outcome Measures**

Landowners will implement new forestry, agroforestry and urban forestry management practices. (Target expressed as number of acres on which new land management was improved.)

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Landowners that implement new management practices will improve management of a significant number of acres. (Target expressed as number of acres on which management was improved.)

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	18000	882585

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Private landowners are often stewards of Minnesota's forest land. Knowledge of research-based land management practices helps conscientious landowners make informed decisions.

**What has been done**

Workshops and consultations educate landowners about current issues and practices in forest management.

**Results**

Landowners report changed practices on their acres of forest land, totaling a large number of acres in 2010.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

- 124 Urban Forestry
- 133 Pollution Prevention and Mitigation

### **Outcome #3**

#### **1. Outcome Measures**

Natural resource-based businesses will become more profitable. (Target expressed as dollars earned or saved by natural resources enterprises.)

Not Reporting on this Outcome Measure

### **Outcome #4**

#### **1. Outcome Measures**

Minnesota legislation will be more effective in providing incentives forest land owners to create management plans. (Target expressed as percentage of participants who acted to create management plans.)

#### **2. Associated Institution Types**

- 1862 Extension

#### **3a. Outcome Type:**

Change in Condition Outcome Measure

#### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	82

#### **3c. Qualitative Outcome or Impact Statement**

##### **Issue (Who cares and Why)**

Over the past three years, Minnesota legislature made changes in property tax laws affecting forest land. The legislation created new land designations for landowners who obtain a management plan, phased out a past program designation called "Green Acres" and created the Sustainable Forest Incentive Act which offered incentive payments. This mix of laws created a confusing array of options for owners. Some were vulnerable to higher taxes if they did not follow complex requirements. No agency was informing land owners about trade offs among the laws.

##### **What has been done**

In partnership with a number of organizations, Extension's Forestry team: 1) educated forest landowners in northeast and southeast Minnesota about their property tax options, 2) trained county assessors, soil and water conservation district staff and foresters about their roles, and 3) offered classes to family forest landowners. In all, classes for land owners were taught in 17 locations. Total attendance was 1,507 -- the largest adult audience drawn for any forestry subject.

**Results**

Six months later, a survey was sent to 792 participants. The response rate was 58 percent, and only 8 percent of this sample had NOT acted. The program clearly helped new legislation achieve its goal of encouraging land management plans. Respondents reported these actions: 1) 56 percent talked to their county assessor's staff about property tax classification or options; 2) 30 percent talked to a friend or neighbor to help them understand property tax and incentive programs; 3) 18 percent talked to a plan writer; 4) 16 percent notified the assessor they plan to enroll forest land in a program; 5) 12 percent enrolled forest land in Class 2c Managed Forestland and 3 percent enrolled in the Sustainable Forest Incentive Act Program; 6) 11 percent completed a management plan; and 7) 74 percent visited Extension's myminnesotawoods.org to get information about forest land tax and incentive programs.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources

**Outcome #5**

**1. Outcome Measures**

Research will provide information on costs and benefits of public forest land to guide public policy decisionmakers.

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

There are almost 3 million acres of tax-forfeited forest land managed by county land departments in 12 northern Minnesota counties. Policymakers need information about the costs and benefits of this land to their counties.

**What has been done**

A study evaluated the financial and economic implications of retaining Minnesota tax-forfeited forest land. It described how the management and use of this land changed following their sale from public to private interests and described and quantified the financial and economic impacts associated with retaining that land in public ownership versus selling it to private interests.

**Results**

The study showed that on average, counties generate about \$5 per acre annually from management of the land, principally through the sale of timber stumpage. The forests also provide substantial forest-based recreation opportunities. The study concluded that public ownership of Minnesota's tax-forfeited forest land cannot be justified on the basis of the land's ability to generate revenue; however, when the full range of forest values and services were considered the economic benefits far outweigh the economic costs. The study's findings have been used by county land commissioners to explain to their county board members the economic tradeoffs associated with management or selling this land.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources

**Outcome #6**

**1. Outcome Measures**

Research will provide information to support strategies for control of invasive species in vulnerable northern forests.

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Earthworms are attacking the soils of the northern forests, killing off understory plants and changing the makeup of the forest ecosystem. Once introduced into Minnesota's forests, which are not home to any native species of earthworms, the pests can travel up to five miles per year on their own. But they are spreading much more quickly around the state's many great fishing lakes. In forests, worms actually make the ground firmer, threatening valuable tree species like sugar maple and black ash.

**What has been done**

Researchers reviewed legislative and regulatory policy for managing invasive earthworms in Minnesota and found that current policy would not protect most of the northern hardwood forests in Minnesota. Turning their attention to how the earthworm is spread, researchers reviewed how

demand for earthworms by anglers changes over the season. Changing their handling of earthworms appears to be critical to slow the introduction of the pest into forests.

**Results**

In collaboration with the Leech Lake Band of Ojibwe, the researchers are working with bait shops at four fishing resorts in northern Minnesota to test the effectiveness of different combinations of informational signage and stickers on bait containers. They are analyzing bait purchase and disposal rates. The work has raised the interest and cooperation of northern Minnesota resort owners who now understand the potential of invasive earthworms to damage the northern hardwood forests.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources

**V(H). Planned Program (External Factors)**

**External factors which affected outcomes**

- Economy
- Competing Public priorities

**Brief Explanation**

**V(I). Planned Program (Evaluation Studies and Data Collection)**

**1. Evaluation Studies Planned**

**Evaluation Results**

**Key Items of Evaluation**