07-0054

2006

LEGISLATIVE REPORT ON THE EXCLUSION OF NEW AND EMERGING PLANT PESTS IN MINNESOTA

MINNESOTA DEPARTMENT OF AGRICULTURE

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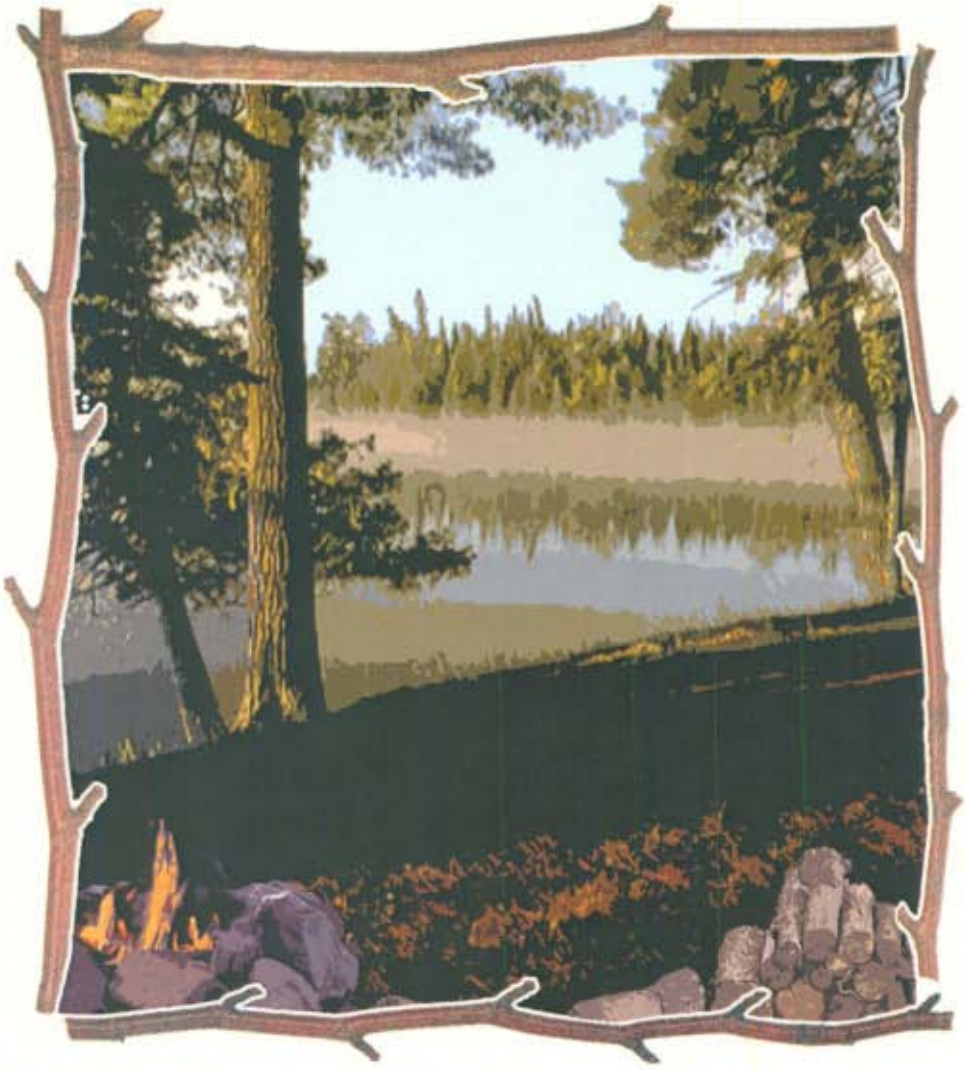
INTRODUCTION

The Plant Protection Law (Minnesota Statutes Chapter 18G.12, subd.5 [2006]) requires reporting on harmful species to the chairs of legislative committees that have jurisdiction over environmental and agricultural resource issues. The following is the annual report of the Minnesota Department of Agriculture's (MDA) Invasive Species Unit accomplishments and activities during 2006.



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PROGRAM OVERVIEW

Invasive species are non-native insects, plants and pathogens that may cause economic and environmental harm. In the United States, over $135 billion (a mind-boggling figure but one that academic and other experts agree on) are spent every year on invasive species. In addition, invasive species degrade our natural resources, as they are second only to habitat loss in impacting biodiversity. For these very reasons, the unintentional import of non-native insects has become an international trade issue—other countries do not want our invasive pests and we do not want theirs.

Within the Plant Protection Division, the efforts of the Invasive Species Unit are directed at the prevention, early detection and rapid response for new plant pests not currently present in Minnesota, or emerging plant pests that are in the state but not yet widely established. This is known as invasive species exclusion, which has been shown to be the most cost-effective method for protecting our natural resources, agriculture and trade from these pests. The MDA is the front line for stopping new and emerging plant pests that may harm Minnesota's environment and economy.

PROGRAM HIGHLIGHTS

In 2006, the Invasive Species Unit continued to concentrate on its primary goal of excluding new invasive species from Minnesota. In concurrence with the National Strategy and Implementation Plan for Invasive Species Management (United States Department of Agriculture, Forest Service Publication 805, October, 2004*), unit staff focused on effective prevention and early detection of and rapid response to invasive species threatening Minnesota. Following the national strategy helps us to focus our program on goals that have been adopted across many state and federal agencies, allowing for more effective program interchange. For example, the Minnesota gypsy moth program works with educating nurseries and sawmills, two industries that ship stock that may carry gypsy moth egg masses (prevention). Last year, the gypsy moth trapping program was successful in finding a population of gypsy moth in the early stages of entry (early detection), and immediately treated the area (rapid response) with a synthetic mating disruptor at the appropriate moth development stage. Minnesota's and the nation's successful gypsy moth program remain the unit's model program for slowing the spread of invasive species.

* http://www.fs.fed.us/foresthealth/publications/Invasive_Species.pdf

PREVENTION

The Invasive Species Unit continues to evaluate pests and their risk to Minnesota through scientifically-based pest risk assessments. Pest risk assessments have now been completed on Siberian moth, emerald ash borer, *Sirex* woodwasp and swede midge, all potential threats to Minnesota resources. In addition, education on the risks of pests being moved in firewood has been a focus, with an outreach program for firewood dealers including site inspections, posters and questionnaire surveys. Unit staff took the lead in forming the Interagency Firewood Group, which meets regularly to strategize on reducing the risk of invasive species introduction through firewood movement.

EARLY DETECTION

Emerald ash borer (EAB) is a non-native, wood-boring beetle that has killed more than 20 million ash trees in Michigan, Indiana, Ohio and Illinois since its discovery in Detroit in 2002. Because of its small size and the fact that EAB larvae are concealed beneath the bark, it is extremely difficult to locate before it has already become established and done considerable damage to ash populations. Early detection is crucial to the success of efforts to eradicate EAB.

In 2006 there were two EAB early detection survey programs in the Invasive Species Unit. One program draws on the assistance and resources of cooperators in local units of government. The cooperators, including county and city park boards, help girdle trees in the spring and cut them down in the fall to search for signs of EAB. No EAB were detected. The second EAB project laid the foundation for a more robust, statewide detection program in 2007. In this project, an EAB introduction risk model was created for Minnesota using GIS modeling tools. The model will help narrow the risk zones for EAB introduction and provide a better idea of where we should be looking for this elusive, extremely destructive pest.

RAPID RESPONSE

Emergency response plans are being developed for EAB and *Sirex* woodwasp. A table-top exercise for EAB response was held in August and brought together local units of government, other state agencies, the University of Minnesota and private industry associations to help identify gaps in the response plan.

SLOW THE SPREAD PROJECT—THE MODEL PROGRAM

The Slow the Spread of the Gypsy Moth Project is an effort to slow gypsy moth spread by detecting isolated populations using trapping grids along the advancing population front. Gypsy moth is a non-native insect that is considered the most destructive forest defoliator in the United States. When detected, the isolated populations can be treated to eliminate them or slow their population growth. The project combines the efforts of state and federal government and has been our model for gypsy moth detection surveys.

MDA has conducted gypsy moth detection surveys since 1973. Gypsy moth has entered the eastern edge of Minnesota now, and is part of the Slow the Spread (STS) "Action Zone." This year over 138,000 acres were treated compared to a previous five-year annual average of 760 acres. Two separate environmental assessments were needed for the treatment, including an analysis of ownership and forest type. In excess of 50 maps were prepared, including posters for public meetings, portable document format (PDF) files for distribution through e-mail, paper maps for reports, and image files for websites. In the 2006 trapping season, half as many moths were caught as in 2005, and record low numbers were detected in the southern half of the state for the second consecutive year. In addition to treatments, 47 seasonal staff were hired, trained, and supervised across Minnesota, and regulatory actions were taken at three separate nursery detections.

PROGRAM EXPENDITURES

Base funding for the MDA Invasive Species Program is derived from general fund dollars. Additional funding is received from federal sources, including the United States Department of Agriculture (USDA) Cooperative Agricultural Pest Survey (CAPS) Program, the USDA Forest Service, and Slow the Spread of the Gypsy Moth project (STS). The general funds received for the program *(see Table 1)* help to match available federal dollars used to create an effective invasive species exlusion program of prevention, early detection and rapid response.

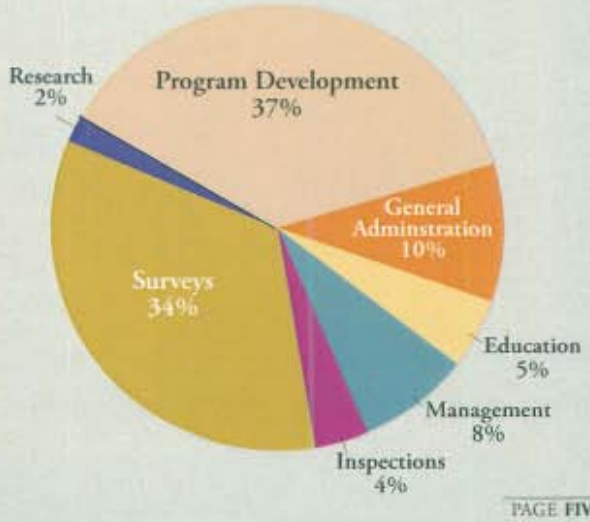
Table 1. ***Invasive Species General Fund Dollars and Federal Dollars, by Activity:***

Activity	General Fund	Federal Fund	Total
Invasive Species, General Fund	$293,243.67	—	$293,243.67
Apiary Survey	$65,115.40	—	$65,115.40
Plant Pest Survey	$258,361.80	$9,927.21	$268,289.01
Survey Coordinator, CAPS Fund	$30,427.31	$78,414.15	$108,841.14
Exotic Bark Borer, CAPS Fund	$6,507.22	$25,071.12	$31,578.34
Sirex Woodwasp, CAPS Fund	—	$2,482.17	$2,482.17
Emerald Ash Borer Survey, Forest Service Funds	$14,064.30	$15,581.13	$29,645.52
Emerald Ash Borer Survey, APHIS Funds	—	$5,070.35	$5,070.35
Gypsy Moth Survey, Slow the Spread Funds	$152,225.92	$457,132.22	$609,358.14
Gypsy Moth Survey, US Forest Service Funds	$89,382.29	$198,242.37	$287,624.66
Gypsy Moth Survey, APHIS Funds	$3,365.80	$19,221.40	$22,587.20
Gypsy Moth Survey, STS Funds	$2,976.64	—	$2,976.64
Total	$915,670.44	$811,142.12	$1,726,812.34

Both general fund and federal dollars are included in the tables below. The majority of the general fund expenditures are for program development and survey efforts across the state. Program development includes interagency meetings, survey planning, surveyor training, response planning, program coordination and other overhead. Survey includes only the surveyor field time, equipment and other overhead. The costs for education are largely for the public meetings and informational meetings held for the Environmental Assessment for the 2006 gypsy moth control efforts, in addition to outreach on firewood movement risks. Management, or invasive species control, was for gypsy moth treatments in Brooklyn Park and Grand Portage Indian Reservation. Inspections included firewood dealer inspections, apiary certification inspections, and response to reports from the public. Research is focused on the development of pest risk assessments and a regional pest risk assessment process.

Table 2. ***MDA Invasive Species Expenditures FY 2006***

Administration	
Program Development	$ 645,427.04
General Administration	$ 137,275.20
Education	$ 86,680.17
Management (Control)	$ 129,898.21
Inspections	$ 69,310.27
Surveys	$ 584,264.98
Research	$ 37,956.48
TOTAL	**$ 1,726,812.34**



PROGRAM SUMMARIES

PREVENTION

REGIONAL PEST RISK ASSESSMENTS

In conjunction with the USDA Forest Service Northern Research Station, Invasive Species staff has been developing a regional pest risk assessment (PRA). A PRA is a process to evaluate the likelihood of a pest establishing and the magnitude of its impact if established. We anticipate that regional PRAs will help prioritize new pests according to risk of introduction to and possible impact on Minnesota.

Because of our partnership with the Forest Service, the first three PRAs were conducted on forest pests. Siberian moth is one of the most important pests of larch and soft five-needle pines in its native range of northern Asia, and now major outbreaks have occurred in China, Russia, Mongolia and the Korean Republic. Emerald ash borer, a native of China, was discovered in Michigan in 2002 and has now been detected as far west as Chicago. The European *Sirex* woodwasp was detected in 2005 in New York, and has caused significant mortality in North American pine plantations growing in other countries. Red pine products from New York that reportedly may be infected with this woodwasp were shipped to Minnesota in 2005 and 2006. The three PRAs are in review for publication through the USDA Forest Service.

An additional pest risk assessment is being conducted to evaluate the pest potential of a new invader of North America, the swede midge or cabbage gall midge. Swede midge is a small fly that attacks crucifer crops such as cabbage, broccoli and canola. The risk assessment indicates that swede midge is likely to establish in Minnesota and cause significant adverse economic and environmental impacts. In addition, hemlock woolly adelgid is currently being evaluated. This exotic pest of hemlock trees poses a potential threat to Minnesota's rare, native stands of eastern hemlock, which comprise the extreme western extent of this tree species range.

We are also beginning regional PRAs on emerging pests of agricultural row crops. In 2006, potato cyst nematode *(Globodera rostochiensis)* was discovered in the United States for the first time. It was detected in an Idaho field after early detection surveys were conducted. Potato cyst nematode (PCN) is a serious pest of potatoes in other parts of the world and can be devastating pest of potatoes in regions such as Minnesota if not controlled.

RISK OF FIREWOOD MOVEMENT

In the last year, it has become apparent that firewood movement is a major factor in accelerating the movement of invasive species. Several emerging plant pests, including EAB, Asian longhorned beetle, butternut canker, and gypsy moth can be moved across the country in a very short time with the movement of firewood both by the public and commerical interests. MDA, with the cooperation of DNR, conducted a questionnaire survey at North Shore state parks and found that over 40 percent of park visitors bring firewood from home with them to the parks, and some of these visitors were from EAB and gypsy moth quarantine areas of Wisconsin and Michigan.

We initiated an Interagency Firewood Group that meets regularly to strategize reducing the risk of invasive species introduction through firewood movement. Members include MDA, DNR, USDA Animal and Plant Health Inspection Service (APHIS), Plant Protection Quarantine (PPQ) and USDA Forest Service. Firewood dealer site inspections were conducted in March, along with the development and distribution of questionnaire surveys and posters. A public relations plan was created for firewood, and outreach materials were developed and distributed to firewood dealers. Activities and planning with the other group members has made the entire effort more effective.

PERMIT APPLICATIONS

Our unit is responsible for reviewing permit applications that have been submitted to APHIS from various organizations and individuals who want to bring soil, plants, insects and pathogens into Minnesota from other parts of the country and the world. Our review process has improved and become more stringent in order to make sure that invasive species are not introduced to the state in this way.

EARLY DETECTION

Tree inspectors and other workers in the tree care industry will likely be the first to discover new infestations of emerging pests. Every year, Invasive Species Unit staff trains hundreds of new tree inspectors on the risks of non-native pests. Plastic wallet-sized identification cards for EAB and gypsy moth were created and distributed to tree inspectors at their annual training and to companies in our Tree Care Registry (an on-line registration list of tree care companies that serves as a quick directory to use in case of plant pest emergencies such as quarantines).

Surveys of various non-native plant pests are conducted under the Cooperative Agricultural Pest Surveys (CAPS), a program funded by USDA, APHIS. Surveys are chosen based on national pest target lists and on pests that threaten Minnesota's economy, environment, and plant or human health.

CAPS EXOTIC BARK BEETLE/WOODWASP SURVEY

MDA has made a significant commitment to this survey, deploying more insect traps than any other state except New York, where *Sirex* woodwasp was initially discovered in 2004. Eighty-five traps were set in the Minneapolis/St. Paul metropolitan area and 75 were set in an area surrounding the port of Duluth. Trap locations were chosen on the basis of the likelihood of establishment of both bark beetles and *Sirex* woodwasp. Trap collections were emptied every two weeks from July through October, yielding approximately 1200 samples.

EMERALD ASH BORER SURVEY

No EAB were detected in a survey of 53 emerald ash borer detection trees. The USDA Forest Service provided a grant to set up the trees, working with local cooperators. Nine cooperators in county and city parks and recreation departments along with the Minnesota Department of Transportation participated in our survey for the second year, and helped to choose sites, girdle and fell the trees. No EAB were found in the survey. The cooperators remain enthused about the project and all have expressed a desire to continue supporting our surveys. The educational opportunities and the relationship development with local public land managers are as valuable as the data collected in this survey, as these participants will likely be among the first to detect EAB.

USDA, APHIS, PPQ provided funding for a larger EAB project, to be completed in 2007. With the funding, 92 detection trees were girdled at private, county and municipal campgrounds for peeling in 2007. Homeowner calls regarding possible EAB symptoms were responded to, and 20 trees with EAB symptoms were destructively sampled with negative results. Progress has been made on developing a contract to cut down and dispose of trees on a large scale.

Additionally, an EAB Introduction Risk Model was created to guide the placement of future detection trees. For each input into the model, GIS was used to weight factors related to the human-assisted movement of EAB. The following inputs were chosen as risk factors for the introduction of EAB into Minnesota: campgrounds, sawmills, seasonal homes, plant nurseries, firewood, freight, green waste, roads, rail, rivers, and population size. A comprehensive report that includes multiple maps was written based on the results of the introduction model.

Finally, mailings were sent to municipalities, tree care workers and campground owners describing the threat posed by EAB and soliciting participation in our monitoring program. Outreach to engage potential partners will continue.

POTATO CYST NEMATODE

The discovery of potato cyst nematode in Idaho potato fields this year resulted in international trade discussions with Canada, Japan and others, and spurred the Invasive Species Unit to develop a potato cyst nematode survey for 2007. Travel to Idaho to observe the state's survey operation and laboratory analysis methods was essential in our development of the survey and sample processing.

LABORATORY IMPROVEMENTS

The Plant Protection Division laboratory program requires expansion, especially in view of the upcoming potato cyst nematode survey. Staff conducted an overview of lab needs and history, including visits to other laboratories and working with MDA's Laboratory Services Division to outline a legislative initiative.

PLANT PEST SURVEY

The Plant Pest Survey provides current information on the abundance and distribution of insect, disease and weed pests in Minnesota field crops. Over 5500 corn, soybean, small grain, alfalfa and sunflower fields were sampled during June, July and August. In excess of 50 species and stages of insect pests were surveyed in these fields. In addition, surveys were conducted in soybeans and wheat for symptoms of primary disease pathogens, and inspections were conducted in selected corn and soybean fields for disease symptoms in support of MDA's Export Certification Unit. Data on the distribution and abundance of surveyed pests were reported to the agricultural community weekly in 13 Minnesota Pest Reports published on the internet and in hard copy.

APIARY CERTIFICATION

Interstate inspections were provided for 36 beekeepers during September and October, certifying nearly 48,000 colonies to be disease and pest-free. As of July 1, 2006, a change in statute allows apiaries overwintering in other states to be inspected only at the request of the beekeeper.

RAPID RESPONSE

EMERGING INVASIVE WEEDS

Surveys were conducted this year to address the growing number of weed pests in the state. Staff conducted follow-up surveys on Grecian foxglove in Washington County, cutleaf teasel in Ramsey County and British yellowhead in Hennepin County. Staff met with Minnesota Department of Transportation and DNR land managers to discuss Grecian foxglove management options and to document their efforts to eradicate the plant on highway rights-of-way and state park land. Cutleaf teasel is an excellent candidate for eradication if continuing survey shows that it has not too widely established. British yellowhead is regulated through the World Trade Organization, which requires that populations be under official control. A follow-up survey will be needed at the site next growing season to determine if there has been spread and establishment in the area.

EMERALD ASH BORER

An interagency tabletop exercise was conducted with several agencies, private industry and University of Minnesota partners in August. The exercise was held to expose gaps in the Interagency EAB Response Plan. Gaps were identified and corrected. In October, MDA held an in-house simulation exercise to review

the response planning and operations process. The Interagency EAB Response Plan was finalized as a result of these exercises, and will be distributed to members of the interagency group and posted on the internet for the public by the end of 2006.

Sirex woodwasp: An emergency response plan is being developed in reaction to the detection of established populations of *Sirex* woodwasp in New York. *Sirex*, a Eurasian insect belonging to the group known as horntails, attacks mostly pines and may cause extensive mortality outside its native range. The response plan includes structured plans for identification of the initial detection, follow-up surveys to delimit the infestation, quarantine to prevent further spread, biological control to suppress populations, and outreach materials to educate the public. It is possible that red pine from New York shipped to Minnesota may have harbored this pest. Trapping in nearby pine stands did not reveal an established population; however, trapping will continue in 2007.

National Incident Management System (NIMS) Training: Staff in the Invasive Species Unit was trained in NIMS this year, from IS 700 to IS 100, 200 and 300.

GYPSY MOTH SLOW THE SPREAD

TREATMENT PROGRAM

2006 was a record-breaking year for gypsy moth treatments in the state of Minnesota. Approximately 138,000 acres were treated and NIMS was used effectively in planning the treatment. The amount of acreage treated increased dramatically from the past five-year average of 760 acres annually (before 2006, 4,700 acres were treated in Minnesota from 1980 to 2005). As the gypsy moth front moves closer to Minnesota, treatment acreage is expected to increase to meet the overall statewide objective of slowing the natural spread rate of 15 miles per year to less than 6 miles per year. The majority of the historical acreage was within the "Eradication" phase of gypsy moth management.

Many challenges arose with this year's treatment program. In addition to treating the highest number of acres in program history, the treatment blocks were in two counties distant from one another (Cook and Hennepin, 235 miles apart), they were in two different gypsy moth management zones (Eradication and Slow the Spread), and they crossed multiple land jurisdictions (Indian tribal lands, national forest, state parks/forest, county, city and private lands). Two separate Environmental Assessments were completed, with the requisite public notices and town meetings along with optional general mailings. Three separate decision notices were issued: one for the Grand Portage Indian Reservation, one for Superior National Forest and a third to cover all other lands in the treatment zones. There were three distinct application periods due to the geographical distribution of the blocks and the treatment product used.

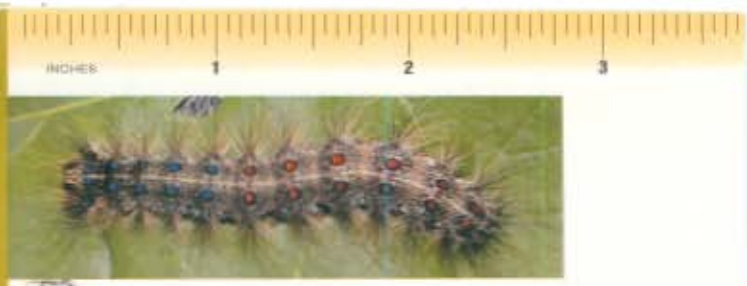
TRAPPING PROGRAM

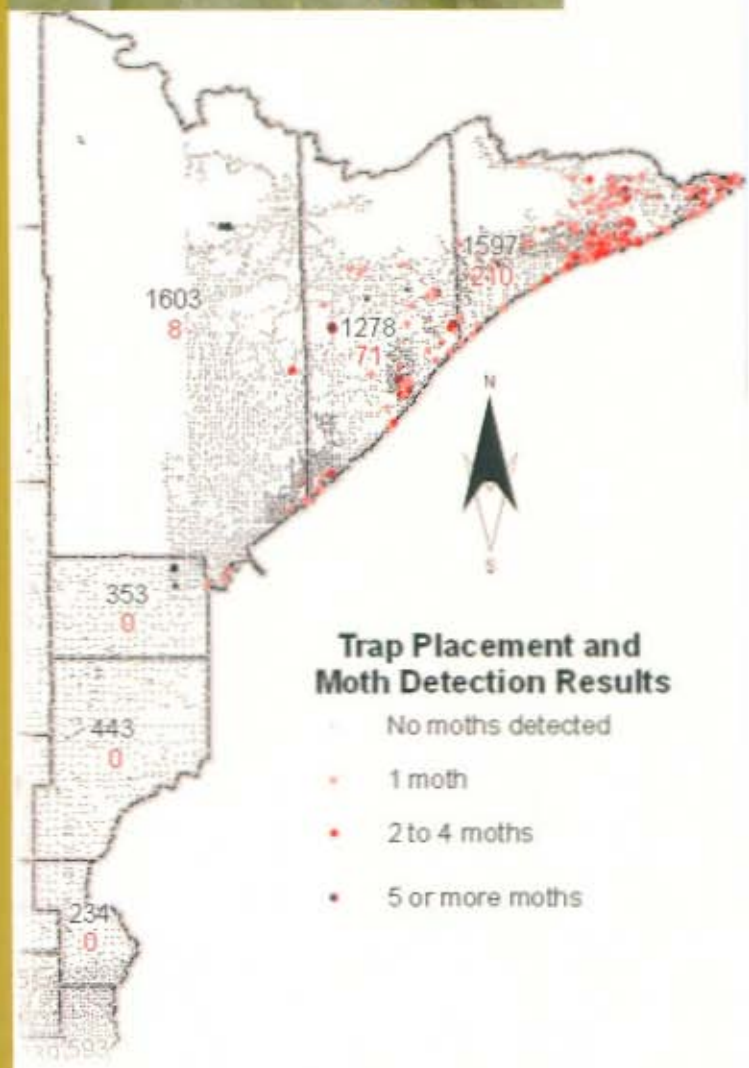
A record number of seasonal staff was hired who set 19,000 detection traps across Minnesota for early detection of gypsy moth populations. In planning survey routes, maps of the 20,000 trap locations were distributed to the 46 seasonal employees. In preparation for the survey, 900 maps were prepared, pre-numbered survey notebooks were printed, and staff implemented a brief instructional course on how to use a compass for trappers hiking off-road.

A total of 412 gypsy moths were collected from the traps. Moth numbers were down to record lows in the central and southeastern parts of the state (St. Cloud to the Iowa border), with only 123 moths captured. In the southeast (Houston, Winona, Olmsted, Wabasha Counties), an area that prior to 2005 has had a consistent increase in moth numbers in the past decade, only 10 moths were caught. This is the second consecutive year with record low moth numbers in the southeast, indicating that previous treatments in these areas were successful.

Gypsy moth finds at Minnesota nurseries continue to be an issue. Thirty-five percent of the 123 moths found in the southern half of the state were found at nursery operations. Ten nurseries in Minnesota accounted for 43 moths found; one of the sites is now under a Federal/ State Compliance Agreement after a female moth and egg mass were found during a follow-up survey. Staff works closely with USDA, APHIS, PPQ to create and implement the Compliance Agreements, designed to decrease the risk of gypsy moth establishment in Minnesota while allowing the businesses to continue shipping.

Sixty-eight per cent of the moths caught were confined to Lake and Cook counties in the northeastern corner of the state (no surprise after a record 1,077 moths were caught in Cook County in 2005). Moth captures in Cook County have been increasing since 2000, but numbers in 2006 are down again (210 moths) due to the treatment. Only three moths were caught within the treatment blocks, as mating disruption treatments draw most moths away from the pheromone traps. However, moth numbers continue to climb in areas surrounding the blocks. Areas of concern will be delimited in 2007. No gypsy moth treatments are proposed in 2007.





PROGRAM PLANS FOR 2007

The Gypsy Moth Program is expanding, now that the moth is on our doorstep. Therefore, this group will split into a separate unit, the Gypsy Moth Unit. The Invasive Species Unit will be renamed the Invasive Species Exclusion Unit to better define its mission. This reorganization is critical to addressing future issues with the ever-increasing pressure of new and emerging plant pests.

PREVENTION

Regarding outreach, new web pages will be set up for the new Gypsy Moth and Invasive Species Exclusion units. In addition, MDA has hired a consultant to improve its general website for easier public access and a better overall look. A public information officer will be hired in the beginning of 2007 to assist the new units through public relations plans and community outreach. The PRA program will be added to the website that will spell out the risk assessment process and provide a copy of each PRA with sections that can be updated with new information when available.

EARLY DETECTION

CAPS Surveys: Surveys in the CAPS program have been approved for funding as follows: Asian long-horned beetle (nursery survey), soybean cyst nematode, soybean rust, sudden oak death, wood-boring insects (bark beetles and Sirex woodwasp) and Karnal bunt. A proposal for an EAB survey has been submitted but it is not known whether funding will be approved; we are planning to continue the EAB detection tree survey program with general funds at this time. A significant increase in the number of detection trees is planned throughout the state, in an effort to provide the earliest possible detection of an infestation. Detection trees may number from 1000 to 2000. Information on groups associated with the risk of an EAB introduction into Minnesota will be updated, including a more comprehensive list of firewood dealers throughout the state. The introduction risk model will be replicated next year with updated inputs.

Potato Cyst Nematode: Discussions continue on the protocol to survey for potato cyst nematode, a pest of potentially serious impact to Minnesota. Staff is working with growers on how best to approach the sampling task, and is considering the purchase of field and laboratory equipment. Trade with other states will likely be affected if we do not begin to gather information on the presence or absence of potato cyst nematode.

Plant Pest Survey: Returning field surveyors will continue to monitor agricultural pests during the 2007 growing season. More training will be given on new and emerging plant pests, and field staff may be recruited to respond to reports of new or emerging pests in greater Minnesota.

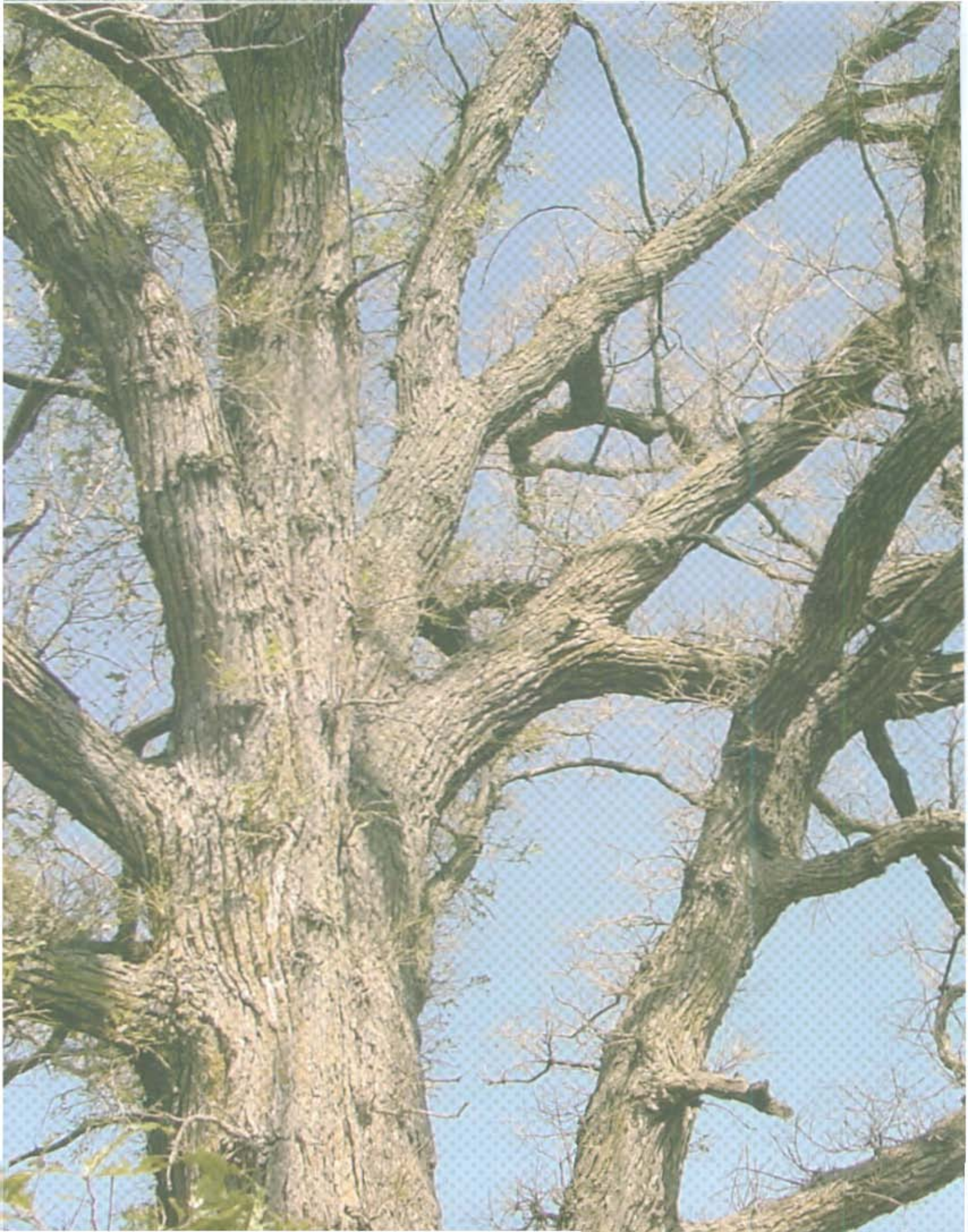
RAPID RESPONSE

Emergency response plans for the arrival of Sirex woodwasp and Asian long-horned beetle will be completed in 2007, and response plans will be produced for new and emerging pests as the threat of introduction develops.

Regarding invasive plants, our main goals will be the development of statistically-sound survey techniques and increased cooperation with County Agricultural Inspectors. These two facets will help develop an invasive plant survey network for the state. In addition, a survey for more cutleaf teasel sites in Minnesota will be conducted and a management plan will be written for eradication from the few known locations.

GYPSY MOTH SLOW THE SPREAD

The new Gypsy Moth Unit is undergoing reorganization. Staff will continue to make improvements on automating the creation of maps and notebooks used by summer trappers. There are no treatments scheduled in 2007, and the unit will likely focus on regulation in close cooperation with the new Invasive Species Exclusion Unit.



FOR MORE INFORMATION, CALL

ARREST THE PEST HOTLINE

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