1996 Forest Health Highlights

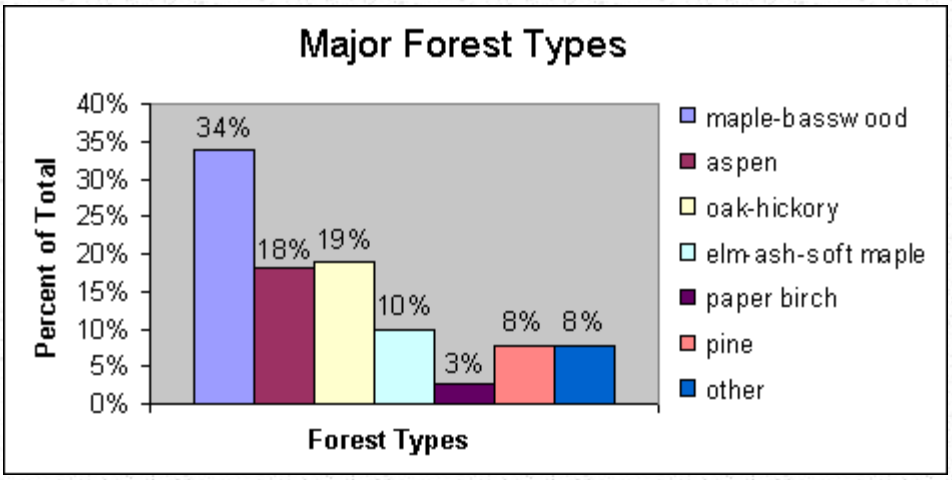
Wisconsin

The Resource

There are an estimated 15.9 million acres of forest land in Wisconsin. This is a 4.2% increase since 1983 and represents almost 46% of all the land area in the State.

Forests are important to the economy of Wisconsin. The primary and secondary wood products industry is the second largest employer in the state. As of 1994, 1,845 or 17.5% of all manufacturers were in the forest products industry, employing 98,361 people (16.8%), with an annual payroll exceeding $3 billion.. In 1992, 2.1 million tons of recycled paper were used in the production of 5.5 million tons of new paper. Wisconsin is first in the nation in the production of fine paper, sanitary paper products, children's furniture and millwork. The value added of all forest products annually exceeds $6.8 billion. About 3 million Christmas trees are produced each year.

Other benefits provided by forests include recreation and wildlife. Deer populations in Wisconsin are among the highest in the country, and populations have been continually trending up for the past 30 years. There is an estimated fall population of about 1.5 million animals.



Special Issues

Efforts to eradicate the **gypsy moth** in Wisconsin continued in 1996. A total of 29,712 acres on 27 sites were treated two to three times with the biological insecticide B.t.k,. Counties where treatments took place include: Brown, Dane, Door, Eau Claire, Kenosha, Kewaunee, Manitowoc, Marathon, Marinette, Milwaukee, Oconto, Outagamie, Portage, Racine, Sheboygan and Waukesha. Also, 2,172 acres were treated with pheromone flakes in Sheboygan County. More than 48,939 delta traps were deployed for detection, delimiting, post treatment and mass trapping. A partial survey of traps as of November 13, 1996, revealed a total of 87,749 moths collected in Eastern and West Central Wisconsin. Egg mass surveys are being conducted in areas that have high numbers of trap catches. About 125 state and federal personnel assisted in all aspects of the program.

Fourteen additional counties in eastern Wisconsin are now classified as part of the transition zone. Counties under federal quarantine as of July 1, 1997 include: Door, Brown, Manitowoc, and Kewaunee. Under the strategic plan approved by DATCP and DNR, the responsibility for managing the populations in these counties will pass to the DNR. Bureau and regional staff will cooperate with UW-Extension and county governments in planning and executing a state-wide education and action program. Foresters will be trained

in gypsy moth silvicultural techniques. If epidemic populations occur, regional staff may be involved in answering complaints, population monitoring and spray programs. Parks may require spraying and vehicle inspection.

The **jack pine budworm** infestation that erupted in 1992 and affected 90% of the 400,000 acres of jack pine type is now declining. In northwestern Wisconsin, only 17,000 acres of jack pine were moderately defoliated in 1996. In northern Wisconsin, approximately 20,000 acres of budworm killed pack pine were harvested. In western and central Wisconsin, approximately 5,000 - 7,000 acres were salvaged between 1992 to 1995. Most of this acreage has been replanted or regenerated to jack pine. The remaining mature jack pine resource is threatened by bark beetles that thrive on weakened trees. Harvesting dead and declining jack pine reduces the chances of bark beetle outbreaks.

The population of introduced **basswood thrips**, an exotic species, has been low for several years. However, in 1995, and 1996 this insect was observed feeding in the buds and on newly emerging foliage of basswood on approximately 200,000 acres in northern Wisconsin. Basswood is a common component of the northern hardwood forests.

Butternut canker is a devastating fungus disease of butternut. In Wisconsin, butternut canker has been reported in 48 of the 62 counties where butternut trees occur. This disease has been observed on 91% of the butternuts surveyed in 79 locations throughout Wisconsin. Activities are being focused on growing butternut on the sites best suited for rapid growth in hopes of growing the tree to a seed-bearing age and maintaining butternut as part of Wisconsin's forest ecosystems. Potentially disease resistant trees have been located. Twigs have been collected from these trees for graftting onto walnut roots in order to conserve this genetic material. A cooperative project between the USDA Forest Service, Wisconsin DNR, and Menominee Tribal Enterprises was initiated to better define the silviculture of butternut.

Cold Injury. Hundreds of sugar maples, red maples and Norway maples exhibited dieback and death in and near Mellen in northwest Wisconsin because of extremely low temperatures (-56 F°) on February 3, 1996. Other hardwoods in the area were not affected. However, in Western Wisconsin winter injury and mortality was widespread on hard and soft maples, ash, birch, fruit trees, junipers, spruce, balsam-fir, black walnut, and yews.

Cherry Scallop Shell Moth. Cherry Scallop Shell Moth made its presence known in Western Wisconsin in Dunn, Eau Claire, and Monroe counties. Earlier in the year, large numbers of moths were reported around homes. And later in the year, wild cherry trees were being defoliated. In some areas the cherry trees looked as if they were on fire. Meanwhile, defoliation varied from severe to light on understory wild cherry trees in central Wisconsin.

Oak Leaf Tatters. Oak tatters is caused by some undetermined spring weather phenomenon. Some specialists believe that the injury is caused by cold temperatures after the bud has broken dormancy but before it opens. When the leaves open, the tissue between the veins is missing, giving the leaves a "tattered" appearance.

This year, the tatters affected mostly white oaks plus a few bur and black oaks. This year the tatters was also accompanied by cupping and blackening of the ends of some leaves which may have been caused by frost. Individual trees and groups of trees were affected. In some trees damage was more severe in the upper than in the lower crown. Damaged trees range in size from mature to ankle-high seedlings. White oaks (and to a lesser extent black oak and bur oak) in Dane, Green, Rock, Lafayette and Iowa counties were heavily damaged by tatters. Most trees produced a second crop of foliage.

Balsam Fir Needle Diseases. *Lirula mirabilis* and *Rhizosphaera pini*, two needlecast fungi on balsam fir, were observed in north central and northeastern Wisconsin. Both of these fungi caused browning of the second and third year needles. These fungi have been documented as being present in Wisconsin's forests for many years yet their incidence has increased since 1994. The wet spring and summer of 1993 are likely to have increased infection. Both fungi caused discolorations and premature needle drop. It is not known

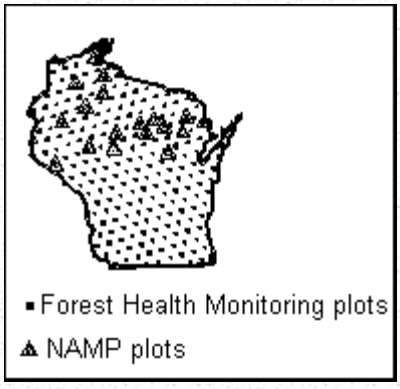
what the impact of these fungi are on balsam in the woodlands. Their presence in Christmas tree plantations caused trees to appear thin and brown as needles infected with *Lirula* sp. may remain on the tree for two years after turning the needles brown.

Oak wilt, a fungus disease of oaks, continues to be of major concern in Wisconsin's rural and urban forests. This disease is spread to new locations by sap-feeding insects that are attracted to wounds on oak trees. Oak wilt is now present in 51 of Wisconsin's 72 counties. The disease was found for the first time in Burnett County in Northwestern Wisconsin and was isolated from northern pin oak. Oak pruning guidelines developed in 1995 for arborists, homeowners and woodlands were distributed and are being evaluated by communities arborists and utilities.

Spruce Needle Rust - *Chrysomyxa* sp. - Severe infections occurred on many ornamental Colorado blue and white spruce in Oneida County (especially Pine Lake Township, Pelican Lake and Three Lakes), Vilas County, and Marathon County in Wausau. Infections were not noticed until late July. The below-average temperature contributed to the delay in development of the rust. Infected needles remained on the trees through August. Trees with severe infections appeared to be yellow or orange from a distance.

Dieback and mortality of red pine plantations in northern Wisconsin - Several factors including feeding scars from the Saratoga Spittlebug, dieback caused by the fungus *Chilonectria cucurbitula* and freeze injury lead to shoot and branch mortality in 8-10 year old red pine plantations in Vilas and Florence counties. Evidence of shoot mortality first appeared during the summer of 1995 as scattered chlorotic shoots. By the summer of 1996, dead shoots and branches were widespread throughout 3 plantations. The most significant factor causing shoot mortality appears to be freeze injury that occurred during the 1994-95 and 1995-96 winters. This injury manifested itself in 2 ways: outright killing of the youngest shoot growth and splitting the bark open, creating wounds resembling those caused by hail damage. Two of the affected plantations were in low-lying areas where freeze injury is more likely to occur. One of the plantations was in an opening in the forest where landscape patterns could cause cold air to collect. Similar symptoms were observed on red pine plantations in northwestern Wisconsin where freeze injury and shoot mortality caused by *Sphaeropsis sapinea* (*Diplodia*) were observed.

Regional Issues



Forest health remained stable based on data on crown conditions and damage assessments from the 89 **forest health monitoring** plots in Wisconsin. The Wisconsin Department of Natural Resources, in cooperation with the USDA Forest Service and the Lumberjack Resource Conservation and Development, monitored forest health throughout Wisconsin. This is Wisconsin's third year in this program designed to monitor the current health and changes in forest health on a regional basis.

The Wisconsin Department of Natural Resources is a participant in the international **North American Maple Project** (NAMP) designed to evaluate the health of sugar maple forests. This project grew out of a concern that sugar maple decline and mortality was affecting the overall health of sugar maple and threatening the maple syrup producing industry. A total of 18 plots have been established in Wisconsin and trees are evaluated annually. Results indicate that sugar maples are in good condition and have recovered from the 1988 and '89 drought.

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