

# 1996 Forest Health Highlights

## Minnesota

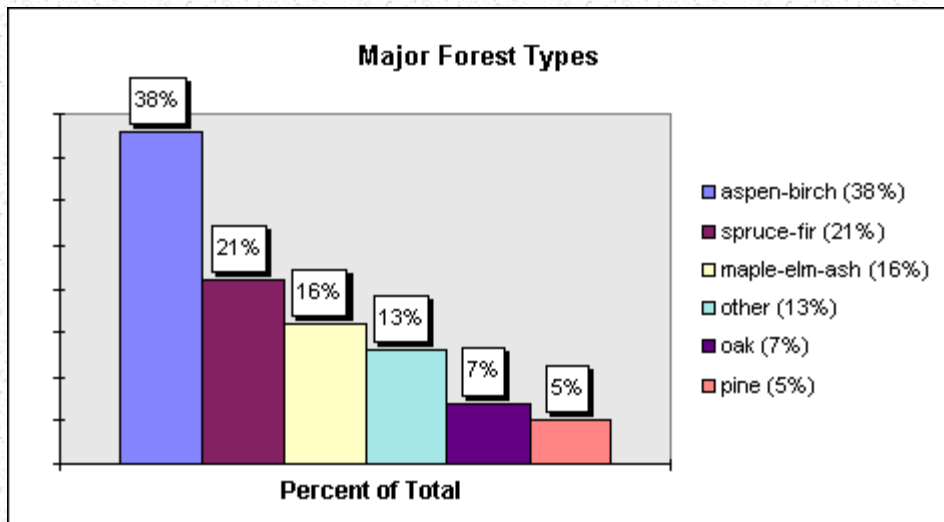
### The Resource

Minnesota's trees are a valuable resource. Forests account for 33% of Minnesota's land area, or about 16.7 million acres. The area of all forest land in the State has increased by 0.7 percent since 1977. Private land owners control 48.5% of the timberland; state, county, and municipal governments administer 37.8%, and the National Forest comprises 12.4%.

These forests are important to both the wood products and tourist industry. Forestry related industries and manufacturing employ about 60,000 people. The value of wood products annually exceeds \$8 billion. A total of 4 million cords of wood were cut in 1993, pulp and paper and oriented strand board accounts for 34% of the cut. Window frames make up 20% of all the value of products produced. Other products include sawlogs, veneer, post and poles, wood chips for landscaping, and fuelwood, although wood for energy accounts for only 4% of the volume cut, down from 12% in 1990. The Christmas tree industry annually produces more than 3 million trees worth over \$25 million.

Trees are also important components in wilderness and urban settings. The Boundary Waters Canoe Area (over 1 million acres) has more visitors than any other wilderness in the United States. Forests in the state are home to the largest wolf and bald eagle populations in the lower 48 states. Annually, millions of people visit to camp, canoe, fish, hike and hunt.

Urban trees increase property values and enhance the beauty of open spaces. More than half of the population of Minnesota lives in the Twin Cities Metro Region. The developed areas of the Metro Region have a dense tree canopy cover of over 50%. At least 10% of the urban area is kept in natural open space including lakes, wetlands, prairie, and forests. No community has planted more than 10-15% of any one species, a lesson learned from the widespread mortality from Dutch elm disease in the 1970's.



### Special Issues

Since 1991, USFS S&PF has funded a cooperative suppression program in the metropolitan region to control oak wilt, a fungal disease that kills oaks. 3068 sites, out of 7250 known sites, have been treated by vibratory plow in order to break root grafts so the disease can't spread to adjacent healthy oaks. On these sites, more than 6700 infected trees have been removed and destroyed to prevent overland spread of the disease.

The exceptionally cold winter did not deter the **gypsy moth**. 155 moths were trapped at 117 sites in 21 counties; down slightly compared to 1995. Two spray programs using Bt were conducted in May and June on 2 sites. Following treatment, no moths were caught at the Chisago Co. site but 7 moths were caught at the Dakota Co. site. An egg mass survey there was negative.

**Spruce budworm**, a defoliator of balsam fir and white spruce, continued to cause topkill and mortality for the 43rd consecutive year in Minnesota. The acreage decreased by about one half compared to 1995; adjacent areas of Ontario also observed this decrease. In the north central counties, spruce budworm have recently targeted white spruce plantations, but have not yet caused topkill or mortality in them.

Blowdown of old growth pines in 1994, 1995 and 1996 occurred at Itasca State Park, which contains the largest remnant of the old growth pine forest ecosystem in the state. Salvage and **pine bark beetle** trapping activities are being used to prevent further pine mortality. The Park's Plan is to extend the life of the old growth pines until restoration efforts can reestablish multi-age pine forests.

The **weather** in 1996 once again had a major effect on the health of Minnesota's forests. The most significant event was the prolonged extremely cold winter; in fact, many record lows were set, including  $-60^{\circ}\text{F}$  in Tower. Many cedars, white and red pines and windbreak Norway spruce were severely winter-burned and many were killed as a result of the hard winter. Maples and ashes sustained topkill and 5-20% of the walnuts in low-lying plantations were killed. In addition, flooding resulted in mortality of lowland trees on 3000 acres in northern counties.

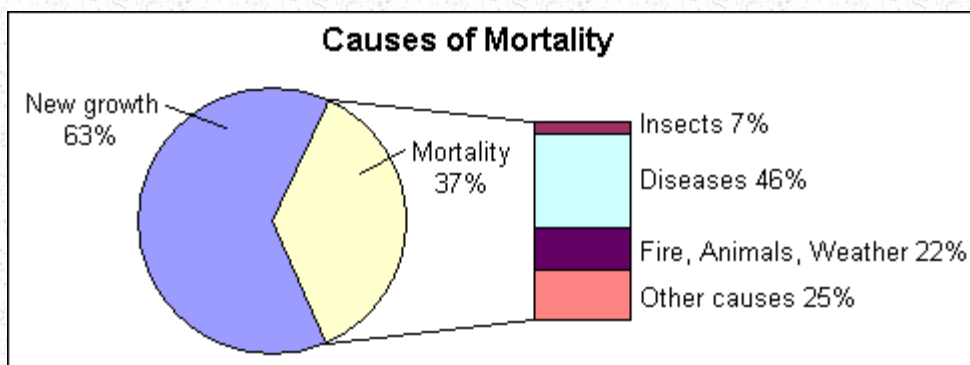
## Other Issues

**Spruce budworm** continues to be active on two fronts in Minnesota, in the northeastern and north central counties. In 1996, over 215,000 acres were defoliated. Spruce budworm is a defoliator of balsam fir and white spruce that causes mortality in these two tree species. Historically, budworm outbreaks have occurred in natural stands with a large component of balsam fir. In these stands, outbreaks continue until the budworm runs out of food material and the population collapses. However, for the past 40 years, budworm has been actively defoliating balsam firs in the northeastern counties with no sign of regional collapse.

## Regional Surveys

Insects, pathogens, fire, animals, weather and several other agents are natural causes of damage and loss in forests. The latest statewide inventory, Forest Inventory Analysis (FIA), occurred in 1990 and measured losses due to mortality and cull that occurred from 1979 to 1990. To date, only volumes and values regarding tree mortality are available.

In the following graph, the entire pie chart represents the total volume of wood that is added to live trees in one year, or the total annual growth. The piece of pie cut away and labeled mortality represents the volume of trees that died in one year. Net annual growth is total annual growth volume minus mortality volume.



Insects and pathogens accounted for 53% of the mortality volume losses totaling 117 million cubic feet of wood. Losses from fire,

animals and weather have been grouped together and caused 22% of the mortality. Other causes, amounting to 25%, is comprised of unknown causes and natural suppression.

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