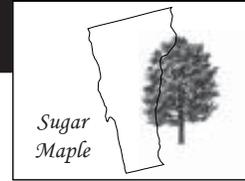


2000 Forest Health Highlights

Vermont



The Resource

Vermont's forests are valuable ecologically, economically, and socially. Covering nearly 80 percent of the state, forests provide jobs, stability to the landscape, wildlife habitats, biological diversity, clear water, scenic vistas, and diverse recreational opportunities. While changes are always occurring to the forests, there are values that Vermonters want to maintain.

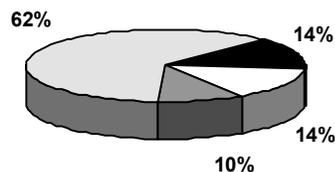
A Forest Resource Plan was developed to sustain the many values and meet the various demands on the forest resource. The vision states that: *In the future, the forests of Vermont will consist of healthy and sustainable ecosystems, with a prosperous and sustainable forest products industry, abundant recreational opportunities, and a combination of ownership patterns supporting a working forest landscape and undeveloped forest land.*

Today 78% of the state is forested (4,544,400 acres) compared to 63% in 1948.

Out of the forested area:

- 97.3% timberland
- 2.7% non commercial

Major Forest Types



- spruce/fir (14%)
- white/red pine/hemlock (14%)
- other (10%)
- northern hardwoods (62%)

Special Issues

In 2000, continuing evaluations of trees affected by the **1998 ice storm** show many trees are recovering. Foliage is filling in where the storm created gaps in tree crowns. One heavily damaged stand in central Vermont showed a 19 percent increase in the percent of canopy cover in one year. Meanwhile, the 1999 drought affected some sites with previously declining trees, as lingering mortality continues from ice storm injury.

A fourth resurvey of the 1985 **Hardwood Tree Health Survey** was initiated in 2000 with the acquisition of aerial photography to assess the hardwood resource in Vermont. Ground surveys in 2001 will be used to complete this assessment. In addition, 11 years of data related to the **Forest Health Monitoring Program** have been collected in the state.

Ongoing monitoring of **sugar maple tree health** showed that over 90 percent of trees evaluated were healthy in 2000. The North American Maple Project includes 39 forests in Vermont that have been monitored since 1988. Results over this 12 year period show fluctuations in sugar maple health in response to growing conditions and tree stress events. In 2000, there were some lingering effects from a 1999 drought, and additional tree stress from leaf diseases that contributed to thin, small leaves in some locations. A

very abundant seed crop also reduced leaf size, as trees focused energy on reproduction at the expense of leaf production.

Lingering effects from the **drought of 1999** were also apparent at locations where soils are shallow, areas where some disturbance recently occurred, and also on wounded trees. Species with observed drought symptoms included ash, hemlock, red spruce regeneration, white pine, maple, and trees growing in wet sites.

Tree declines were observed on over 15,000 acres of deciduous forests and 3,500 acres of spruce and fir forests in 2000. These reflect a decrease from 1999. In addition, 10,000 acres of forests were dead or dying as a result of increased water tables, usually associated with beaver ponds or wetlands.

White pine trees throughout Vermont have been observed with yellowing needles and casting of previous year's needles. A variety of stress agents seemed to be involved at different locations. In some cases a disease known as Caliciopsis canker was involved. At sites previously injured by the 1998 ice storm or drought affected areas, bark beetles in the genus Ips were associated with mortality of some trees. A forest health survey of white pine in Vermont will be conducted in 2001 to further assess tree conditions and causes for declines.

Special Issues cont.

High squirrel populations led to widespread conifer shoot clipping in the winter of 1999-2000. The low availability of mast led them to feed heavily on conifer buds. These animals are also known to feed heavily on bird eggs in years when populations are high and there is a lack of other food sources.

Damp spring and summer weather resulted in an abundance of leaf diseases in 2000. In many cases these diseases caused **browning of foliage**. Over 30,000 acres of hardwood forest were observed with brown foliage, with contributing factors of anthracnose, a common leaf disease, and insect activity (maple leaf cutter and birch leaf miners). Most of these trees are expected to recover.

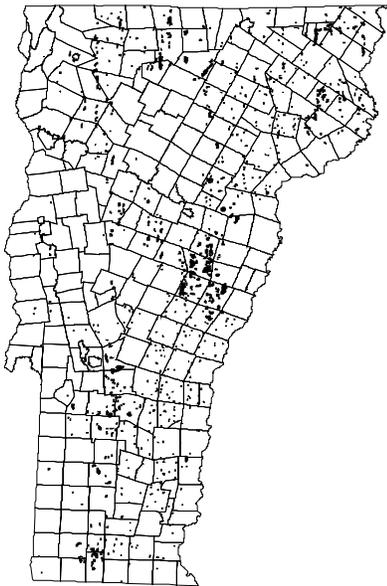


Figure 1. Areas of foliage browning caused by leaf diseases and insects, 2000.

Forest Health Web Sites :

* Vermont Department of Forests, Parks & Recreation: <http://www.state.vt.us/anr/fpr/forestry/protect/frpdir.htm>

* Vermont Monitoring Cooperative: <http://vmc.snr.uvm.edu>

* USDA Forest Service, Northeastern Area Forest Health Protection: <http://www.fs.fed.us/na/durham/>

Exotics

The Common Pine Shoot Beetle is a newly introduced insect that was found in northeastern Vermont in 1999. This non-native insect has been steadily moving eastward in New York state. The insect kills pine shoots during the summer by boring into them. In 2000, the beetle was confirmed to be present in two new Orleans County locations and one location in Caledonia County, which is a new county record. While no visible damage to pine was present, the presence of this exotic pest in 3 Vermont counties could mean restrictions to the movement of pine logs, pine bark, Christmas trees and wreath making materials. A quarantine of the affected counties will be imposed in 2001/2002.

The **Hemlock Woolly Adelgid** and the **Asian Longhorned Beetle** were not detected anywhere in Vermont in 2000, despite the presence of these insects in other regional states. The hemlock woolly adelgid is attacking and in some cases causing serious decline of hemlock as near as northern Massachusetts. The Asian longhorned beetle is a large wood boring insect that often prefers maples to other tree species, and can kill healthy trees in less than three years. The Department of Forests, Parks & Recreation is cooperating with the University of Vermont on a regional public awareness program concerning these two insects.

Gypsy moth populations increased in Chittenden County in 2000, and some defoliation occurred on ornamental oaks. Other areas in the state continue at low population levels. No noticeable defoliation is expected in 2001.

Air Quality and Forest Health

Forest soils provide the foundation for good forest health. Several new initiatives of the Vermont Monitoring Program will provide more information on changes in forest soils over time. A long-term soil monitoring study is being designed to provide information on the long-term effects of acid deposition on forest nutrition. Likewise, two new soil climate stations were installed as part of a national Soil Climate Analysis Network to evaluate the effects of climate change on soil temperature, moisture and other factors.

Ground level **ozone injury** to forests is being monitored annually at specific sites statewide as part of the National Forest Health Monitoring Program. While ozone exposure can reduce tree growth and tree resiliency, only leaf symptoms of injury have been detected at our monitoring sites. Ozone concentrations were generally low in 2000, in part due to rainy, cool weather. Sensitive plant species at 33 percent of the 18 locations surveyed in 2000 had symptoms of ozone injury. No forest trees have been detected with ozone injury.

For More Information

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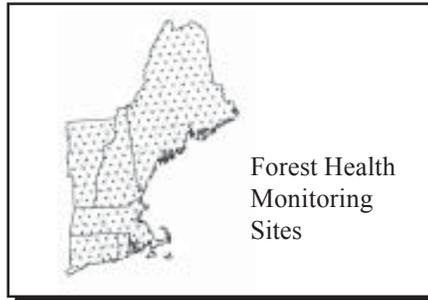


Regional Surveys

Interest in regional forest condition prompted the implementation of the National Forest Health Monitoring Program and the North American Maple Project.

FOREST HEALTH MONITORING PROGRAM

The objective is to assess trend in tree condition and forest stressors. All of the New England States have been involved since the program was initiated in 1990. Results indicate that there has been minimal change in crown condition in the last 5 years. In 1994, 99 percent of trees greater than 5 inches diameter had normal crown fullness. About 96 percent of the trees had little or no crown dieback, and 78 percent showed no measurable signs of damage. The most common damage was decay indicators, which were more evident on hardwoods than softwoods. Additional surveys indicate there are concerns for individual species such as ash, butternut and hemlock due to various damage agents.



NORTH AMERICAN MAPLE PROJECT

This cooperative project with Canada was initiated in 1988 to look at change in sugar maple tree condition. There are several states in the Northeast involved including New York, New Hampshire, Vermont, Maine, and Massachusetts. Overall, sugar maple located within the sample sites are in good condition. Periodically, insect defoliation has affected crown condition in some areas. There was little difference found between sugarbush and non sugarbush stands.

For More Information

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