

Forest Health Highlights

Vermont



February 2000

The Resource

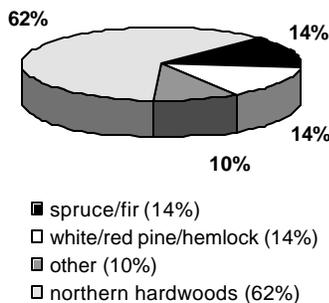
Vermont's forests are valuable ecologically, economically, and socially. Covering nearly 80 percent of the state, forests provide jobs, stability to the landscape, wildlife habitats, biological diversity, clear water, scenic vistas, and diverse recreational opportunities. While changes are always occurring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



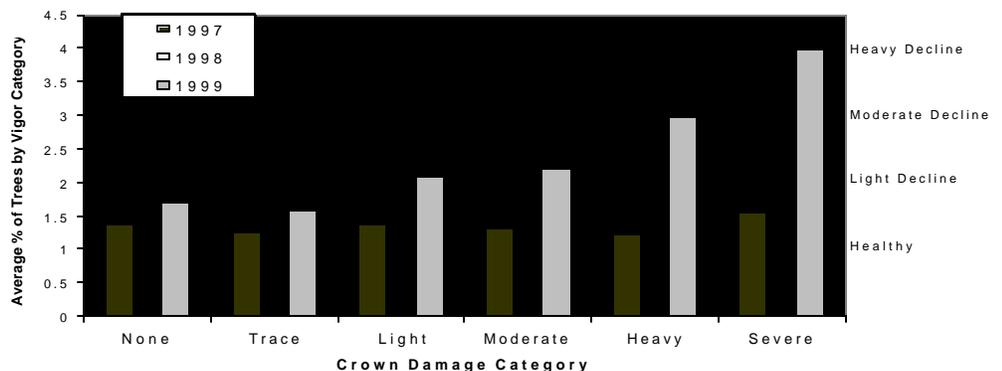
Special Issues

For a second year in a row, **extreme weather conditions** affected Vermont's forests. The year 1999 was warmer than usual, the 5th warmest on record; drier than usual, the 3rd driest summer on record; wetter than usual in September, the wettest on record; and featured three heavy wind storms, one brought on by Hurricane Floyd and accompanied by heavy rains, and two others in July. Forests were impacted by these events in several ways. The drought stressed trees, especially those on ledgy or shallow soils, causing leaf scorch, leaf yellowing and browning, and early leaf color and leaf drop. In some cases, leaves browned and dropped in June and July. Most symptoms of drought were not visible until late summer. Drought symptoms were recorded on 84,727 acres. Trees such as birches and beech were especially affected. Beech bark disease was more conspicuous than normal, due to the drought with 4000 acres of damaged trees recorded. Tree stress this year may result in smaller leaves and other symptoms in 2000, despite replenished soil water from September rainfall. Heavy winds caused tree breakage and uprooting on over 1116 acres.

Trees in areas affected by the **1998 ice storm** are still recovering. Results from the North American Sugar Maple Project show that leaf and branch growth is filling in on injured tree crowns. Most severely injured trees are still alive, but will take many years to return to a healthy condition. Some may never fully recover.

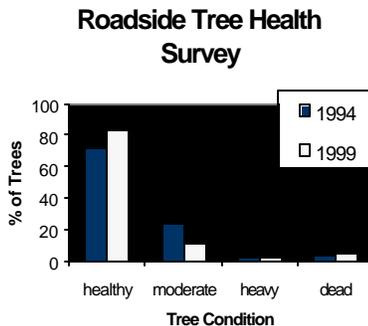
Special surveys were conducted in 1999 to identify potential effects from the 1998 ice storm on sugarbushes and to monitor the health of roadside trees. The **sugarbush survey** was conducted across Vermont in sugarbushes known to have ice injury to trees. Results show that in stands which were hardest hit by the ice storm, more sugar maples experienced tree crown injuries than other tree species. While the amount of crown damage varied within each sugarbush from none to 100%, average crown damage for all sugarbushes was less than 30%. Elevation was a key factor in determining sugarbush damage, with 2 distinct elevation bands of damage, 200-1100 feet and 1700-2200 feet.

Ice Storm Effects: Trend in Vigor by Crown Damage Category - All species and crown classes



Special Issues cont.

The **roadside tree health survey** had been previously conducted statewide in 1994. A sample of the same roads in 1999 showed that most trees are doing even better than in 1994. This group of roads was not significantly affected by the ice storm.



Needle browning and drop of previous year needles on white pine was widespread during early summer. This was caused by **Brown Spot Needle Blight**, a disease that infected needles last summer during the extreme wet weather. This disease had never been identified on white pine in Vermont before this year.

Defoliation and browning of sugar maple foliage by the **maple leaf cutter** insect affected 14,479 acres of forest land. Populations have been increasing over the past few years, and this year marks a substantial increase from last year when 1,336 acres were damaged.

Exotics

The **Common Pine Shoot Beetle** was found in Essex and Orleans County, not far from the Canadian border. This non-native insect has been steadily moving eastward in New York state. The source of our introduction is believed to be infested logs from New York that were shipped to an area of Quebec, not far from the Vermont border. The insect kills pine shoots during the summer by boring into them. So far, no damage to pine has been detected in Vermont. A quarantine of the affected counties is being considered.

Two regionally significant exotic insects, the **hemlock woolly adelgid** and the **Asian longhorned beetle**, are not currently found in Vermont. The hemlock woolly adelgid is attacking and in some cases causing serious decline of hemlock as near as northern Massachusetts. An external quarantine is in effect to reduce the chances of introduction of the adelgid from infested areas into Vermont. 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. Attempts are underway to eradicate the non-native from parts of Long Island, New York City and Chicago, Illinois, however, the insect continues to spread into new locations in metropolitan areas of these cities. This insect has not been found in New England, but plans are being developed by State organizations to provide for a quick response if the insect is found in Vermont. The Department of Forests, Parks & Recreation is cooperating with the University of Vermont on a regional public awareness program concerning this beetle.

Pear thrips is an exotic insect that has been causing defoliation of sugar maple and other tree species in Vermont since 1987. Damage this year was less extensive than in 1998, but some heavily defoliated trees had compounded stress from anthracnose and drought. Pear thrips defoliation affected 10,921 acres in 1999.

Concern about **regeneration** of hardwoods in southern counties includes problems of invasions of non-native plants. Non-native species of buckthorn, Japanese barberry, honeysuckle, and oriental bittersweet are examples of plants beginning to invade our Vermont forests. Regeneration failures are also associated with heavy fern cover and heavy deer pressure.

Air quality and Forests

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 these sites. Ozone concentrations were particularly high in Vermont this year, but drought conditions prevented plant uptake of ozone, resulting in lower than expected injury. Sensitive plant species at 33% of the 21 locations surveyed in 1999 had symptoms of ozone injury.

Several new research initiatives focus on understanding **acid deposition** effects on forests. A New England Governors/Eastern Canadian Premieres initiated project is mapping forest sensitivity to acid deposition. Forest resilience to acid deposition depends largely on the ability of soils to buffer the acid inputs, thereby keeping soil nutrition stable for tree growth. A preliminary map of the sensitivity of Vermont forests will be completed in 2002. Another acid deposition initiative from the University of Vermont is studying a variety of tree species for nutrient leaching from foliage. This study complements other work on red spruce that has identified that acid deposition affects the hardiness of this tree over cold winter conditions.

For More Information

Vermont Department of Forests, Parks
and Recreation
103 South Main St.
Waterbury, VT 05671-0602

(802)-241-3678



Forest Health Protection
USDA Forest Service
P.O. Box 640
Durham, NH 03824

(603) 868-7709

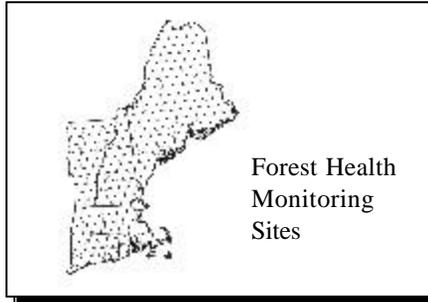


Regional Surveys

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

Vermont Department of Forests, Parks and Recreation 103 South Main St. Waterbury, VT 05671-0602 (802)-241-3678		Forest Health Protection USDA Forest Service P.O. Box 640 Durham, NH 03824 (603) 868-7709	
---	---	---	---

July 1996