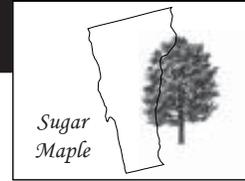


2002 Forest Health Highlights

Vermont



June 2003

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, these are values that Vermonters want to maintain.

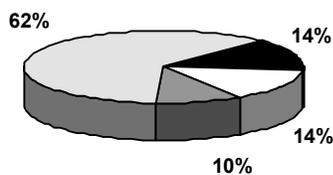
A Forest Resource Plan was developed to sustain the many values and meet the various demands on the forest resource. The vision states that *In the future, the forests of Vermont will consist of healthy and sustainable ecosystems, with a prosperous and sustainable forest products industry, abundant recreational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

Drought was the primary forest health concern in 2002. Hardwood browning was mapped on 200,123 acres during aerial surveys in late August to mid-September. Most of the damage was on shallow, ledgey soils. Some trees dropped their leaves prematurely. Beech, birches, red maple, and sugar maple were the species most severely affected. No refoitation was observed. Hardwood browning was most severe in southern Vermont. In drought years, trees are not able to produce normal amounts of carbohydrate. The effects of lower carbohydrate reserves will show up in any of the next two or three years, and decline may continue for several years. The greatest risk will be to wounded or diseased trees and trees on poor sites. Birch condition may be of particular concern, since the shallow root systems of white birch are quite sensitive to soil temperature changes.

Symptoms of tree decline from the 2001 drought were also noticeable. Chlorosis of white pine foliage was widely reported in the spring, although trees greened up by mid-summer. A few ridgetops with hardwood mortality, 25 to 100 acres in size, were mapped in Caledonia and Washington Counties. Drought increased the impact of beech bark disease and birch leaf miners. Conifers stressed by drought may experience a buildup of bark borers. Sawdust, exit holes, or bark which is sloughing off from woodpecker activity can be observed. This may occur on trees with green foliage. Drought related mortality of red and Scots pine was observed in 2002 in small, widely scattered areas. The pine engraver and turpentine beetle were contributing factors in some of these areas.

Tree decline visible during aerial survey decreased for deciduous forest but increased for conifer forests. Hardwood decline and mortality was mapped on nearly 1,500 acres in 2002, while spruce-fir dieback and mortality was mapped on 4,100 acres. In addition, 10,400 acres of forests were dead or dying as a result of increased water tables, usually associated with beaver ponds or wetlands. **Larch decline**, initiated by drought and usually followed by infestations of the eastern larch beetle, increased noticeably, especially in the Northeast Kingdom. Over 1,400 acres of larch decline areas were mapped, compared to 400 acres in 2001.

Other Significant Stressors

Symptoms were occasionally severe from **weather related damage**. Spring frost on May 20 and May 22, 2002, affected Christmas tree plantations in scattered locations. In southern Vermont, some forest and ornamental trees were also damaged. **Birch defoliation**, caused by birch leaf miners was unusually widespread at moderate to heavy levels. Drought increased damage severity. In all, 84,121 acres of birch defoliation were mapped during aerial surveys.

Bruce spanworm damage was observed statewide. Heavy defoliation of sugar maple in Essex and Orleans counties was mapped on 3,222 acres during aerial surveys. These green inchworms cause lacy defoliation in May and June. **Forest tent caterpillar** populations may be building. Increased sightings in Vermont in 2002 and an outbreak on aspen in Ontario, Canada, suggest it is an insect to look out for. **Maple leaf cutter** defoliation was less noticeable than previous years, with only 5,954 acres of damage mapped, compared to 23,634 acres in 2001.

Special Issues cont.

Exotic Pests

Beech bark disease continued to be more conspicuous than normal due to increases in beech scale and *Nectria*, and recent droughts. In all, 55,962 acres were mapped. Over half of the trees in some mapped areas had visible symptoms. Some trees are genetically resistant to beech bark disease, and will produce resistant sprouts and seeds.

Butternut canker occurs statewide, causing widespread mortality. The University of Vermont Forest Pathology Laboratory continues to research site factors and potential insect vectors.

Gypsy moth populations were at very low levels statewide and are expected to remain low in 2003.

Exotic woody plants known to be invasive were present on 20 percent of sites evaluated in the 2001 Vermont Hardwood Health Survey.

Hemlock woolly adelgid is not known to occur in Vermont. No signs of adelgid were found when hemlock regeneration was inspected in 30 hemlock stands. Although it has been found in new locations in New Hampshire and Massachusetts, the insect is not known to have moved any closer to Vermont. We continue to discourage hemlock salvage in anticipation of future losses, because of the spotty impact of the insect, the long delay before mortality occurs, and the many unknowns about its population dynamics as it moves further north. Research continues at the University of Vermont on fungal pathogens of hemlock woolly adelgid and risk mapping.

Asian longhorned beetle has not been detected in Vermont. This beetle is a large wood-boring insect now present in the New York City and Chicago areas. It 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 this insect and the hemlock woolly adelgid.

Common pine shoot beetle is a newly introduced insect that was found in northeastern Vermont in 1999. This insect kills pine shoots during the summer by boring into them. By 2000, the insect was confirmed as present in Essex, Orleans, and Caledonia Counties. A trapping survey of 65 sites in 7 counties was conducted in 2002, however the beetle was not found in any counties outside the quarantine area. The movement of pine logs, bark, or unprocessed bark mulch from Essex, Orleans, and Caledonia Counties is now regulated.

Monitoring of Forest Health

Ongoing monitoring of **sugar maple tree health** as part of the North American Maple Project showed that 92 percent of trees evaluated were healthy. This project includes 38 forests in Vermont that have been monitored annually since 1988. Results over this 14-year period show fluctuations in sugar maple health in response to growing conditions and tree stress events. In 2002, foliage was thin in some locations due to drought, but there was little change in overall tree condition for all locations compared to previous years. Other species evaluated include beech, red maple, yellow birch, and white ash. Beech trees remained less healthy than other species, while red maple showed improvement over time. Yellow birch and white ash showed a trend toward thinner foliage.

The **Vermont Hardwood Health Survey**, initiated in 1985, uses aerial photography of 1 percent of the state's forests, followed by ground survey of over 80 locations, to evaluate the health of the hardwood resource every 5 years. The most recent survey was completed in 2001 and the survey results are now available as a 36-page report and summary brochure. The results indicate that 91 percent of trees evaluated were healthy, with little change since 1996. There was a dramatic improvement in tree health between 1985 and 1991, with continued improvement between 1991 and 1996.

A **forest ecosystem management demonstration project** will be implemented in 2003 to test new forest management techniques that promote old growth forest characteristics. This project is part of the Vermont Monitoring Cooperative's work on Mount Mansfield, and will include new and existing silvicultural treatments, coupled with research on forest ecosystem effects and economic tradeoffs.

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/>

For More Information	
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