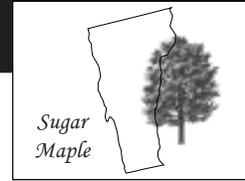


2004 Forest Health Highlights

Vermont



January 2005

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.

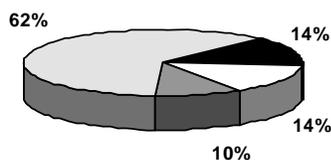
A Forest Resource Plan was developed to sustain the many values and meet the various demands on the forest resource. The vision states that, *In the future, the forests of Vermont will consist of healthy and sustainable ecosystems, with a prosperous and sustainable forest products industry, abundant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

Major Forest Types



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

Special Issues

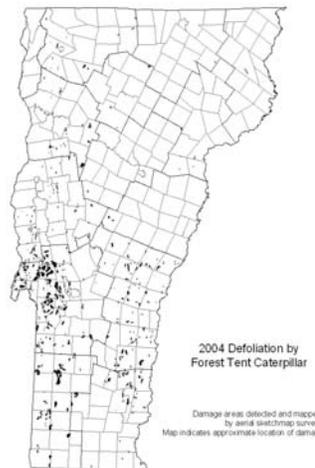
Forest tent caterpillar populations continued to increase, causing widespread defoliation on over 90,000 acres this year. Sugar maple, oak, and white ash were most often affected, and the most extensive defoliation was observed in southern and central counties.

Trees in many areas did not refoliate normally and remained without leaves through most of the summer. Sugar makers who experienced this situation are advised to reduce tapping to allow for tree recovery. Historically, outbreaks have lasted 1 to 3 years in one region, but 3 to 8 years statewide. Additional defoliation is expected in 2005.

Hemlock woolly adelgid is an exotic insect not known to be established in Vermont, despite populations in adjacent States. In 2004, Vermont received numerous nursery stock shipments that were found to be infected with HWA. The insect was found on certified hemlocks from five nurseries in North Carolina and one in Pennsylvania.

Over 700 trees were recovered and destroyed, but 14 trees were sold and not located. Additional nursery stock from New Hampshire was also found to be infested, and 17 trees were destroyed. Vermont is revising its quarantine on hemlock imports from other States to strengthen the ability to keep this insect out of Vermont.

The State continues 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 mapping of high risk forest stands.



Other Significant Defoliators

Birch defoliation affected over 66,000 acres of forest. Various organisms were responsible: birch leaf miner, birch leaf skeletonizer, and *Septoria*, a fungal disease. Upper-elevation paper birch trees had widespread dieback and mortality, believed to be associated with recent drought years.

Eastern tent caterpillar caused significant defoliation to host trees statewide, the heaviest damage seen in recent years. Cherry and apple trees were heavily defoliated but in many cases were able to successfully re-foliate.

Bruce spanworm damage was observed statewide. Defoliation was most prominent on lower foliage and, although defoliation was observed statewide, less than 400 acres was mapped from aerial surveys. These green inchworms cause lacy defoliation in May and June. By July, the margins of damaged leaves will have turned brown.

Maple leaf cutter defoliation of sugar maple trees was less noticeable than previous years, with less than 400 acres of damage mapped.

Fall cankerworm populations increased and small areas of defoliation were observed.

Arborvitae leaf miner caused heavy damage on over 1,000 acres of northern white cedar, and in some cases resulted in severe browning.

Tree Declines

Deciduous and conifer forest **tree declines** continued but covered fewer acres than in previous years. Although drought conditions were not present in 2004, much of this decline is believed to be associated with ongoing stress from droughts in recent years. Hardwood decline and mortality was mapped on 31,000 acres; spruce-fir dieback and mortality was mapped on nearly 12,000 acres; 19,000 acres of forests were dead or dying as a result of higher water tables, usually associated with beaver ponds or wetlands; and **larch decline** continued on over 2,000 acres.

Monitoring of Forest Health

Ongoing monitoring of **sugar maple tree health** showed that over 90 percent of trees evaluated were healthy. This survey of North American Maple Project plots in Vermont includes 38 forests that have been monitored annually since 1988. Results over the 17-year period show fluctuations in sugar maple health in response to growing conditions and tree stress events. In 2004, the major factor affecting tree health was defoliation by forest tent caterpillar and Bruce spanworm.

A **forest ecosystem mercury research project** was implemented in 2004 to improve understanding of atmospheric mercury movement through forest canopies. This project is part of the Vermont Monitoring Cooperative's work on Mount Mansfield and is part of studies that provide results on the role of forests in cycling mercury from air to water systems.

Vermont continues to participate in monitoring the health of our forests in collaboration with the USDA Forest Service Forest Health Monitoring Program. Results from surveys conducted since 1990 in Vermont are available through the Forest Health Monitoring Web site: <http://fhm.fs.fed.us/>.

Exotic Pests

Beech bark disease continues to be more conspicuous than normal due to increases in scale insects and *Nectria* cankers enhanced by recent droughts. Over 75,000 acres of symptomatic trees were mapped, with some areas experiencing dieback and mortality.

Balsam woolly adelgid continued to cause decline and mortality of balsam fir trees. Over 10,000 acres of damaged forests were mapped during aerial surveys. Drought from previous years seems to be involved with mortality associated with this bark and twig feeding insect. Despite continued health effects, populations of this insect have decreased due to cold winter temperatures.

Butternut canker is a statewide health concern, as butternut trees continue to decline. The University of Vermont Forest Pathology Laboratory has ongoing research into site factors and potential insect vectors.

Gypsy moth caterpillars were commonly observed statewide; populations are expected to increase in 2005.

Pear thrips numbers increased in soil samples, but spring leaf development was rapid in most areas, and damage was limited to high-elevation sugar maples.

The **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 2004, the insect was confirmed as present in 6 counties.

All Vermont counties are now included in the quarantine area. The movement of pine logs, bark, or unprocessed bark mulch is now regulated at specific times of year. Details of the quarantine are available at http://www.vtfpr.anr.state.vt.us/fpr/protection/for_protect_forhealth.cfm.

Exotic woody plants known to be invasive in forests are being documented across the State. Currently, species of buckthorn, honeysuckle, and other non-native plants are out-competing native species in some forests in southern Vermont.

Emerald ash borer is not known to occur in Vermont, but has been recently raising serious tree health concerns as it moves from importation sites in Michigan. This wood-boring insect girdles trees by feeding just below the bark in the cambium area. It feeds on a variety of ash species and can kill healthy trees in 2 years. Vermont is conducting surveys of ash forests for the presence of emerald ash borer and will continue to treat this as a potential tree health issue for the future.

The **Asian longhorned beetle** has not been detected in Vermont. This beetle is a large wood-boring insect now present in the New York City, Jersey 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 and Recreation is cooperating with the University of Vermont on a regional public awareness program concerning this insect and the hemlock woolly adelgid.



Sudden oak death infections occurring on the west coast have not been detected in Vermont. A fungus-like organism, *Phytophthora ramorum*, causes cankers on susceptible trees (oak, beech, and chestnut species) and can also cause leaf spotting on a long list of trees and shrubs. Although it is unclear what impact this disease would have in our northeastern forests, Vermont will continue to survey for this disease on shipments of nursery stock coming from infested areas.

For More Information

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

(802) 241-3678



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

(603) 868-7709

State and Private
Forestry