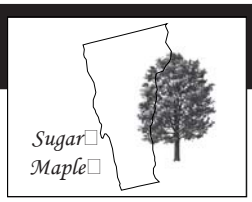
2003 Forest Health Highlights

Vermont



January 2004

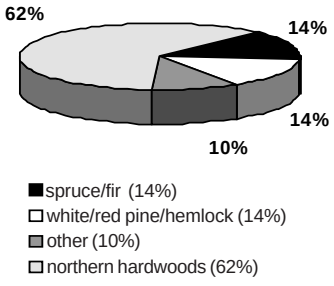
The Resource

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, *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.*

78% of the State is forested (4,544,400 acres) compared to 63% in 1948.
Of the forested area:
- **97.3% timberland**
- **2.7% noncommercial**

Major Forest Types



Special Issues

Birch defoliation and decline was widespread throughout Vermont in 2003, affecting over 170,000 acres of forests. Several birch species were involved. Yellow birch showed leaf browning, mostly due to feeding by a birch skeletonizing insect. High elevation paper birch were damaged by a birch leaf disease causing leaf spotting, browning, and, in some cases, leaf drop.

Winter injury on red spruce affected nearly 85,000 acres of forests, mostly in mountainous areas. An unusually long period of cold temperatures in January and mid-February caused needle injury, resulting in current year needle death. The pronounced red needles were visible throughout the winter, and, in some cases, persisted into August. Some tree injury was severe, causing death of previous year needles and current year buds. A special aerial survey was conducted in April and May. A research study was initiated by the USDA Forest Service to determine the severity, health effects, and relationship of injury to tree calcium levels.

Tree declines visible by aerial survey increased dramatically for deciduous and conifer forests. Although **drought conditions** were not present in 2003, much of the decline is believed to be associated with ongoing stress from droughts in 3 of the previous 4 years. Hardwood decline and mortality was mapped on 50,000 acres, while spruce-fir dieback and mortality was mapped on nearly 14,000 acres. An additional 17,000 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 or defoliation, and usually followed by infestations of the eastern larch beetle, continued to increase from the past 2 years. Over 4,000 acres of such decline were mapped, compared to 1,400 acres in 2002 and 400 acres in 2001.

Other Significant Stressors

Symptoms were occasionally severe from **weather**. Damage from **heavy winds** during two July storms caused localized breaking and uprooting of trees. A microburst on July 21 created 120 mph winds at spotty locations in southern Vermont; a separate wind storm on July 24 affected additional forests. The two storms damaged over 3,000 acres.

Bruce spanworm damage was observed statewide. Heavy defoliation of sugar maple trees occurred in locations in southern Vermont; otherwise defoliation was most prominent on lower foliage. These green inchworms cause lacy defoliation in May and June. By July, the margins of damaged leaves will have turned brown.

Forest tent caterpillar populations are increasing, and defoliation was observed on over 300 acres this year. This insect has been at low population levels for decades, but is historically one of the major insect pest problems in sugar maple forests. Additional defoliation from this insect is expected in 2004.

Maple leaf cutter defoliation of sugar maple trees was less noticeable than previous years, with only 900 acres of damage mapped compared to 5,954 acres in 2002 and 23,634 acres in 2001.

Locust leaf miner defoliation increased dramatically and was heavier than in recent years. Defoliation by this leaf-mining beetle, which has two generations each growing season, results in leaf browning that is conspicuous on roadsides and in urban settings.

Monitoring of Forest Health

Ongoing monitoring of **sugar maple tree health** showed that 88 percent of trees evaluated were healthy, a decrease from recent years. This survey of North American Maple Project plots in Vermont includes 38 forests that have been monitored annually since 1988. Results over the 16-year period show fluctuations in sugar maple health in response to growing conditions and tree stress events. In 2003, the major factors affecting tree health included drought from previous years and defoliation from the Bruce spanworm.

A **forest ecosystem management demonstration project** was 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 includes new and existing silvicultural treatments coupled with research on forest ecosystem effects and economic tradeoffs.

Vermont continued participation in an international project sponsored by the New England Governors and Eastern Canadian Premiers (NEG/ECP) to map **forest sensitivity to acid deposition**. A report on the pilot study in Vermont was presented at the September 2003 NEG/ECP meeting; these preliminary maps are available via the Internet (http://www.ecosystems-research.com/fmi/VT-NF-Forest-Sensitivity-Report.pdf). Final maps of New England and Eastern Canada, as well as a regional report, will be produced by the end of 2004. Vermont continues to participate in monitoring the health of our forests in collaboration with the USDA Forest Service's Forest Health Monitoring Program. Results from surveys conducted since 1990 in Vermont are available through the Forest Health Monitoring Web site (http://www.na.fs.fed.us/spfo/fhm/index.htm).

Exotic Pests

Balsam woolly adelgid continued to cause decline and mortality of balsam fir trees. Nearly 9,000 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. Populations decreased somewhat, at least in northern Vermont, apparently as a result of the cold winter temperatures.

Beech bark disease continues to be more conspicuous than normal due to recent droughts. Over 90,000 acres of symptomatic trees were mapped.

Butternut canker is a statewide health concern for butternut trees, causing widespread mortality. The University of Vermont Forest Pathology Laboratory continues to research site factors and potential insect vectors.

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 began to survey ash forests for the presence of emerald ash borer in 2003 and will continue to treat this as a potential tree health issue for the future.

Gypsy moth populations were at very low levels statewide and are expected to remain low in 2004.

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

Hemlock woolly adelgid is not known to occur in Vermont, although it has been found in new locations in New Hampshire and Massachusetts closer to the Vermont border. 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 mapping of high risk forest stands.

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 and Chicago areas. It often prefers maples to other tree species, and can kill healthy trees in less than 3 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.

Pear thrips numbers were low in fall 2002 soil samples, and little damage occurred in 2003.

The **common pine shoot beetle,** a newly introduced insect found in northeastern Vermont in 1999, 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 2003, and the beetle was found in one new site in Washington County, outside the quarantine area. The movement of pine logs, bark, or unprocessed bark mulch from Essex, Orleans, Caledonia, and Washington Counties is now regulated.

For More Information

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