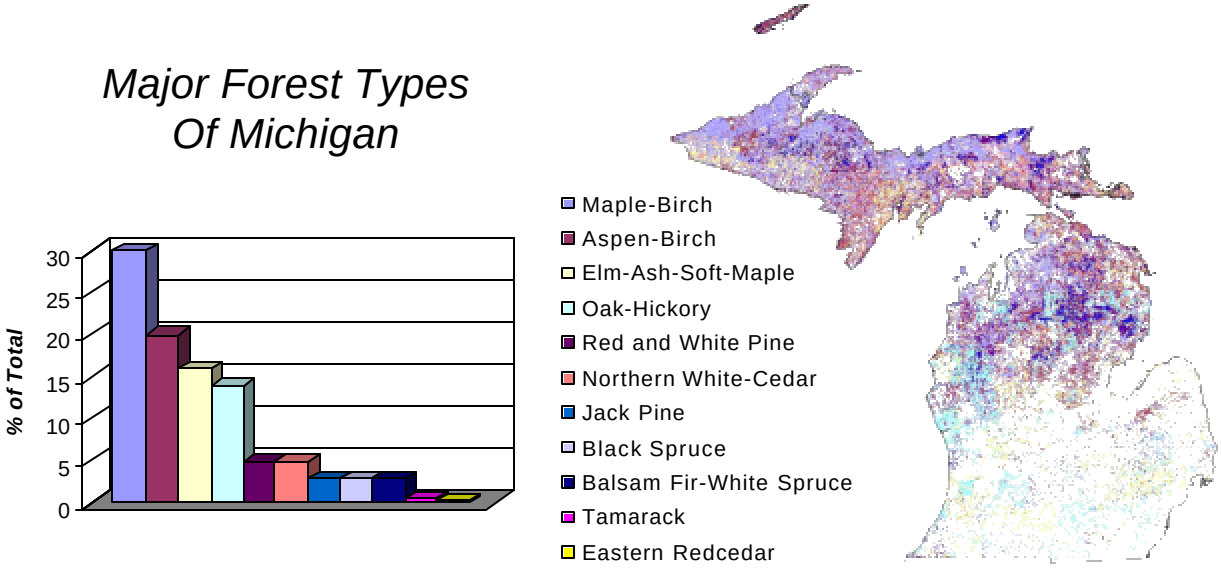
2000 Forest Health Highlights
Michigan

Forests comprise 53% of the land area of the state, or about 19.3 million acres. These forests are a critical component of Michigan's environment and economy for the recreational opportunities and the products they provide. Forestry related industries and manufacturing employ 150,000 people statewide and annually contribute $9 billion to the state's economy. Additionally, forest-based tourism and recreation support 50,000 jobs and add $3 billion to Michigan's economy. Michigan's forests contribute to clean air, water, and reduce soil erosion.



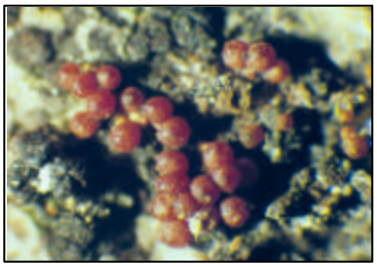
Incidence of the vascular disease **oak wilt** continues to increase from 2000 levels in several areas around the Upper Peninsula and the northern Lower Peninsula of Michigan. In response, a statewide oak wilt initiative is underway in cooperation with the Michigan Department of Agriculture and the Michigan Department of Natural Resources. This effort is focusing on detecting new and established oak wilt pockets across the state, and working with local communities to suppress the spread of infection centers.

Detection is being accomplished through ground surveys conducted by state, federal, and private foresters, consultants, and nursery inspectors. Information is maintained in a database that links field observations with extensive GIS datasets. This is the first time specialists and resource managers will be able accurately track the occurrence of oak wilt in Michigan over time. This data will be available to the public on the Web in 2001.

To slow the overland spread of oak wilt, harvesting restrictions have been established on state land. Cutting forest stands that contain oak trees will be prohibited between April 15 and July 15. This is the period when the sap-feeding beetles responsible for spreading oak wilt are most active. These beetles are attracted to fresh tree wounds and can infect oak trees that have been damaged during logging operations.

The introduction of **exotic organisms** is a serious threat to our native forest ecosystems. Several agencies including the Michigan Department of Agriculture, the U.S. Forest Service, USDA Animal and Plant Health Inspection Service, university forest entomologists and the Michigan Department of Natural Resources are preparing contingency responses to possible introductions of exotics. Current planning efforts focus on the **Asian longhorned beetle,** and the **Hemlock Woolly Adelgid.**

The presence of the beech scale, *Cryptococcus fagisuga*, was first confirmed in Michigan in March 2000. The Ludington State Park is extensively infested, as are several satellite areas within the Ludington area. Ludington is on the Eastern Shore of Lake Michigan in the central Lower Peninsula. Subsequent surveys found beech scale in several areas of Michigan's Upper Peninsula with associated tree decline and mortality in isolated areas. **Beech Bark Disease** is caused by a combination of two pests, the beech scale and a fungal disease, *Nectria spp*. US Forest Service Pathologists, St. Paul, Minnesota recently identified the fungus currently associated with Michigan's beech mortality as *Nectria galligena*. Beech Bark Disease will continue to spread through Michigan and will have a profound impact on Michigan's American Beech resource.



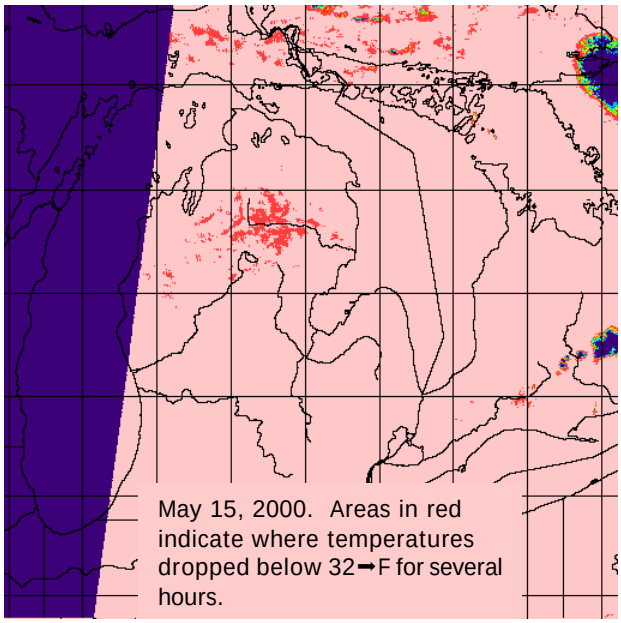
Large numbers of an exotic "ladybug" called the **Multicolored Asian Lady Beetle**, *Harmonia axyridis*, invaded homes and other structures in the fall. This exotic species is native to eastern Asia. Epidemic populations have plagued Michigan homeowners for the last few falls. Although generally considered a beneficial predator, this was a difficult concept to sell people removing hundreds of beetles from inside and around their home. They also disrupt native predator complexes.

The **Larch Casebearer** defoliated tamarack (eastern larch) in the central Upper Peninsula for the second consecutive year. Larch casebearer is an exotic insect introduced to the Lake States since the early 1900's. Introduced parasites have effectively protected the tamarack resource.

Public agencies and private groups are creating a **Michigan Invasive Plant Council**. The Council's mission is to protect Michigan from the threat of invasive plants like purple loosestrife, leafy spurge, spotted knapweed and garlic mustard by 1) Raising public awareness about the spread and impact of invasive plants; 2) Facilitating the exchange of information concerning management, control, inventory and monitoring of invasive plants; 3) Providing a forum for all interested parties to discuss issues relating to invasive plants; 4) Serving as an educational, advisory and technical support council for all aspects of invasive plants and related issues; 5) Preventing future introductions of new invasive plants; and 6) Developing, maintaining and publishing a council-reviewed invasive plant species list.

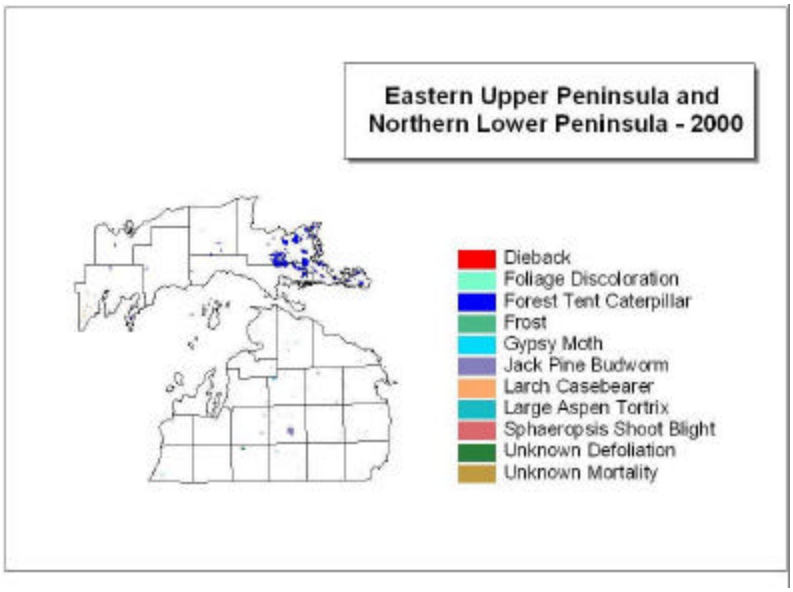
Sphaeropsis sapinea (=Diplodia continues to affect open grown and understory red pine in the Upper Peninsula and in northern Lower Michigan, particularly in the northeastern counties. Wind and hailstorm damage combined with dry growing seasons in 1998 and 1999 created conditions favorable for development of the disease. Sphaeropsis causes shoot death, stem cankers and a phenomenon called collar rot. Collar rot girdles the stem at ground level and can kill seedlings and small trees. Research at the University of Wisconsin indicates that red pine plantations that develop symptoms after planting

may have been infected at the nursery. There are no effective controls once a tree is infected with *Sphaeropsis*. Avoiding stressful conditions, like planting red pine on poor sites, can help reduce the incidence of infection. Harvesting mature red pine trees can help reduce infection on young red pine seedlings and saplings growing below.



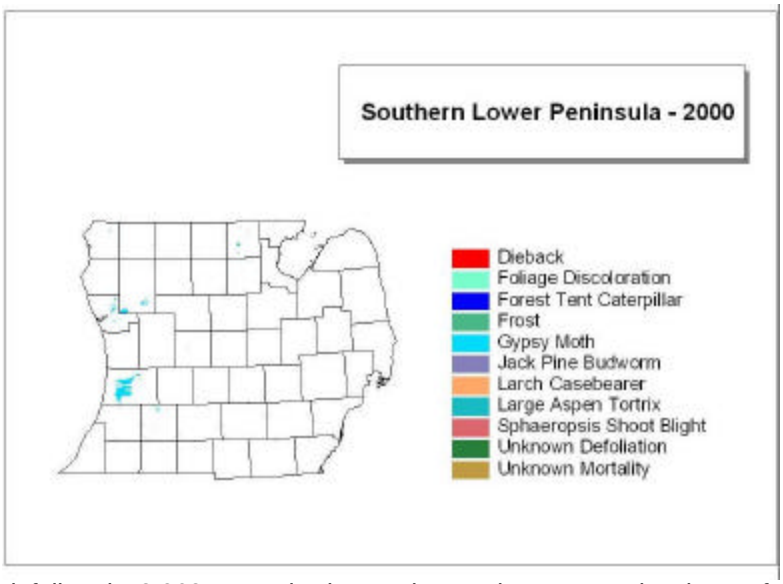
May 15, 2000. Areas in red indicate where temperatures dropped below 32➡F for several hours.

Cold temperatures during the evenings of May 14-15 and May 20 damaged newly expanded oak leaves across the Michigan's northern Lower Peninsula. Temperatures in the low teens and twenties were recorded over much of the area. Damage was widespread but limited to areas of low terrain where cold air settled. Oaks in the Upper Peninsula escaped damage because leaves were still in the unexpanded bud stage. In the southern Lower Peninsula, oak leaves were closer to full expansion and largely protected from damage by the waxy cuticle layer of the mature leaves. Trees damaged by the freeze produced new leaves and had fully recovered by midsummer.



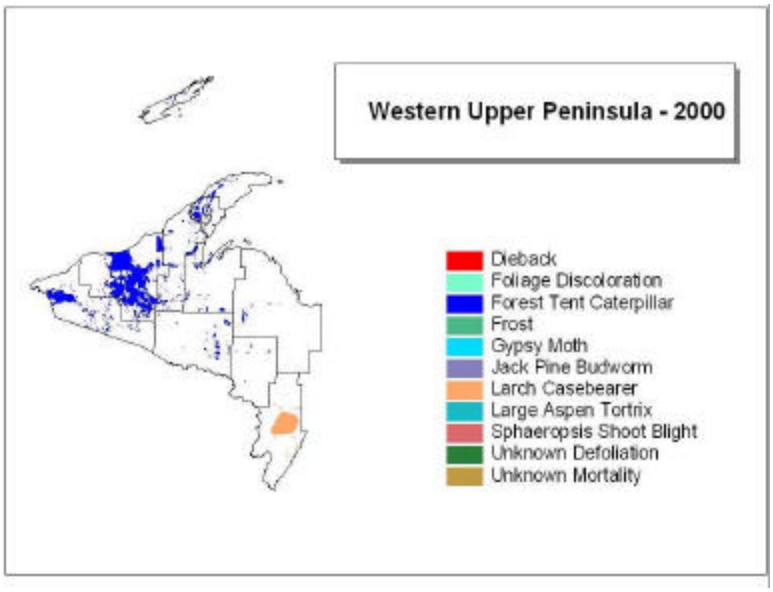
Gypsy mothdefoliation decreased nearly 50 percent in 2000 to 96,929 acres, down from 176,626 acres in 1999. The biological insecticide B.t. was applied to another 78,000 acres as part of the Michigan Cooperative Gypsy Moth Suppression Program. This also represents a significant decline from 1999. The decrease in gypsy moth numbers is due largely to nucleopolyhedrosis virus (NPV). The virus occurs naturally and typically

becomes active when gypsy moth populations are high. In recent years, the virus has also been active in areas where gypsy moth populations are low. Studies are being conducted at Michigan State University to determine whether the introduced fungal pathogen **Entomophoga maimaiga** is also playing a role in the decline of gypsy moth populations.



Forest tent caterpillar is at outbreak levels in the Upper Peninsula, where 712,057 acres of forestland was defoliation, mostly pure and mixed aspen stands. Populations of this insect in the Lower Peninsula are expected to increase dramatically across the northern Lower Peninsula in 2001. **Large aspen tortrix** defoliated only 2759 acres of aspen and mixed aspen forests across the state in 2000, down from 251,826 acres in 1999.

Jack pine budworm defoliated 18,062 acres in the northcentral Lower Peninsula, up from 10573 acres in 1999. Based on historical information, budworm populations are expected to begin declining noticeably in 2001. In the Upper Peninsula, where populations have been low for several years, jack pine budworm defoliation is expected to increase.



Spruce budworm activity in the Upper Peninsula has been spotty for the last few years with no significant population buildup detected. **Larch casebearer,** an insect introduced from Europe in the late 1800's, attacked 100,774 acres of larch in the Upper Peninsula in 2000. Except where severely weakened, trees have refoliated and should recover. Populations of the casebearer typically don't defoliate the same stands two years in a row.