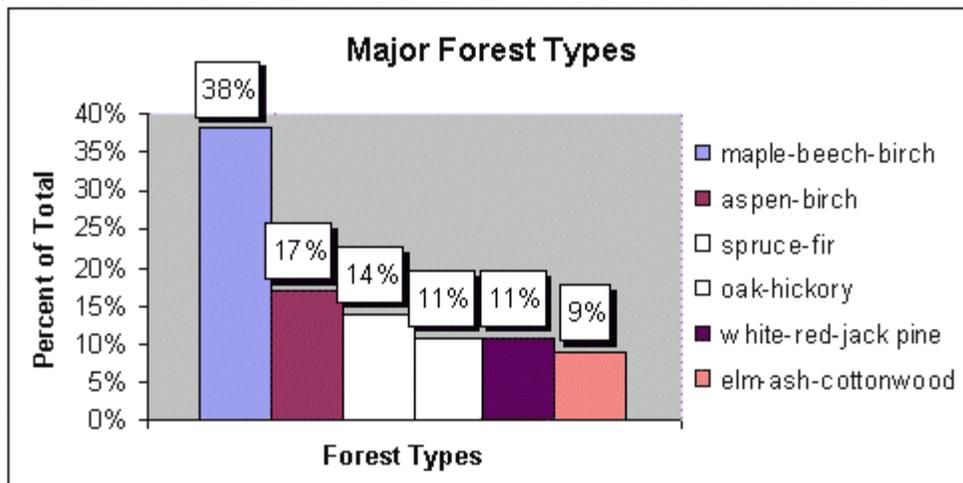


1999 Forest Health Highlights Michigan

The Resource

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 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.



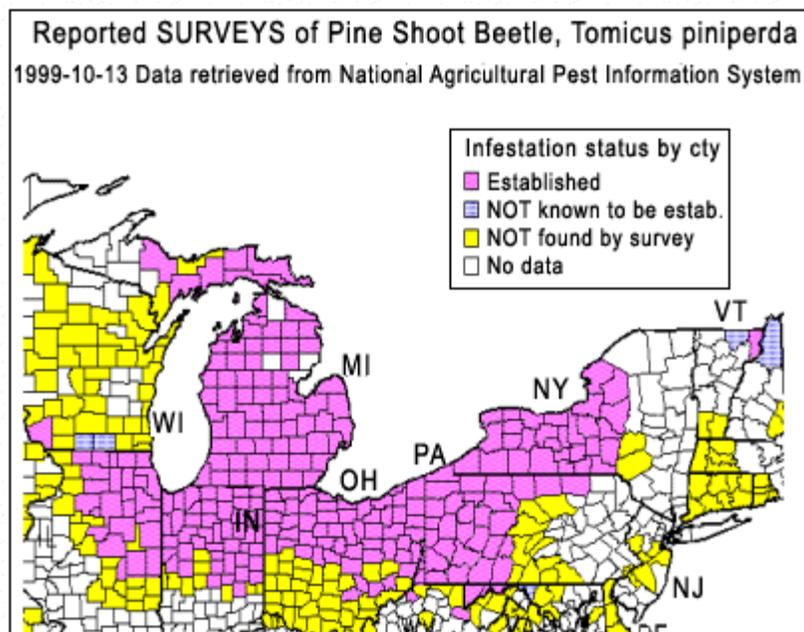
Special Issues

Incidence of the vascular disease **oak wilt** has increased 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 will focus on detecting new and established oak wilt pockets across the state, and working with local communities to suppress the spread of infection centers.

Detection will be accomplished through ground surveys conducted by state, federal, and private foresters, consultants, and nursery inspectors. Information is being maintained in a database that links field observations with extensive GIS datasets. This will be 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 2000.

The introduction of **exotic organisms** is perhaps the most 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 the possible introduction of the **Asian longhorned beetle**, and other invasive exotic pests in Michigan. Although uninfested border counties will be surveyed for the **pine shoot beetle** in 2000, the comprehensive survey for the PSB will be discontinued in 2000. Steps have been initiated to rescind the PSB quarantine. This decision is based on the need to focus limited resources on more serious pests, and the lack of control measures to slow down

the natural movement of the PSB. Quarantine enforcement will continue until rescinded.



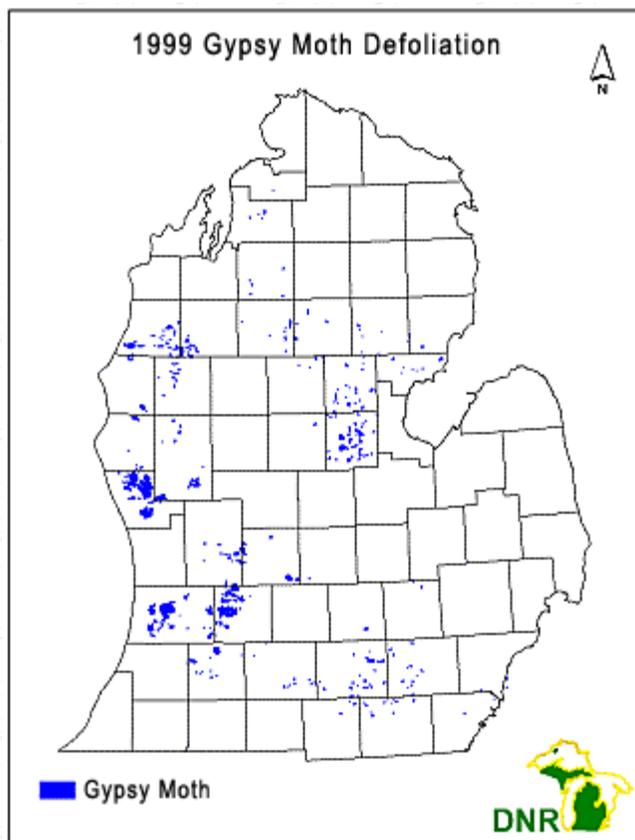
A fly that attacks the seed heads of the invasive exotic plant **spotted knapweed** has been introduced in the Lake States. This insect is establishing very well throughout Michigan. This is just the beginning. To be successful, other biocontrols must be introduced until the knapweed's competitive advantage is "normalized". It will then contend for space and nutrients as do native plants that have evolved with a cadre of natural limiting factors.

Extreme winds and hailstorms in the past two years damaged red pine plantations in Northern Lower Michigan and the Upper Peninsula. Resulting branch and stem injuries were infected by *Sphaeropsis sapinea* (=Diplodia) causing dramatic top kill and whole branch flagging in young plantations. This disease 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 seedlings 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.

Pine bark beetle populations have been increasing in the northern Lower since 1997. Red pine stands stressed by lack of moisture are susceptible to damage by this insect. Adult beetles fly to stressed red pine trees in the spring and lay eggs. Larvae burrow into the tree to feed on the live tissue below the bark. Extensive feeding can girdle and kill trees. When conditions are favorable for bark beetle outbreaks, red pine harvests are restricted to the winter season. Treetops and branches left on site are chipped or cut and scattered to discourage adult beetles from using the material to lay eggs.

Other Issues

Michigan experienced a two-fold decrease in **gypsy moth** defoliation in 1999, where 176626 acres were defoliated in the Lower Peninsula. This is down from 301,778 acres affected in 1998. In several aspen and mixed aspen stands, **large aspen**



tortrix defoliated 69,826 acres in the Lower Peninsula. Gypsy moth and aspen tortrix were active in the same stands in many areas. In the Upper Peninsula, large aspen tortrix populations were high for the third consecutive year, defoliating 182,000 acres, with spotty defoliation on another 535,000 acres. In some areas of the Upper Peninsula, a combination of **forest tent caterpillar** and tortrix defoliated several aspen and mixed aspen stands. **Bruce spanworm** and **spring cankerworm** defoliated 105,000 acres of sugar maple stands, and caused spotty defoliation on an additional 228,000 acres.

The **jack pine budworm** defoliated 10573 acres in 9 counties in north central Lower Michigan. Jack pine stands on state land were evaluated in 1999, high-risk areas were identified based on age and site characteristics, and efforts are underway to harvest these stands prior to next outbreak. The current Lower Peninsula outbreak is in its third season. Based on historical information, budworm populations are expected to begin declining noticeably next season. In the Upper Peninsula, populations have been low for several years, and populations are expected to increase. **Spruce budworm** activity in the Upper Peninsula has been spotty for the last few years with no significant population buildup detected. **Thin cedar crowns** were common in central Upper Peninsula in 1999 and were easily mistaken for spruce budworm defoliation in mixed lowland conifer cover types. A heavy seed year thinned new foliage and gave cedars a distinct brown color.

European pine shoot moth damage was common in many parts of the state in 1997 and 1998. The concern that populations were building as they did 30 to 40 years ago subsided in 1999 as little shoot moth damage was detected. European pine shoot moth overwinters on snow covered lower branch whorls of young red pine. Heavy snows in 1995 and 1996 contributed to a population buildup but low snow accumulations in 1997 and 1998 provided little protection for larvae and likely triggered a population collapse.

Damage from **windstorms and tornadoes** declined in 1999 in Michigan, where it was limited to isolated timber blowdown on state land. One exception was the tornado that leveled the town of Comins, Michigan in the northeastern Lower Peninsula. While there were no injuries, damage to the town and immediate surroundings was extensive.

Michigan State University has established 50 permanent plots throughout Southern Michigan to survey the incidence of **dogwood anthracnose**. Approximately 2/3's of the plots have no signs of anthracnose. The survey indicates that dogwood anthracnose infested areas are spotty and occurrence appears highly correlated to suburbs that use landscaping services. The study also indicates that Michigan has many landscape nurseries with infected stock originating

from several other states.

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