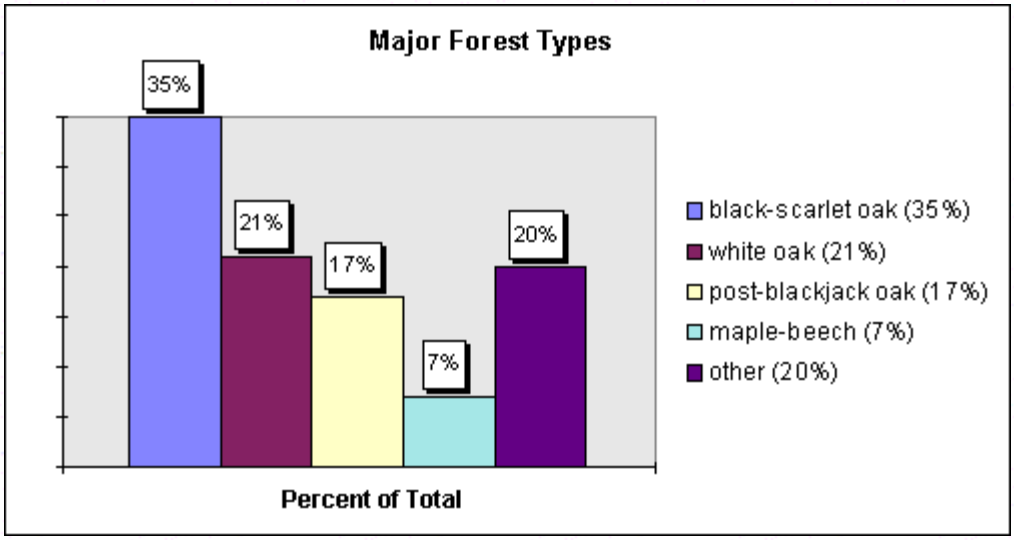
1999 Forest Health Highlights
Missouri

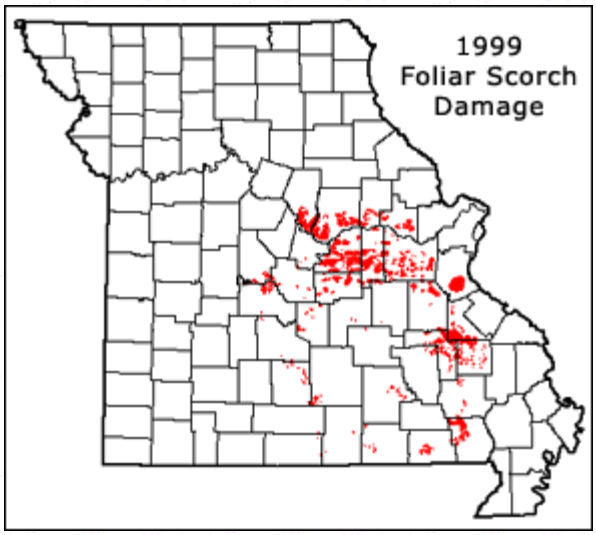
The Resource

Missouri is almost one-third forested. There are about 14 million acres of forest land, an increase of 10% since 1972. The eastern Ozarks have 67% of the State's forest land. In addition to recreation and wildlife benefits these forests provide, the latest statistics indicate the value of forest products produced annually exceeds $3.3 billion. There are over 2,600 firms employing more than 33,000 people with a payroll of about $500 million per year. In 1994, 709 million board feet were cut, 90% was oak, with a stumpage value of about $109.5 million.



Special Issues

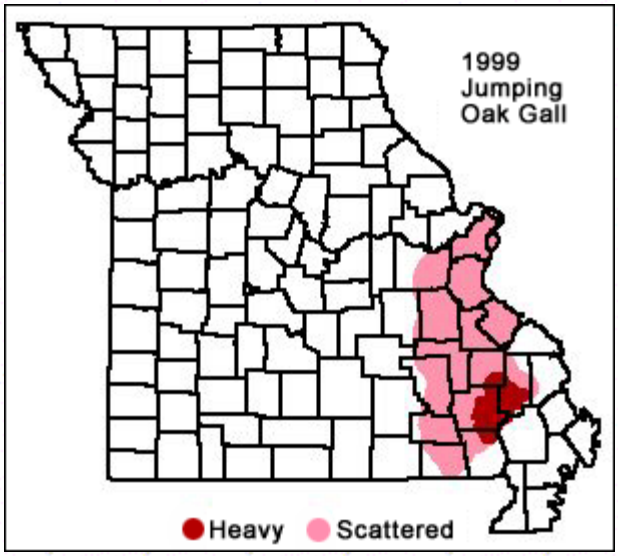
Drought - The weather in 1999 continued to be a dominant factor in forest health concerns in Missouri, as it has in recent years. Dry weather conditions began to develop in mid-July and continued into October. By late August, drought conditions existed over most of the state, but were most serious in southern and eastern Missouri. The leaves on many deciduous trees browned and dropped by late August, appearing like an early autumn. A number of conifers (particularly white pine) had needle damage that resembled winter injury. Although wildfires most commonly occur in early spring in Missouri, numerous wildfires burned in southern and eastern Missouri during October and November.



The immediate impact of drought conditions can be expected to cause mortality of some young trees or recently planted or previously stressed trees that did not receive supplemental water. But impacts of the 1999 drought also can be expected to extend for the next several years. This kind of weather can be a significant factor in the onset of decline. Trees stressed this year by

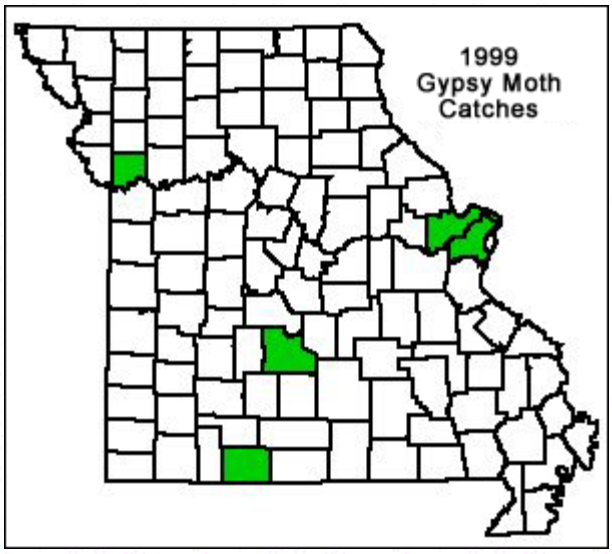
the drought are more susceptible to many other damage agents in the next few years, particularly if the trees were growing on poor sites or had been stressed by other factors.

Jumping oak galls - Damage from jumping oak gall wasps was again seen in eastern and southeastern Missouri in 1999. The wasp, probably Neuroterus saltatorius, induces pinhead size galls to form on white oak leaves in the spring. On heavily infested trees, leaves turn brown and drop by mid-summer, and new leaves may be produced. In 1999, heavy damage was observed on 612,000 acres located between Fredericktown and Poplar Bluff in southeastern Missouri. The heaviest damage in 1998 had been immediately north of this area, extending from St. Louis to Fredericktown. In 1999, an area of scattered to light damage was observed on an additional five million acres extending south from St. Louis to the Arkansas border along Ripley County, enclosing most of the 1998 damage area.



Oak leaf drop - A mysterious type of damage appeared in mid-summer among a large number of mature trees in the white oak group (white, bur, post, chinkapin). Leaves throughout the entire tree crown developed varying levels of mottling and quickly dropped from the affected tree. These symptoms were evident prior to the onset of this year's drought conditions. Numerous samples from affected trees were examined for oak wilt, but none was found. One explanation suggested for this phenomenon involves the very mild winters of the past two years and particularly warm temperatures in February. The unusual weather at that time may have caused damage to vessels maturing in buds or starting to develop in spring wood. Leaves may have then aborted later in the year, when they begin to rely on new sapwood vessels, or when the weather turned hot and water movement became critical. However, this hypothesis has not been proven. Affected trees will likely recover, although the leaf drop phenomenon is another stress factor compounding the effects of this year's drought.

Gypsy moths - The Missouri Cooperative Gypsy Moth Survey placed and monitored more than 12,000 traps throughout the state in 1999 in the annual effort to detect the presence of gypsy moths. A total of 13 moths were captured statewide. Ten moths were caught in the St. Louis metropolitan area (St. Louis and St. Charles Counties) and one moth each was caught in Clay, Laclede, and Taney Counties. Some of the gypsy moth captures were near locations where moths have been caught in the past. A few moths are captured every year around St. Louis and near vacation and recreational sites in Taney County. Large volumes of



interstate traffic traveling to those areas provide opportunity for gypsy moths to hitchhike into the state.

One moth was captured in Laumeier Park in St. Louis, where eight moths were trapped in 1998. Three moths captured in St. Charles County were apparently a result of infested nursery stock that had been shipped there from the Northeastern U.S. The Taney County capture site is in the same area where gypsy moths were caught in 1997 and 1998. In spite of the repeated moth captures, there are no known populations of gypsy moths in Missouri at this time. However, the risk of gypsy moths establishing in Missouri continues to increase as infested areas in nearby states expand.

Forest Health Monitoring - In 1999, Missouri joined the national Forest Health Monitoring (FHM) program. The purpose of the program is to measure changes in forest health over time and evaluate those forest health issues that impact on the sustainability of our forests. A network of 282 FHM plots has been established in Missouri based on a national survey grid. Currently 116 of those plots have a forested condition. A portion of the plots will be remeasured each year during summer months. Results of the annual surveys will be compiled with those from other states to examine forest health issues on a national or forest type basis.

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