

Oak Mortality Issue Paper  
Mark Twain National Forest  
July 2, 2001

The Problem:

Prolonged drought in southern Missouri has weakened oak trees in the Ozark Highlands region of the Eastern central hardwoods ecotype.

- Some parts of southern Missouri are 25 inches below normal rainfall over a 2 ½ year period.
- Once the trees are weakened by drought, two oak-boring beetles accelerate the death of the trees. These beetles are the red oak borer and the two-lined chestnut borer.
- Early spring defoliation by loopers and other pests in some places has further weakened the drought stressed trees.
- A fungus attacks the root systems of stressed trees.
- These factors are combining to cause widespread mortality in red oaks, especially mature and over-mature scarlet and black oaks.
- The problem is widespread across the Mark Twain and southern Missouri, even immature red oaks and white oaks are being affected.
- Plots taken from November, 2000 to February 2001 on the Salem/Potosi Ranger districts indicated that 70 to 90% of the scarlet and black oaks are affected by drought and insects, and about 20% of those affected are dead. These numbers will probably be higher as the summer progresses.
- Red Oak borer populations and damage are expected to skyrocket in summer 2001. Eggs laid in weak trees with diminished sap flows are expected to have higher than normal survival rates. The red oak borer breeding population is already at historical high levels.
- No direct treatments are available for the immediate remediation of this mortality. Timber management activities must be used to mitigate effects over long periods of time.

What can be done about the problem: **Short-term**

- Salvage cutting of dead/declining red oak, other oaks, and removal of red oak borer brood trees.
- Temporary control of mid-story shade –tolerant species to encourage oak and pine regeneration
- Regenerate by uneven-aged and even-aged harvest methods to encourage white or post oak and pine regeneration.
- Prescribed burning to encourage development of white or post oak and pine regeneration, and reduce competition from shade tolerant species.

**Long term:**

- In areas of less severe mortality/decline and in areas that may be vulnerable to decline, hazard rating systems may be useful in identifying stands vulnerable to decline.

- Silvicultural treatments such as mid-story control, thinning and prescribed burning can be used to keep oak stands healthy and encourage healthier oak-pine mixes.
- Regenerate vulnerable stands before the oaks completely lose their ability to sprout.

What is being done:

- The Northeastern Area Forest Health Protection unit, St. Paul, MN, conducted a biological evaluation. Oak mortality was mapped from the air in September, 2000, and a report completed March 27, 2001. The information from this effort was used to determine the focus of an Environmental Impact Statement that is currently under way.
- The Environmental Impact Statement is being conducted on 25,000 acres of the Mark Twain National Forest for commercial harvesting of dead and dying timber and to improve forest health in parts of Crawford, Dent, Reynolds and Iron, Washington, and Shannon counties.
- Communication and coordination with the Missouri Department of Conservation, the Ozark National Forest, Missouri Forest Products Association and Forest Service's Research and State and Private branch is ongoing.
- A Mark Twain National Forest Strategy for dealing with the oak mortality is being developed in July.

Economic Effects to the timber industry in Missouri:

- Oak trees make up 40-50% of the trees on the 1.5 million acres of the Mark Twain NF located in 29 counties in southern Missouri.
- Currently 33% of lumber being sawn at some mills is reduced by one grade due to red oak borers. Trees that have been dead more than two years have limited commercial value. The products from two-year-old dead trees would be chips or firewood.

Further concerns:

- Oak mortality in northwest Arkansas is widespread and the damage exceeds estimates made two years ago.
- Missouri is about two years behind Arkansas's outbreak of oak borers. Salvage operations and brood tree removal needs to occur before the peak of infestation.
- Public health and safety is top priority. Roads, recreation sites, and other areas of human concentration need to be inspected, and weakened trees should be cut down. A tree fell on a moving car in Arkansas recently.
- Wildfire hazard is greatly increased due to the fuel build up and an increase in fire intensity in areas of mortality.

