

SHORT-TERM RESPONSE

- ▶ Hazard trees in and around recreation areas, roads, and rights-of-way may be removed or felled to protect visitors;
- ▶ A forest health ecological evaluation of affected areas is being prepared to document the severity of the problem and examine short-term treatment alternatives;
- ▶ Improvement cuts for forest health may be used to reduce adverse impacts; and,
- ▶ Active timber sales in affected areas may be modified to compensate buyers for loss of timber value.

LONG-TERM STRATEGY FOR NATIONAL FORESTS

A new round of forest planning is scheduled for the Ozark and Ouachita National Forests. *The Ozark-Ouachita Highlands Assessment* will provide a background or foundation for forest plans in the Highlands region. For the Ozark and Ouachita National Forests, development and improvement of hardwood management options will need to be a priority so that the effects of decline can be minimized as much as possible.

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FOR FURTHER INFORMATION:

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<http://www.fs.fed.us/oanf/ozark.htm>

Ouachita National Forest
Forest Supervisor
Hot Springs, AR 71902
Phone: 501-321-5202
<http://www.fs.fed.us/oanf/ouachita.htm>

Arkansas Forestry Commission
State Forester
Little Rock, AR 72204
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WHY ARE THE OAK TREES DYING?



United States
Department of
Agriculture
Forest Service
Southern Region



OAK DECLINE

THE PROBLEM

Large numbers of northern red, southern red, black and scarlet oaks are declining and dying in central and northern Arkansas on the Ozark and Ouachita National Forests, and in southern Missouri on the Mark Twain National Forest. State and private land in both states is also affected. Other trees, like white and post oaks, and hickories are dying as well, but in smaller numbers. June 2001 aerial surveys of the Ozark NF estimated 300,000 acres were severely affected, up from 19,000 in 1999.

A COMPLEX PHENOMENON

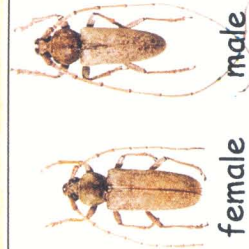
No single cause is responsible for oak decline. Trees are *predisposed* to decline by:

- ▶ relatively old age (70 to 90 years.);
- ▶ shallow, rocky soils, ridgetop and upper slope locations; and,
- ▶ previous severe droughts (such as those in the 1950's and 1980).

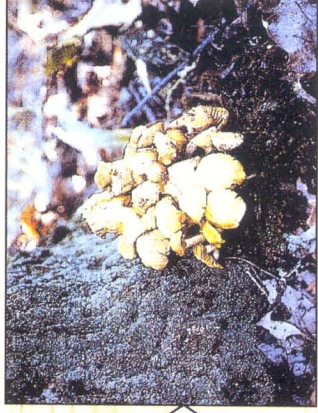
Decline is then *incited* or triggered by such things as:

- ▶ short-term, severe drought (such as occurred in 1998 and 1999); and,
- ▶ repeated early spring defoliation (such as caused by the gypsy moth in the north-eastern United States).

red oak borer adults



mushrooms of the armillaria root rot fungus



Secondary insects and diseases are *contributing factors* that cause further stress and damage to the trees. Examples are:

- ▶ red oak borers (high populations in 1999);
- ▶ two-lined chestnut borers; armillaria root rot (a common fungus that attacks roots);
- ▶ insects like walkingsticks, which cause defoliation; and,
- ▶ hypoxylon cankers, which form on main stems.

degrade caused by red oak borer larvae



borer attack oozing sap where young red oak borer larvae are feeding under bark



oak borer exit hole in red oak



ECOSYSTEM IMPACT

Dying trees represent a loss of:

- ▶ wildlife habitat;
- ▶ recreational opportunities (hiking, camping, hunting, etc...);
- ▶ product values, such as timber degrade caused by borer tunnels; and,
- ▶ aesthetics.

In addition, oak decline:

- ▶ creates dead trees which are a safety hazard to forest visitors along roads, trails, and in or around recreation areas;
- ▶ may reduce the ability of oaks to reoccupy the site; and,
- ▶ increases the proportion of more shade-tolerant species, such as maple.