CENTRAL HARDWOOD NOTES

Reducing Borer Damage In Oak Regeneration And Sawtimber

Borers cause millions of dollars in damaged wood annually to oak stands, and adversely affect the form and vigor of oak regeneration. A moth and four species of beetles cause most of the damage; the carpenterworm moth, the oak timberworm, the red oak borer, the living-beech borer, and the white oak borer. The larvae of these insects chew holes in the wood ranging from shotholes made by the oak timberworm to holes as large as 20 mm in diameter made by the carpenterworm. The life histories of these insects are complex and can be found in the literature.

You can safely assume that unmanaged stands will sustain at least some-perhaps heavy--damage from one or more of the above borers. So you should manage oak stands to reduce borer damage.

In general, heavily-stocked slow-growing stands on poor sites have the most borer damage. Wet spots and/or fine to coarse sawdust-like wood particles around variable size holes on the trunks or at the bases of the trees are the usual signs of borer activity.

You can greatly increase the quality of your oak stands with little added timber stand improvement (TSI) cost by following these recommendations in your stand management:

1. Maintain stocking levels at optimum to promote good growth and quality (refer to current recommendations on managing oak stands). Most borers deposit eggs under bark scales or in holes made by the females on suppressed, slow growing trees. Vigorous trees with good sap flow can off en "drown out" young borer larvae especially in years of above normal rainfall. Vigorous trees can also better survive climatic stresses such as drought, late frosts, and damage from insects such as defoliators and root feeders.
2. Remove the small, suppressed, understory trees first in thinning. These suppressed trees in sawtimber stands serve as "brood" trees for borers that can greatly reduce quality of the overstory trees.
3. Cut rather than herbicide or girdle these trees. If left standing, girdled or poisoned trees become heavily infested with secondary dead wood insects. These insects furnish abundant food for woodpeckers, and reduce woodpecker predation on the primary (living tree) borers. Also, cutting promotes stump sprouts which add to oak regeneration potential at harvest. Otherwise, suppressed understory oaks in maturing oak stands may eventually succumb to a combination of insects, disease, and physiological factors.

4 Do your thinning in oak stands between August of odd-numbered years and late April of even-numbered years, especially if the killed trees are not removed or felled. TSI during this period kills first year larvae of several borer species, otherwise red oak borers can complete development into adults if TSI is done from late May of even-numbered years to July of odd-numbered years.

5 Leave non-oaks for den trees where possible, or substitute den or nesting boxes when wildlife considerations are important. Although oak "wolf trees" are valuable for wildlife dens, they are generally borer "brood trees."

6 Remove trees damaged or killed by logging operations, vandalism, lightning or other causes promptly, especially where a very fine, white powder appears on the wounds indicating borer attacks. Such trees can produce heavy populations of oak timberworms and carpenterworms. In just 2 to 4 years insects from these trees cause damage to healthy trees in adjacent areas.

7 Make clearcuts as large as possible yet still compatible with other forest uses. Current research in Ohio indicates heavy borer damage to regenerating northern red oak 2 to 6 inches d.b.h. in small clearcuts adjacent to mature oak stands. Adult borers emerge from the tops and limbs of large oaks surrounding the opening and attack nearby young oaks which can be killed, deformed, or have their growth greatly retarded.

8 Thin black oak stems before the largest stem is 2 inches d.b.h. to avoid leaving the smaller stems of sprout clumps and the smaller side of forks near the ground. These are more susceptible to borer attack than the larger vigorous stems and can become brood trees.

Hardwood borers can also damage other economically important species, but to a lesser degree than oak. Damage from some borer species may be a localized problem related to site and/or climatic conditions or improper harvesting procedures such as delayed removal and processing of logs. Increasing the vigor and growth of some tree species such as black cherry and maple may increase attacks from peach bark beetles and the Columbian timber beetle so specific recommendations for borer problems in non-oak species should be sought from a forest entomologist familiar with local borer pests.

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