

SUGAR MAPLE BORER

By Douglas C. Allen

One of the most detrimental pests of sugar maple is an insect known as the sugar maple borer. The seriousness of this problem arises from both the location and nature of the damage, and the susceptible condition of sugar maple in many of today's northern hardwood stands. Outbreaks of this pest are relatively mundane compared to those of the principal maple defoliators. In the absence of additional disturbances (e.g., unfavorable weather such as drought, poor site and stand conditions), however, sugar maple usually can withstand one or two years of moderate to heavy defoliation. On the other hand, once a tree is attacked by maple borer the damage endures and its degrading effects may amplify over time.

THE INSECT

The adult borer is a dark brown to blackish, thick bodied beetle approximately an inch long and marked with distinct bright yellow bands that vary in width and length. It belongs to a group commonly referred to as the longhorn beetles; a name evoked by the unusually long antennae or feeler-like structures that are attached to the head.

Each female deposits one to a few eggs in bark crevices or holes that she chews through the bark. Eggs, and subsequent damage, usually are concentrated on the lower 20 feet of the tree trunk. Many trees are probably used for egg laying, but vigorous maples overcome feeding attempts by young larvae. Following egg hatch, the white to cream-colored, legless, grub-like larva enters the tree and feeds beneath the bark. Eventually it excavates a shallow transverse feeding gallery engraved on the surface of the sapwood (Figure 1). This gallery, which usually extends 4 - 6 feet up the trunk, and accompanying damage partially girdle the tree.

The presence of the larval gallery in the center of a conspicuous scar (Figure 1) distinguishes maple borer damage from that of stem cankers associated with certain fungal infections. Recently formed borer scars are masked by dried and spongy bark that has not sloughed away (Figure 2).

The borer requires two years to develop from egg to adult. In preparation for overwintering during the second year, the fully grown larva excavates an 3/8 - 5/8 inch diameter vertical gallery that is several inches long and penetrates the sapwood to a depth of 2-4 inches.

Figure 1. (right) Typical sugar maple borer injury. Note the horizontal larval gallery in the center of the scar.



Figure 2. (below) Cryptic sugar maple borer damage. Note telltale cracks in the bark (white arrows).



THE DAMAGE

Whether or not the maple borer causes significant damage, depends on your management objectives. By definition, in order to be considered a pest an insect must prevent you from maximizing your management goals.

For example, if you own a woodlot solely for aesthetic reasons, as a place to hunt, or as a source of firewood, you probably would not consider the maple borer a pest. Should your objective be to produce maple syrup or a variety of wood products, however, the borer can have an important economic impact.

Because sugar maple borer most often attacks at some point on the first 20 feet of the stem, it damages the most valuable part of the tree from a sawtimber standpoint - the butt log. This damage is manifested as

mineral stain (a discoloration resulting from the tree's response to invasion), callus tissue that forms at the margins of the scar (another defensive mechanism that the tree uses to isolate or compartmentalize injury), and holes in the outer 4-6 inches of sapwood where the insect excavates a tunnel in preparation for its second winter. Generally, this interaction between the insect and the tree greatly decreases the value of the first log, because it is not acceptable for veneer or gives an undesirable appearance to lumber cut from the injured portion of the infested stem.

Damage affects sugarbush operators in two quite different ways. As a result of stem girdling, often large limbs are killed immediately above the injury, which effec-

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4 tively decreases crown size (and, hence, the volume of sap produced by the injured tree). When damage occurs within the region of the bole that normally is used for tapping (4-6 feet above the ground), the area of bole suitable for tapping is reduced.

When a tree 6-8 inches in diameter at breast height is attacked, it may be especially susceptible to wind snap. The tree bole may be weakened where the larval gallery becomes oblique or nearly horizontal (in the vicinity of the catfaced scar) and during high, gusty winds many tree stems break at this spot.

CONTROL SUGAR MAPLE BORER WITH A CHAIN SAW!

The most effective means of minimizing borer damage is to maintain tree vigor. Studies indicate that the maple borer is a secondary insect; that is, it can only successfully attack sugar maple that is under

stress. The most common source of stress associated with maple borer damage is intense competition for growing space between trees in overcrowded stands. Proper thinning of stands during the highly susceptible pole timber stage, when trees are between 5 and 11 inches in diameter at breast height, is especially important in a program of preventative maintenance. If your management objective is to produce wood products, removal of previously damaged trees is also recommended during thinning or timber stand improvement activities. This will improve the quality of the residual stand, because it relinquishes growing space to sound, and presumably, more valuable trees.

Sugarbush operators can afford to be more liberal. If your objective is to produce maple syrup, use careful judgement before condemning a tree. It is not necessary to remove a tree just because it has a

borer scar. As long as the tree pays its way in terms of sap production it should be retained in the bush.

Sugar maples in most of today's northern hardwood stands are especially vulnerable to borer damage, because these stands have not been properly managed. Most landowners can not justify the cost of thinning when the material removed has no or limited market value. Hence, stands are ignored or repeatedly highgraded; both practices degrade stand health and set the stage for additional damage by maple borer. ▲

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