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# Habits and Control of the Eastern Pineshoot Borer

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The eastern pineshoot borer, *Eucosma gloriola* Heinrich, feeds on many species of pine including Scotch, eastern white, jack, red, Austrian and mugho. It is occasionally found on white spruce and Douglas fir. This insect is often present in Christmas tree plantations, because it prefers Scotch pine, which accounts for approximately 85 percent of Michigan's Christmas trees.

**Damage:** Larvae of the eastern pineshoot borer feed on the growing tips of branches by tunnelling down the center of the shoot. These hollowed-out shoots turn yellow, then brown, after mid-June. They eventually bend over at right angles (Figure 1) or break off due to wind or snow. A small (1/8-inch diameter) circular or oblong hole at the base of the injury results when the larva chews its way out of the shoot. The presence of this exit hole and the hollow, brown, bent-over shoot distinguishes the injury from other shoot damage appearing at the same time.

**Description:** The larva is dirty-white to gray with a brownish-yellow head. At maturity, it is about 3/4 inch in length. The adult is a copper-colored moth with two shiny gray transverse bands on the forewings. The wing expanse is about 5/8 inch.

**Life History:** The pupa of the eastern pineshoot borer overwinters in a cocoon in the soil or leaf litter beneath the tree. Adults emerge early in the spring when the buds are beginning to expand. Eggs are laid on growing tips, needle sheaths or bark scales during late April and early May. In about two weeks, the eggs hatch and the young larvae begin boring down the center of the shoot where they feed until late June or July. When the larva matures, it chews an exit hole in the side of the shoot near the base of the current year's growth and drops to the ground to pupate (Figure 2).

**Incidence and Location of Damage in Michigan:** Christmas tree farms throughout Michigan's Lower Peninsula were surveyed for eastern pineshoot borer damage during fall of 1977. Damage was observed in all but 4 plots out of 52. Although the insect was widespread, it was present at low population densities. Only 26 of the trees had one or more injured shoots. The highest average number of injured shoots per tree was 9 in one location, but overall, the average number of injured shoots per tree was less than 1 (0.8).

The eastern pineshoot borer attacks both terminal and lateral branches, but injury was found most often on lateral shoots in the top half of the tree. Terminal shoot injury was found on only 2 percent of the trees surveyed. The highest incidence of attack (25 percent) occurred on lateral branches in the top one or two whorls of branches.

**Preventing Damage:** Although the injury caused by the eastern pineshoot borer is quite visible, the damage does not pose any problems to the vigor of the tree. Many attacks may damage the form of the tree, but the damage is minimal since the insect seldom attacks the terminal leader. The injured shoots will set buds and grow again the next growing season just as if the branch had been sheared. Bushiness will result, but this is desirable for Christmas trees. However, the injury is detrimental to the aesthetic value of the tree because the dead, brown branch tips are unattractive to Christmas tree buyers. The number of pineshoot borers can be reduced by normal shearing in June and early July



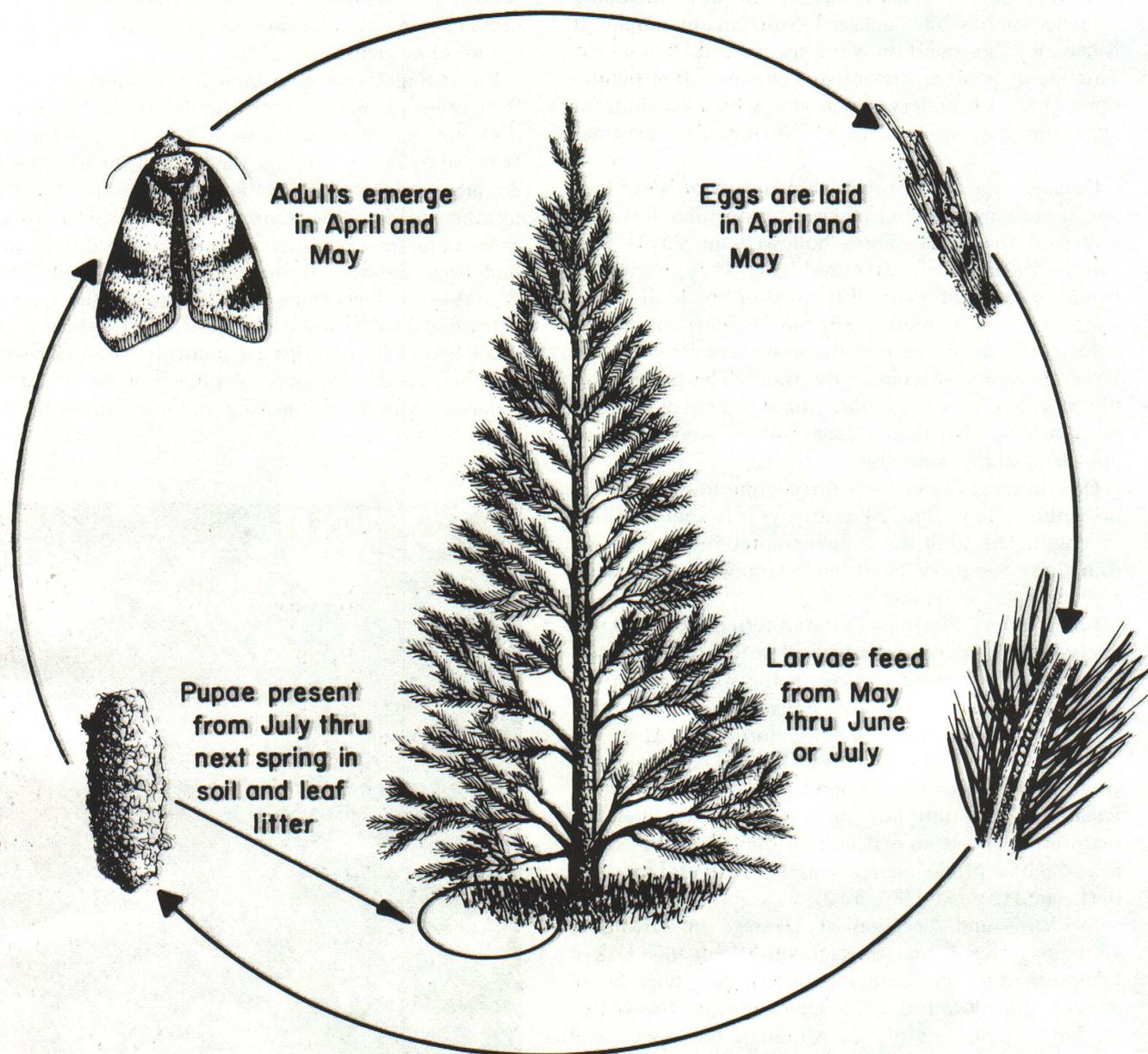
Figure 1. Eastern pineshoot borer injury on Scotch pine.

before the larvae leave the shoots to pupate. The larvae cannot survive once the shoots they are feeding in are cut off the tree.

**Recommendations:** The use of insecticides to control the eastern pineshoot borer is discouraged because of the minimal damage the insect causes. Also, control is difficult to accomplish with insecticides because of the particular habits of the insect. The larva is protected inside the shoot where it feeds. The pupa is hidden in the soil or leaf litter inside a cocoon. The adult, which is

vulnerable to sprays, has a long period of emergence in the spring, making it necessary to spray more than once. Besides being costly, heavy use of insecticides has another major disadvantage. It results in a reduction of natural enemy levels and, thus, a resurgence of other insect pests.

Our research indicates that the best method at this time for controlling the eastern pineshoot borer is normal shearing. This is most effective if it is done in June and early July.



**Figure 2. Life history of the eastern pineshoot borer.**