

# MOTHS THAT AFFECT PINE SHOOTS

By Douglas C. Allen

The caterpillar stage of several species of moths destroy twigs, distort growth and discolor foliage of pines in the United States.

They never kill the host, but their damage often reduces height growth and generally deforms the tree. Below is an example of each of the three most important groups in the northeast commonly associated with trees 1 to 15 ft. tall.



Fig. 1. Larva of pitch twig moth surrounded by a pitch mass.

**Pitch Twig Moths** - pitch and Scots pine are preferred hosts of the pitch twig moth (also called the pitch nodule maker), the most frequently encountered member of this group in New York. The full grown caterpillar (larva) can be as long as 1.25" and is pale reddish brown with a dark brown to black head (Fig. 1).

Feeding occurs beneath twig bark, almost to the pith or center of the shoot. The injury is covered by a conspicuous mass (nodule) of pitch which is 0.5" or so in diameter the first year and as large as 1.0 to 1.5" in diameter the second year (Fig. 2). It takes two years to complete the cycle from egg to adult, and the most severe damage occurs early during the second growing season when branch tips turn reddish brown. This "flagging" results when the larva girdles a twig. Eventually, damaged twigs break off, and in heavy infestations this may deform the tree. Each larva overwinters and eventually transforms to the moth stage beneath the pitch nodule.



Fig. 2. Undisturbed pitch mass within which a pitch twig moth larva lives.

**Pine Shoot Borers** - white and Scots pine are favored by the eastern pine shoot borer, though it also occurs on jack, red, Austrian, pitch, and mugo pines. The mature caterpillar is 0.5" to 0.8" long and dirty white to grey with a yellow-brown (honey colored) head.



Fig. 3. (l.) Discolored and weakened terminal of white pine damaged by pine shoot borer.

Fig. 4. (r.) Tips of Scots pine twigs damaged by pine shoot borer. Note larval tunnels in pith (arrows).

Damage to terminal and lateral twigs first becomes obvious in mid-June when the 6.0" to 8.0" tip of an infested shoot begins to droop and discolor (Figs. 3,4). Eventually an infested twig turns brown. One to as many as three larvae excavate the center (pith) of a twig (Fig. 4). When it is done



feeding the full grown larva chews an exit hole through the side of the twig and drops to the ground, where it transforms to the pupal (pew-pull) stage prior to overwintering in the litter.

**Pine Shoot Moths** - the European pine shoot moth is an introduced pest first noticed in the United States in New York state around 1914. Various shoot moths are associated with pines throughout North America, but this European import is the most important species.

Principle hosts in the northeast are Scots, mugo, Austrian, and red pines. The full grown larva is approximately 1.25" long and has a distinctly "chubby" appearance with a brown body and shiny black head. Each larva begins feeding as a leafminer at the base of a needle and eventually enters a terminal or lateral shoot near the base of a bud. A small amount of pitchy exudate mixed with silk occurs at the bases of both infested needles and recently invaded buds. As the larva feeds within a bud, the mass of pitch becomes quite conspicuous (Fig.5). Damage distorts leaders, causing crooked



Fig. 5. Mass of pitch (arrow) at base of Scots pine bud infested with European pine shoot moth.

shoots called “posthorns” (Fig. 6), which result in a bushy tree. The insect overwinters as a larva in the bud and eventually pupates in this location as well.

**Management Options** - pests in all three groups are most likely to become problems in young natural stands or plantations. Of the three examples described above, by far the most serious problem in our region is the European pine shoot moth. Damage by all three moths may be confused with injury due white pine weevil (NYFO Nov./Dec. 1992) or pine shoot beetle (NYFO Jan./Feb. 1993). However, neither of these beetles are affiliated with large pitch nodules nor is silk associated with their feeding.

When European pine shoot moth threatens a Christmas tree plantation or young plantation of red pine, the area around buds on both terminal and lateral shoots can be

treated with an appropriate insecticide during mid- to late April. The other two species rarely require treatment, but it is important to distinguish between them and potentially serious infestations of shoot moth. Shearing Christmas trees can substantially reduce damage, because this practice removes many infested tips. On individual trees of concern, branch tips infested by any of these pests may be removed manually and destroyed to minimize damage and reduce moth populations.

*This is the 44th in the series of articles contributed by Dr. Allen, Professor of Entomology at SUNY-ESF. Reprints of this and the complete series are available from NYFOA. It is also possible to download this collection from the DEC Web page by clicking on articles using the following address: <http://www.dec.state.ny.us/website/dlf/privland/linkspag.html>*

Fig. 6. “Posthorn” resulting from European pine shoot moth damage (arrows).



## **A**pplication or Facsimile Application for Membership in the New York Forest Owners Association.

I/We would like to support good forestry and stewardship of New York’s forest lands.

( ) I/We own \_\_\_\_\_ acres of woodland.

( ) I/We do not own woodland but support the Association’s objectives.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

City Zip

Telephone \_\_\_\_\_

County of Residence \_\_\_\_\_

County of Woodlot \_\_\_\_\_

Referred by \_\_\_\_\_

### **Annual Dues** (Please Check One)

STUDENT	\$10
INDIVIDUAL	\$20
FAMILY (or co-owners)	\$25
CONTRIBUTING	\$30-\$100
SPONSORING	\$101 and up

#### MEMBERSHIP INCLUDES:

Six issues of the **NY FOREST OWNER**, woodswalks, chapter meetings, and two statewide meetings for all members.

Please send check payable to New York Forest Owners Association, OR, if you prefer, by check payable to New York Woodland Stewards, Inc. (NYWS, a tax deductible fund), including any contribution in excess of your NYFOA membership to:

NYFOA, Inc  
P.O. Box 180.  
Fairport, New York 14450