

## 21. Pine Tip Moths

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### Hosts

Tip moths, *Rhyacionia* species (family: Tortricidae), are very common young pine seedling pests throughout the United States, particularly in the Southeastern United States. The Nantucket pine tip moth (*R. frustrana*) (fig. 21.1) is a ubiquitous pest of loblolly, shortleaf, Virginia, pitch, Scots and red pine in the Eastern United States, and ponderosa and Monterey pine in the Western United States, where it was accidentally introduced. Longleaf, slash, and eastern white pine are also occasionally infested, but are much less susceptible. The subtropical pine tip moth (*R. subtropica*) and pitch pine tip moth (*R. rigidana*) are also found in the East, but typically infest slash, longleaf, and pitch pine, respectively. The western pine tip moth (*R. bushnelli*) prefers ponderosa pine, but also infests other pine species.

### Distribution

The Nantucket pine tip moth's range extends from Massachusetts south to central Florida and west through central Missouri, Oklahoma, and east Texas. Disjunctive populations also exist in New Mexico, Arizona, and California. The Nantucket pine tip moth's eastern range overlaps with the Subtropical pine tip moth and the pitch pine tip moth. The subtropical pine tip moth's range closely follows the range of its primary host slash pine, extending through southern South Carolina south to southern Florida and west to Mississippi. The western pine tip moth has a wide distribution in the Western United States, from Montana, North and South Dakota, and Nebraska, to the Pacific Northwest, and south to Arizona and New Mexico.



Figure 21.1—Adult Nantucket pine tip moth. Photo by Chris Asaro, Virginia Department of Forestry.

### Damage

Pine tip moths can reduce seedling growth, lead to stem deformity and can occasionally cause seedling mortality if infestation levels are high enough.

### Diagnosis

Pine tip moth feeding damage in buds and shoots causes the affected plant tissue to turn brown (fig. 21.2). Dried resin can also be found on the buds and shoots where the insect bored into the seedling. Larval frass is evident when the damaged shoot or bud portion is dissected.

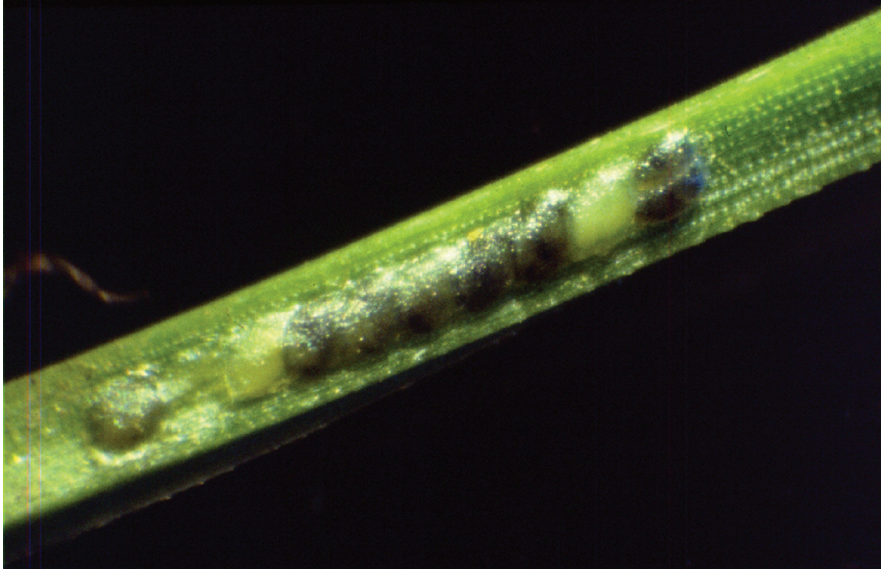
### Biology

Pine tip moths have between one and six generations per year depending on moth species and climate, usually corresponding to the number of host growth flushes. Pine tip moths can overwinter as



Figure 21.2—Nantucket pine tip moth damage on loblolly pine shoots. Photo by Chris Asaro, Virginia Department of Forestry.

larvae or pupae, and usually overwinter in buds and shoots. Some species overwinter in the duff layer at the tree base. The adults emerge in spring and mate shortly after emergence. The female moths lay single eggs or clusters on shoots, needles, and buds (fig. 21.3). The newly hatched larvae mine needles before beginning to feed on buds and shoots underneath



**Figure 21.3**—Pitch pine tip moth eggs. Note: darkened eggs have been parasitized by *Trichogramma* egg parasites. Photo by Harry O. Yates, USDA Forest Service.



**Figure 21.4**—Closeup of resin buildup on pine shoot with pupal exuvia from emerged tip moth. Photo by Chris Asaro, Virginia Department of Forestry.

a protective web filled with pine resin (fig. 21.4). Larvae grow larger and begin to feed inside the buds and shoots, with the length of feeding damage somewhat proportional to the number of larvae feeding within each shoot.

## Control

### Chemical

A number of contact and systemic insecticides are available for tip moth. Contact insecticides can be quite effective at controlling tip moth infestations, but applications must be properly timed to reach newly hatched larvae before they enter buds and shoots. Typically, it is prohibitively expensive to spray each generation, especially over multiple years. Systemic insecticides are also effective and can provide 1 or 2 years of control from one application. They can only be applied at the seedling planting time or during the first year, however, and are ineffective if applied directly to larger trees.

## Selected References

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