

The Hemlock Looper (*Lambdina f. fiscellaria* (Guen.))

Introduction

The hemlock looper (*Lambdina f. fiscellaria* (Guen.)) occurs naturally in Nova Scotian forests and can always be found there in low numbers. However, when conditions are right their population can build-up very quickly, causing heavy defoliation and tree mortality in a short time. These increases are usually followed by sudden population collapses that normally occur three to five years after the start of a buildup.



Hemlock looper larva (——— actual size)

Host

Feeding damage caused by the larvae is usually found in stands containing mature and overmature balsam fir, its favourite host in Nova Scotia, but is known to feed on other tree species such as hemlock, spruces, pine, and hardwoods.

Damage

In late June, the newly hatched larvae first feed on the tender needles of the developing shoots, then quickly switch over to feed on the older needles which they prefer. When the older needles are consumed, the larvae will then return to feed on any remaining needles on the new shoots.

The larvae are wasteful feeders. As they move around on the foliage they nibble as they go, taking bites out of the needles. This causes the needle to dry out, die, then turn red. It is this feeding characteristic that can destroy the foliage in one year, often causing the death of the tree.

Detection

Early detection of a building hemlock looper population is extremely important for monitoring and assessing what it is going to do. It gives us time to develop management methods if required.

Some methods used to monitor the population and detect outbreaks are the use of traps to capture adult moths. This initial information alerts us that there is a rise in the adult moth population in an area. Using this information we can determine where branch samples should be taken in late Fall so that the eggs can be separated from the foliage and counted. Based on the number of eggs laid by the female moth, the defoliation that can occur the following summer can be estimated. Also, aerial defoliation flights are done in September after larval feeding is completed. Any reddened foliage detected from the air is mapped and recorded to be ground checked.

Control

Natural factors play a major part in controlling hemlock looper outbreaks. Egg, larva, and pupa parasites help reduce the population, but a fungus appears to be the primary agent responsible for the collapse of the population. Unfortunately, it takes three to five years for it to build and spread through the population. Until this happens other methods that can be used are harvesting the merchantable stands at risk, or by using the biological insecticide *Bacillus thuringiensis* to reduce the level of damage to high value forest stands until the population collapses.



Adult (——— actual size)



Eggs on lichen (- actual size)



Pupa (——— actual size)

Reference:

Rose, A.H. and O.H. Lindquist, Insects of Spruces, Fir and Hemlock, Canadian Forest Service, Rev. 1994

Photos used with permission.

Time of year each stage of the hemlock looper can be found.

STAGES	Jan.	Feb.	Mar.	April	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eggs	████████████████████									████████████████	
Larva					██████████████	██████████					
Pupa						██████████	██████████				
Adult							██████████████	██████████			

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