



Winter Moth

Operophtera brumata

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Introduction

Winter moth was introduced into North America from Europe. It was first recorded in Nova Scotia in the 1930s and then in the Pacific Northwest (British Columbia, Oregon and Washington) in the 1970's. Winter moth showed up in eastern Massachusetts in the early 2000's and has since spread westward in MA, into Rhode Island and now coastal Maine.

The larvae of winter moth defoliate deciduous trees and shrubs in early spring. Trees heavily defoliated by winter moth for three or more years can exhibit branch dieback and mortality.

Winter moth was most likely introduced into Maine as cocoons in the soil of landscape trees and plants from infested areas. So far it has only been positively identified in Harpswell and Vinalhaven but could be in other locations as well.

This insect is very closely related to the native Bruce spanworm, *Operophtera bruceata*. It is extremely difficult, (and impossible in the field), to tell the two species apart. Bruce spanworm is an occasional pest of trees in Maine and rarely remains a problem for long. This is in contrast to winter moth that has no natural enemies in North America to keep the populations in check.

Hosts

Winter moth feed on the leaves of many deciduous trees and shrubs in Maine. Preferred hosts include oak, maple, apple, elm, ash, crabapple, cherry, and blueberry. The larvae will feed on many other plants as well.

Life Cycle and Description

The larvae hatch in early spring from eggs laid on the trunks of host trees. They crawl up the trees and burrow into both leaf and flower buds, feeding on the expanding buds and foliage. The larvae also produce silk that they use to "balloon" to new locations. They also use the silk to tie buds and leaves together when they are young. Winter moth larvae are light green to brownish-green inchworms with longitudinal white stripes on each side of the body and are ½" long when full-grown.

Mature larvae spin down out of the trees to pupate in the soil, not only under the trees, but also in the surrounding area. The larvae form earthen cocoons where they stay from June to November. They are well protected during this time and are not affected by pesticides.

Adults are active from late November to January whenever the temperature is above freezing. Males are small, light brown to tan moths. They are attracted to lights and a pheromone released by the females. Female adults are small, gray, with reduced wings and flightless. They are most commonly found crawling at the base of trees. After mating, females deposit their eggs in host tree bark crevices, scales, or loose lichen. The eggs over-winter and hatch in the spring when temperatures reach ~55° F.

(over)

Control*

An early April horticultural oil spray on trunks and branches of infested trees to kill eggs may be helpful. However, some eggs are protected under bark flaps and lichens.

Bacillus thuringiensis (B.t.) is a bacterium that works very well on younger larvae of the winter moth while they are free feeding on open leaves. This is a biological insecticide that can be used in ecologically sensitive areas as it affects only caterpillars in the larval stage and is very short-lived in the environment. There are also a number of chemical insecticides that are registered for controlling larvae on shade trees and ornamental that should be effective.

Some products are available to act as a barrier to climbing adults. Generally, heavy weight paper strips that are covered with a sticky substance are put on the tree to snare the climbing moth or caterpillar. This should be done in November when the adults are active.

Research is being done at the University of Massachusetts in Amherst on a parasitic fly (*Cyzenis albicans*) that has been effective in controlling winter moth in Canada and the Pacific Northwest. This is a long term biocontrol option but it will take years for it to become effective after releases are begun.

DO NOT MOVE LANDSCAPE MATERIAL from infested areas as the cocoons of winter moth are in the soil from **June through November**.

***Note:** These recommendations are not a substitute for pesticide labeling. Read the label before applying any pesticide. Pesticide recommendations are contingent on continued EPA and Maine Board of Pesticide Control registration and are subject to change.

Caution

For your own protection and that of the environment, apply the pesticide only in strict accordance with label directions and precautions.