

# Winter Moth - Questions and Answers

developed by Charlene Donahue, Entomologist, Maine State Forest Service, August, 2012

1. Why is the discovery of the winter moth in Maine such bad news?

Winter moth (*Operophtera brumata*) defoliates a wide range of hardwood trees and shrubs and has no natural enemies in North America. This pest killed 40% of the red oak in some Nova Scotia stands before it was brought under control. It is killing trees in eastern Massachusetts now and is a pest of blueberries and cranberries in Oregon and Washington State.

2. How was the population discovered?

An alert Harpswell landowner called in November of 2011 wondering what the clouds of moths were that she was seeing at her light and around an oak tree. She sent in samples that were sent on to a Massachusetts researcher who identified them using DNA testing. This testing was needed as winter moth is very closely related to the native Bruce spanworm (*Operophtera bruceata*).

In May of 2012 the larvae, small green inchworms, were found on the tree that had had the moths on them and on hundred of acres of trees in the surrounding area.

3. Is this an invasive species?

Yes, it is native to Europe and it is causing significant environmental and economic harm in its new home. (Federal definition of an invasive species: <http://www.invasivespeciesinfo.gov/whatis.shtml>)

4. What do they look like? Can you describe the various stages of their lifecycle?

The larvae are small green inchworms that vary in color from light green to brownish green. They feed on the buds and leaves of trees, shrubs and herbaceous plants from the end of April until early June.

When they finish feeding the larvae spin down on silk to the ground, form earthen cocoons and spend June through November as pupae in the soil – this is important to remember.

Male moths are drab-colored, with fragile-looking wings. Their wing span is about 1". The ½" long female moths are a mottled gray to brown; this makes them well camouflaged on their hosts. Female moths have greatly reduced wings and do not fly. The adult moths emerge from the soil in November and December, mate, and the flightless females lay eggs in bark crevices and under lichen on host trees.

The eggs hatch in late April or early May. The tiny larvae put out a silken thread and balloon on the silk to other trees. This is the main method of natural dispersal.

5. If you see winter moth, who should be contacted?

Contact the Maine Forest Service Insect and Disease Laboratory at 207-287-2431 or [Charlene.donahue@maine.gov](mailto:Charlene.donahue@maine.gov) if you see:

- Clouds of moths flying around Thanksgiving or later
- Trees defoliated in May by green inchworms

6. What do they eat?

They feed on the leaves of broadleaf trees, shrubs and understory herbaceous plants. Favorite hosts include oak, birch, maple, cherry, apple, blueberry, and many more.

7. Do they have a natural predator?

Not effective ones in North America. Although birds and parasitic wasps were observed attacking the winter moth larvae.

For more information about ongoing efforts to address the infestation of Winter Moths in Vinalhaven, ME, contact:

**Andrew J. Dorr, Town Manager: 863-2042**

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8. What areas of Maine are known to be infested? What is the expected spread rate? Can its population be contained to its current location?

Currently winter moth is known to be in parts of Harpswell and Vinalhaven.

The natural method of dispersal is the larvae ballooning on silk when they first hatch. How far they go depends on the winds and how dense the cover is in the area and the average rate of spread is 4.5 miles/year.

Containing the population to the current area would take a very concerted effort that probably will not happen. However, efforts should be made to minimize the spread of this damaging pest. Most importantly, avoid moving soil and landscape plants from the infested areas when the pupae are in the ground (late May through December).

9. Can the insects be transmitted to other areas?

Yes, the soil under and near infested trees (the larvae spin down on silk that blows them away from the trees) are full of cocoons that can be easily moved to new locations if you dig up plants.

Don't move landscape plants or trees from infested areas.

10. Is there a way to keep the winter moth population in check?

In the fall, trees can be wrapped using tree bands. These are pieces of material (you can use strips of foil-backed insulation) wrapped around the tree trunks 2-4 feet from the ground and covered in Tanglefoot. The female moths get stuck on the wrap and don't lay eggs. If the population is very high the bands can get overloaded and become ineffective.

Infested trees can be treated in early April with horticultural oil to smother the eggs on the trunk and branches. This may not kill all the eggs as they may be covered with bark or under lichens.

The biological insecticide *Bacillus thuringiensis* (Dipel, Foray) can be applied to trees in May after the larvae have hatched and the leaves have begun to expand. These products are allowed near water as they only affect larvae that eat the leaves within a few days of treatment.

Other pesticides can also be used to control winter moth. These include, but are not limited to, spinosad and permethrin.

The Maine Forest Service is looking into introducing parasitic flies (*Cyzenis albicans*) for long term control of winter moth. These flies are specialized parasites that feed only on winter moth. They have been successfully used in Nova Scotia and British Columbia.

A researcher in Massachusetts has been releasing the flies since 2005. They are starting to recover flies from the first release sites indicating that the flies are becoming established. Hopefully over the next few years the flies will begin to bring the winter moth population under control in MA.

Don't move landscape plants or trees from infested areas.

11. How can residents and visitors help prevent the spread of the winter moth?

Don't move landscape plants or trees from infested areas. In the eastern US, Massachusetts, Rhode Island and Connecticut are known to have winter moth.

During late May and early June check vehicles from infested areas and make sure that there are not inchworms or pupae on them.

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