

Winter Moth Basics for 2015

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Winter Moth (*Operophtera brumata*): This is a new and important pest of cranberry and other fruits in Southeastern New England. Moths emerge from the soil usually in late November and may be active into January. The male moths are light brown to tan in color and all four wings are fringed with small elongate scales that give the hind margins a hairy or fringed appearance. The female is gray, almost wingless and cannot fly. Winter moth caterpillars are pale green caterpillars with a white longitudinal stripe running down both sides of the body. They are “loopers” or “inchworms” and have just 2 pairs of prolegs. At maturity, the caterpillars will be approximately 1-inch long, whereupon they drop to the soil for pupation. Pupation occurs from late May into early June.



Winter Moth Larva



Bruce Spanworm Larva

Life Cycle: After mating, the female deposits eggs loosely in bark crevices, under bark scales, or elsewhere. Adult moths then die and the eggs over-winter. Eggs are dark-colored at first but turn orange within 3-4 weeks. In late-March or early-April, **just prior to hatching, they turn red and eventually a deep, shiny blue.** Eggs hatch when temperatures average around 55°F. **It is believed that egg hatch in MA occurs when approximately 177 to 239 growing degree days (GDD) above a base of 40°F (starting Jan 1) have accumulated,** which is historically during the second week in April. After hatching, the larvae begin feeding.

See <http://www.yourweekendview.com/outlook/agriculture/growing-degree-days/> to calculate the GDD for your location. Good bio-indicators are flowering red maples. **Models suggest that we will reach egg hatch after April 15, 2015.** GDD accumulation will be posted on the UMass Cranberry website.

Damage: Caterpillars feed within both flower and foliar buds. Once a bud has been devoured from within, the caterpillar will migrate to other buds and repeat the process. Destruction of the flower buds leads to greatly diminished harvest on fruit crops. Older larvae feed in expanding leaf clusters and are capable of defoliating trees and other plants, when abundant.

Management: Scout bogs early for winter moths larvae! Winter moth larvae are likely present by May 1. Injury can occur to developing tips before populations can be detected. So, if you have a history of winter moth injury, you may need to apply a prophylactic spray early in the season. The best choices for control are Avaunt, Delegate, and Intrepid. Avaunt cannot be used on flow-through bogs. For Avaunt and Delegate, allow 7 days between applications. Intrepid is a growth regulator product and the larvae must eat it to be affected. It has greater residual and is more active than Confirm. However, Intrepid is Zone II-restricted and restricted use. The action threshold is an average of 18 larvae per sweep set.

For detailed information concerning the biology and management of Winter Moth, visit the following: <http://extension.umass.edu/landscape/fact-sheets/winter-moth-overview> or <http://extension.umass.edu/landscape/fact-sheets/winter-moth-identification-management>
and for current regional updates the landscape message at: <http://extension.umass.edu/landscape/landscape-message>.

Winter Moth in Southern New England 2015 (Heather Faubert, URI Coop Extension). The average date of egg hatch in RI is April 10 but we expect a bit of a delay given the cool spring weather. Last November, I set up tree wraps at 5 locations: three in RI, one in Pawcatuck, CT and one in Acushnet, MA. The tree wraps encouraged female winter moths to lay eggs just below the tree wraps. Over the next week I'll remove all the tree wraps and look for eggs to monitor. I removed the tree wraps at URI last week and found hundreds of eggs to monitor. Winter moth eggs start out orange, but then turn blue a few days before hatching. Very handy for monitoring egg hatch!

It is important to control winter moth just when hatching for apple, cranberry and blueberry, it is less important for landscape trees. When eggs hatch, winter moth caterpillars wriggle into swollen buds and begin feeding. For apple, cranberry and blueberry, swollen buds are primarily flower buds and once caterpillars are inside buds they are protected from insecticide sprays until just before bloom. By this time many flowers may have been damaged or destroyed, destroying the crop. Landscape trees, on the other hand, can withstand early winter moth feeding damage. To save trees from being defoliated, insecticides can be applied after trees leaf-out, but before excessive feeding damage has occurred.

Biological control The fly, *Cyzenis albicans*, has successfully controlled winter moth outbreaks in Nova Scotia in the 1950's and the Pacific Northwest in the 1970's. *C. albicans* lay eggs on leaves of winter moth host plants. When eating leaves, winter moth caterpillars accidentally eat fly eggs too. A fly egg hatches and the larva develops inside a caterpillar body. When a parasitized caterpillar drops to pupate, it digs into the soil but instead of a winter moth caterpillar pupating, the fly pupates instead. The fly pupa remains in the soil until the following spring when it emerges as an adult fly at the same time winter moth eggs hatch.

Parasitic flies have been released in Massachusetts since 2006 and in Rhode Island since 2011. In Massachusetts, some of the early release sites are already seeing winter moth populations decline due to high rates of parasitism. In Rhode Island, we recovered flies for the first time in 2014 in Goddard Park. In a few years we hope to start seeing winter moth controlled by *C. albicans*.

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