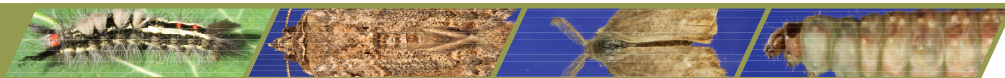


Insect Production Services

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version 2.1



Biology of the Whitemarked Tussock Moth (*Orgyia leucostigma*)

INTRODUCTION

The white marked tussock moth (*Orgyia leucostigma*), a native species to North America, is found in Canada, from Newfoundland to Alberta and the entire eastern U.S.A.. Tussock caterpillars (larvae) belong to the Lymantriidae family of moths and are aptly named for the dense tufts of hair that protrude from the backs of some species. Whitemarked tussock moths are highly polyphagous insects feeding on both hardwood and softwood trees and at times, many plant species including those used for crops. Epidemics have occurred in deciduous stands of herbaceous oak, birch, cherry, apple, beech and in coniferous stands of balsam fir, spruce, hemlock and tamarack. In Ontario, infestations occur in urban areas on elm and Manitoba maple.



LIFE CYCLE

Whitemarked tussock moth overwinter during the egg stage. Eggs hatch from late-June to early-July and the larvae or caterpillars feed for five to six weeks until they reach pupation. Female larvae moult their skins five times and therefore have six larval stages called instars whereas males have only five instars. During their third-instar, larvae develop their characteristic tufts of hair: two long, black tufts on either side of their head (horns), one long, black tuft near their hind end (tail), four shorter whitish-grey tufts on the back followed by two small, raised, red tufts just before the tail. These irritating hairs easily break off and serve the insect as a highly effective defense mechanism for their life cycle. Larvae incorporate these hairs into their cocoons to discourage predation and the female moths use them first for camouflage and then as

protection for her eggs. Caterpillars are also identified by their red heads and the two light yellow stripes that extend lengthwise on their backs. By mid-August, larvae change to pupae within dark-grey cocoons spun of silk and body hairs. These pupae may be found on twigs, branches and crevices in bark. Adults emerge by late-August and early-September. Males are dark-grey, possessing a wingspan of approximately 30mm and are characterized by their plumose antennae. Females are creamy-white colored, hairy and wingless. Since they are egg-laden and flightless, immobile females mate immediately and lay their eggs, in a foamy white mass, on or near empty cocoons.

DAMAGE AND NUISANCE

Young larvae typically skeletonize deciduous leaves and as they mature, start consuming the entire leaf except for main veins and the petiole. Once trees are defoliated, larvae will spin down from branches on silken threads and because of their light weight and long hairs, younger instars are easily transported by the wind to new hosts. On conifers, not only are the needles consumed but also tender bark on twigs causing the twigs to curl and branches to deform. For conifers, repeated years of defoliation in excess of 90 percent results in significant wood loss and ultimately tree mortality. Top kill may occur on trees which have undergone 75 percent defoliation for 2 consecutive years or more. In urban areas especially, tussock moth may also pose another threat. Their larvae's hairs, like many other "fuzzy caterpillars" are hollow and contain a toxin that is released

BIOLOGY OF THE WHITEMARKED TUSOCK MOTH

when they penetrate an animal's skin. When these urticating or nettling hairs brush up against people, many experience allergic reactions such as painful rashes and when they are inhaled may cause respiratory problems. Children catching and handling these caterpillars are especially vulnerable. These hairs and shed skins persist long after larvae have disappeared and continue to cause reactions.

NATURAL CONTROL

Outbreaks of whitemarked tussock moth normally last from two to four years. Although epidemics of this species are usually terminated primarily by a naturally occurring nucleopolyhedrosis virus, other factors including parasitoids, natural predators and diseases such as fungi contribute in suppressing population numbers. Natural predators such as birds have limited effect on populations since they only eat young larvae before their hairs develop and become troublesome. High population densities are usually necessary in order for diseases and parasitoids to be effective. *Bacillus thuringiensis* (B.t.) is a naturally occurring bacteria that is commercially available as a biological insecticide and is proven to be effective against tussock moth larvae. B.t. is only effective on lepidopteran species and does not harm non-target insects including beneficial pollinators. However, because B.t. degrades in sunlight and easily washes away in rain, it offers a very narrow window for control.

WHAT CAN I DO?

As a home or woodlot owner, small infestations can be controlled manually by collecting and destroying egg masses. However if egg masses are missed, it may be necessary to prevent serious damage by initiating control procedures using a registered insecticide before caterpillars become too

large. Small trees or small lots can be sprayed with portable mist blowers or conventional orchard blowers. For taller trees or large lots aerial applications are necessary. If spraying is necessary, B.t. is available at most gardening centers and much safer to use than chemicals. Spraying chemical insecticides might also greatly affect natural predators of tussock moth and non-target species, so before using any insecticide, read the label carefully, use proper protective wear and follow instructions stringently before using them.

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