

## Douglas-Fir Tussock Moth

*Orgyia pseudotsugata* (McDonnough)

Lepidoptera: Lymantriidae

Mason, R. R.; Wickman, B. E. 1991. Integrated pest management of the Douglas-fir tussock moth. *Forest Ecology and Management* 39: 119-130.

**Objective:** To review the integrated pest management practices for *O. pseudotsugata* populations.

**Abstract:** Douglas-fir tussock moth, *Orgyia pseudotsugata* (McDonnough), is a periodic defoliator of Douglas-fir, *Pseudotsuga menziesii* (Mirb.), and true firs, *Abies* spp., in western North America. Outbreaks occur quite unexpectedly every 7-10 years and usually persist for 3-4 years. Defoliation by *O. pseudotsugata* can be severe and cause widespread tree mortality during the first year of an outbreak. Surviving trees may exhibit growth loss, top-kill, and tree deformity.

**Sampling Procedure:** Much of the information included in this review paper is summarized as individual research articles in *Sampling Methods for Forest and Shade Tree Insects of North America*, Vol. 1, or presented elsewhere. However, those unfamiliar with *O. pseudotsugata* may find this paper an informative source of management practices. Table 1, describing the phases of *O. pseudotsugata* densities, may be of particular interest to land managers.

**Notes:** Larvae of *O. pseudotsugata* can be sampled following the methods of Mason 1969, 1970, 1978, 1979, and 1987; or Shepherd et al. 1985.

### References:

- \* Mason, R. R. 1969. Sequential sampling of Douglas-fir tussock moth populations. Res. Note PNW-102. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; 11 p.
- \* Mason, R. R. 1970. Development of sampling methods for the Douglas-fir tussock moth, *Hemerocampa pseudotsugata* (Lepidoptera: Lymantriidae). *Canadian Entomologist* 102: 836-845.
- \* Mason, R. R. 1977. Sampling low-density populations of the Douglas-fir tussock moth by frequency of occurrence in the lower tree crown. Res. Pap. PNW-216. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; 8 p.
- \* Mason, R. R. 1978. Detecting suboutbreak populations of the Douglas-fir tussock moth by sequential sampling of early larvae in the lower tree crown. Res. Pap. PNW-238. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; 9 p.

\* Mason, R. R. 1987. Frequency sampling to predict densities in sparse populations of the Douglas-fir tussock moth. *Forest Science* 33: 145-156.

\* Shepherd, R. R. 1985. Pest management of Douglas-fir tussock moth: estimating larval density by sequential sampling. *Canadian Entomologist* 117: 1111-1115.

## Table

Table 1. Description of typical phases of an outbreak of the Douglas-fir tussock moth

Phase	Density of small larvae (No./ m <sup>2</sup> foliage)	Description
0	<3	Low density. No visible defoliation. Caterpillars uncommon, egg-masses rare.
I (Release)	30 > 3	Sub-outbreak density. Usually little or no visible defoliation. May be some light feeding in tops of crowns late in season. Caterpillars common. New egg-masses large, outnumber old masses.
II (Peak)	>30	Outbreak density. Defoliation visible on most host trees, especially severe in upper crowns. Caterpillars abundant all season. New egg-masses, also abundant, outnumber old masses.
III (Decline)	>30	Outbreak density. Defoliation repeated on all trees. Caterpillars abundant early in season, but numbers decline sharply before pupation. New egg-masses scarce, and smaller than usual.
IV (Postdecline)	<3	No new defoliation. Caterpillars scarce. New egg-masses rare.

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