

Douglas-Fir Tussock Moth

Orgyia pseudotsugata (McDunnough)

Lepidoptera: Lymantriidae

Shepherd, R. F.; Gray, T. G.; Chorney, R. J.; Daterman, G. E. 1985. Pest management of Douglas-fir tussock moth, *Orgyia pseudotsugata* (Lepidoptera: Lymantriidae): monitoring endemic populations with pheromone traps to detect incipient outbreaks. *Canadian Entomologist* 117: 839-847.

Objective: To develop a trap-based monitoring system that follows population trends of *O. pseudotsugata* adults through endemic levels and predicts incipient outbreaks.

Abstract: The Douglas-fir tussock moth is a major defoliator of Douglas-fir, *Pseudotsuga menziesii* (Mirb.) Franco, and true firs, *Abies* spp., in western North America. Defoliation can often be severe and cause tree mortality during the first year of defoliation.

The number of *O. pseudotsugata* adults caught in delta-shaped sticky traps baited with pheromone lures was compared with egg mass densities and subsequent defoliation. A lure containing 0.01% pheromone by weight was more effective at predicting population trends than baits having concentrations of 0.0001, 0.001, 0.1, or 1.0%. Trap saturation occurred at 40 moths per trap. To achieve a standard error of 30% of the mean, six traps were required at each site. A threshold density of 25 moths per trap provided a warning of potential outbreaks, causing defoliation up to 12-km from the trap site.

Sampling Procedure: Construct delta-shaped traps (695 cm²) from 2 L orange, paper milk cartons with the interior coated with Tanglefoot™ (Tanglefoot Co., Grand Rapids, MI). Place six traps, with one 3 by 5-mm PVC lure containing 0.01% of *O. pseudotsugata* pheromone (Z-6-heneicosen-11-one) impaled to the roof interior, at each monitoring site. Hang traps >30 m apart on live host branches 2-2.5 m above ground.

A trap density threshold of 25 moths per trap is used to indicate that the population is about 2 years from outbreak, and should be followed up by more detailed egg mass surveys. Space survey plots 1-5 km apart the summer before defoliation is predicted to occur. The authors recommend a pre-outbreak warning system consisting of a continuous pheromone-trap monitoring system to follow population trends, and a sequential egg mass survey to identify concentrated areas of outbreak where defoliation can be expected (Shepherd and others 1984).

Reference:

- *Shepherd, R. F.; Otvos, I. S.; Chorney, R. J. 1984. Pest management of Douglas-fir tussock moth (Lepidoptera: Lymantriidae): a sequential sampling method to determine egg mass density. *Canadian Entomologist* 116: 1041-1049.