

Western Hemlock Looper

Lambdina fiscellaria lugubrosa (Hulst)

Lepidoptera: Geometridae

Evenden, M. L.; Borden, J. H.; Van Sickle, G. A.; Gries, G. 1995a. Development of a pheromone-based monitoring system for western hemlock looper (Lepidoptera: Geometridae): effect of pheromone dose, lure age, and trap type. *Environmental Entomology* 24: 923-932.

Objective: To evaluate appropriate type of trap, dose of pheromone, and lure longevity for *L. fiscellaria lugubrosa*.

Abstract: Western hemlock looper, *Lambdina fiscellaria lugubrosa* (Hulst), is an important periodic defoliator of western hemlock, *Tsuga heterophylla* (Raf.) Sarg., and other conifers in the United States and Canada. Damage generally occurs in mature or senescing stands where defoliation results in growth reduction, top kill, and tree mortality.

A pheromone-based monitoring system could be established for *L. fiscellaria lugubrosa*, which is strongly attracted to the sex pheromone of eastern hemlock looper, *Lambdina fiscellaria fiscellaria* (Guenée). This pheromone, a 1:1 ratio of isomeric 5,11-dimethylheptadecane and 2,5-dimethylheptadecane, was tested at doses of 10, 100, 1,000, and 10,000 µg per trap. Trap saturation appeared to occur with the 1,000 and 10,000 µg doses, while traps baited with 1 or 10 µg were effective over the flight period of *L. fiscellaria lugubrosa*. Traps baited with 10 µg pheromone provide a better estimate of the size of the next generation and are therefore appropriate for a pheromone-based monitoring system (Evenden 1994, Evenden et al. 1995). Nonsticky Unitraps (Pherotech, Delta, BC) were recommended over sticky traps for monitoring *L. fiscellaria lugubrosa*. The inner surface of sticky traps, made from 2-liter milk cartons shaped into 3-sided traps and coated with adhesive on the interior, became saturated with as few as 100 moths. A pheromone-based monitoring system using 10 µg pheromone in Unitraps would allow managers to detect increasing populations of *L. fiscellaria lugubrosa* during the adult flight period in late summer instead of during egg surveys in October. The earlier detection would allow for additional time to make management decisions for this pest.

Sampling Procedure: Install Unitraps baited with rubber septa loaded with 10 µg of 1:1 ratio of isomeric 5,11-dimethylheptadecane and 2,5-dimethylheptadecane. Mount septa in the lid. Traps should be installed in trees 1-2 m above ground and at least 100 m apart from each other. Deploy traps before the *L. fiscellaria lugubrosa* flight period, which begins in late July or early August, and leave in place through October. Check traps every 2-3 weeks. Solid-formulated cubes of dichlorovos placed in each trap will kill captured moths; replace dichlorovos each time traps are checked.

References:

- Evenden, M. L. 1994. Development of a pheromone-based monitoring and detection technique for the western hemlock looper, *Lambdina fiscellaria lugubrosa* (Hulst) (Lepidoptera: Geometridae). M.P.M. thesis, Simon Fraser University, Burnaby, BC, Canada.
- Evenden, M. L.; Borden, J. H.; Van Sickle, G. A. 1995b. Predictive capabilities of a pheromone-based monitoring system for the western hemlock looper, (Lepidoptera: Geometridae). *Environmental Entomology* 24: 933-943.