

Gypsy Moth

Lymantria dispar (Linnaeus)

Lepidoptera: Lymantriidae

Liebhold, A. M.; Elkinton, J. S.; Zhou, G.; Hohn, M. E.; Rossi, R. E.; Boettner, G. H.; Boettner, C. W.; Burnham C.; McManus, M. L. 1995. Regional correlation of gypsy moth (Lepidoptera: Lymantriidae) defoliation with counts of egg masses, pupae, and male moths. *Environmental Entomology* 24: 193-203.

Objective: To compare three *L. dispar* census methods, and determine their ability to predict regional defoliation levels.

Abstract: The gypsy moth was introduced into Medford, Massachusetts in 1869, and is now a major defoliator of hardwoods throughout the northeastern USA and Canada. Defoliation results in reduced growth, decreased vigor and extensive tree mortality.

Three different *L. dispar* sampling techniques were compared for their spatial correlation with regional defoliation maps. Counts of pupae and egg masses under burlap bands, and counts of male moths in pheromone-baited traps, were taken in a network of 150 plots distributed irregularly throughout Massachusetts. These counts were compared with aerial sketch maps of *L. dispar* defoliation collected during the same period. Egg mass and pupal counts were correlated positively with subsequent defoliation. These results indicate that counts of egg masses (or pupae) under burlap bands may be the most suitable measure for predicting *L. dispar* defoliation on a regional scale.

Sampling Procedure: Place a standard milk carton pheromone (50 +/- disparlure) trap surrounded by 20 oak, *Quercus* spp., trees >13 cm d.b.h., where burlap bands are placed. Establish traps in early summer and revisit in late summer and early fall. Count all egg masses and pupal remains under the burlap bands, and the number of male moths per pheromone trap.

If egg mass counts are greater than 1.8 per tree, or pupal counts are greater than 4 per tree then defoliation is likely to occur. The authors suggest that defoliation predictions can be extrapolated, with some caution, out to 10 km from where counts are made. For operational use, establish permanent plots on a grid network with less than 10 km between plots.

Notes: Egg mass counts under burlap bands may be more useful than pupal counts because they usually remain intact providing a census over several months.