

Gypsy Moth

Lymantria dispar (Linnaeus)

Lepidoptera: Lymantriidae

Wallner, W. E.; Jones, C. G.; Elkinton, J. S.; Parker, B. L. 1991. Sampling low density gypsy moth populations. In: Gottschalk, K. W.; Twery, M. J.; Fields, S. I., editors. Proceedings of the U.S. Department of Agriculture Interagency Gypsy Moth Research Review--1990. Gen. Tech. Rep. NE-146. Radnor, PA: *U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station*; 40-44.

Objective: To review the sensitivity, reliability and cost of methods for sampling low density *L. dispar* infestations.

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 reduces tree growth and vigor, and in combination with other stress factors can cause excessive tree mortality. The techniques for sampling gypsy moth populations at low densities (less than 100 egg masses per hectare) were compared. The use of pheromone traps has demonstrated the highest level of male moth detection, but cannot be related to subsequent egg mass, larval density, or defoliation, levels. Therefore, its use for population monitoring is limited to detection and delineation of new infestations.

A series of burlap banded trees can be used to monitor fluctuations in egg mass densities. Egg masses beneath bands on sample trees reflected densities on unbanded trees, and are much easier to deploy than other conventional sampling techniques such as fixed-radius, prism, stem, and timed walk samples. Populations were considered in outbreak mode when densities were greater than 100 egg masses per hectare, and were triggered at densities between 10-25 egg masses per hectare.

Sampling Procedure: Place a burlap band around the bole of each oak, *Quercus* spp., tree >7 cm diameter and 1.3 m high in clusters of 10 trees. Separate each cluster by 100 m to reflect an estimate that is based on 1 ha. Return annually to the same locations, record the number of egg masses within each band, and compute the mean of the 10-tree sample per plot. Populations are in outbreak mode when densities are greater than 100 egg masses per hectare. Expect populations to reach outbreak status if densities are between 10-25 egg masses per hectare.