Forest Tent Caterpillar

Malacosoma disstria (Hübner)
Lepidoptera: Lasiocampidae

Batzer, H. O.; Martin, M. P.; Mattson, W. J.; Miller, W. E. 1995. The forest tent caterpillar in aspen stands: distribution and density estimation for four life stages in four vegetation strata. *Forest Science* 41: 99-121.

Objective: To develop a procedure for estimating density of *Malacosoma disstria* (Hübner).

Abstract: The forest tent caterpillar is a major defoliator of hardwood forests, particularly trembling aspen, *Populus tremuloides* Michx., in the northern USA and Canada. Young larvae feed on developing buds, while later instars feed gregariously, often defoliating the tree completely. Defoliation causes growth loss, twig dieback, and tree mortality in cases of prolonged infestation.

The forest tent caterpillar exemplifies the mobile class of defoliators by expanding its vertical distribution during development from the tree canopy to the ground. This study investigated the distribution of eggs, small larvae, large larvae, and cocoons in overstory-tree, high-shrub, low-shrub, and ground strata in stands of *P. tremuloides*. All parts of *P. tremuloides* as well as ground vegetation underneath aspen stands were sampled for *M. disstria* life stages.

Egg mass sampling was the most reliable estimator of population density as larval and pupal counts proved to be rather laborious and imprecise. The number of egg masses per tree was estimated from samples in the upper and mid-crown, and d.b.h. using a branch model.

Sampling Procedure: Collect the three longest mid-crown branches and the single longest upper crown branch. Record the number of egg masses, and diameter at 1.3 m height. Whole tree egg mass numbers can be calculated using the equation:

$$EMT = 1.83\ UC_1 + [1.48\ MC_1 + 0.91\ (MC_2 + MC_3) + 0.48]\ (diam.)^{0.311}$$

where,

EMT	=	numbers of egg masses in the tree
UC_1	=	numbers of egg masses on the longest upper-crown branch
MC_1	=	numbers of egg masses on the longest mid-crown branch
MC_2, MC_3	=	numbers of egg masses on the second and third longest mid-crown branches.

Note: Edge trees should not be sampled since the number of egg masses is usually less than the population mean.