

# MONITORING, AND MAPPING GYPSY MOTH DATA IN AIPM: THE PROCESS AND PROBLEMS OF IMPLEMENTATION

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## ABSTRACT

The Appalachian IPM program (AIPM), due to its size (12.8 million acres), location along the leading edge, and use of new technology, will influence the development of gypsy moth management programs. This paper reviews the data collection, management and mapped display of the adult male and egg mass life stages in the AIPM project. Data are field-collected using optically-scanned forms and managed using database management and geographic information systems. Maps showing population density, trend in density, extent of infestation and proximity to other infestations are delivered to land managers.

Male moth data are collected from ca. 9,000 pheromone traps in a 2 or 3 K systematic survey. Sentinel traps (ca. 3% of the traps) are checked weekly towards the end of the season to establish the end of moth flight and initiate egg mass surveys. A small proportion of traps along the northern edge of the project have been filling and this problem is projected to increase. Progress of trap placement and service visits are mapped weekly to aid in personnel management. Moth catch and trend in moth catch are modelled into surfaces. Male moth maps at the same scale and size as USGS 7.5 minute topographic maps display male moth trend as shaded polygons, moth catch as contours and postings, and last year's egg mass point data. Computer programs which automate this procedure are in place. About 100 minutes of computer time is currently necessary to produce and plot each map, and ca. 130 quads were produced in 1989 by the USFS in Atlanta.

Egg mass data (1/40th acre fixed-radius plots) are collected where male moth data suggest positive counts are likely. The number of egg mass samples between the two years is increasing dramatically. A sequential sampling plan was established in 1989 to help increase precision in the face constrained sampling resources. This problem is projected to continue, and additional sampling plans are needed. Due to the resolution, spatial distribution, and spatial dependence of the egg mass data, surface models easily produce artifacts at locations distal to collection sites. To prevent this, mapped displays are restricted to within 250 m of collected data by creating a polygon that defines the area within 250 m of any sample, and restricting the display of all surfaces to fall within this polygon. Defoliation data are also included on egg mass maps.