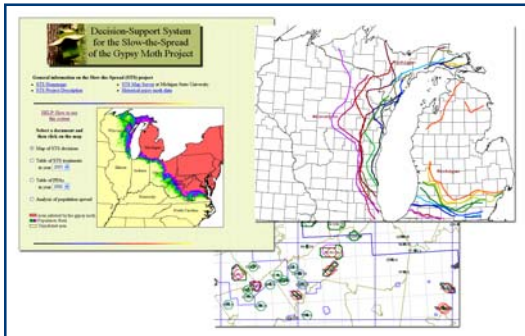


## Decision Support

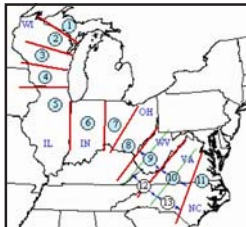


A system comprised of integrated components for analyzing project, male moth, and treatment data.

The *Decision Support System* provides a means of analyzing STS data and making uniform decisions across multiple state and federal jurisdictions. Quantitative evaluations are undertaken annually for analysis of male moth catch, gypsy moth spread, proposed project activities, and treatment evaluation.

- **Decision Algorithm** - analyzes annual male moth catch data and provides recommendations for project boundaries, delimitation, and treatment.

- **Spread Rates** - annual rates of spread are calculated for the gypsy moth within defined regions of the project (see figure right).



- **Treatment Evaluation** - The final goal of managing isolated colonies in the STS project is to reduce population numbers to the background level in the neighboring areas. A 3-fold reduction in moth capture relative to the surrounding moth population level would be considered successful in the STS project.

The Slow-the-Spread project's specific goal is reducing the spread of the gypsy moth into uninfested areas. This invasive pest entered the U.S. in the late 1860's and has become the most destructive forest defoliator in the country, causing untold damage in commercial woodlots, public forests, and private property.

Infestation by the gypsy moth can decrease tree growth and cause dieback and tree mortality. Defoliating outbreaks of this pest often encroach on forested residential areas where the caterpillars are a nuisance to homeowners when highly valued trees are defoliated.

### Our Mission

- Implement integrated pest management strategies in order to reduce the rate of gypsy moth spread.
- Provide coordination for program implementation to members and cooperators of the Gypsy Moth Slow-the-Spread Foundation.



### Gypsy Moth Slow-the-Spread Foundation, Inc.

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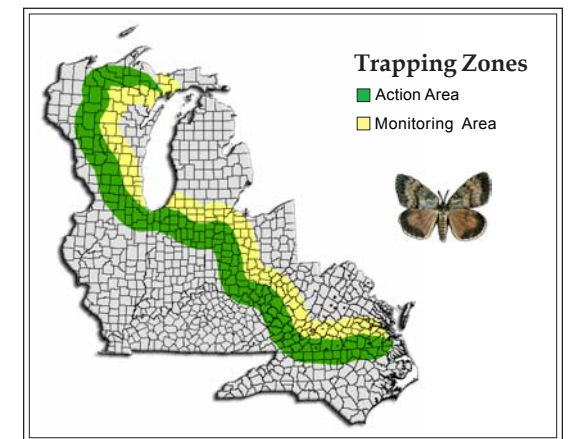
Phone: (919) 877-9361 Fax: (919) 877-0940  
Email: info@gmsts.org Web: www.gmsts.org



## National Slow-the-Spread of the Gypsy Moth



**Slow-the-Spread (STS)** is a preventive project funded as part of USDA's (Forest Service and APHIS) national strategy to manage the gypsy moth in the United States. State and federal partners, located along the leading population edge of the generally infested area, implement STS cooperatively. The purpose of STS is to reduce the overall rate at which the generally infested area expands.



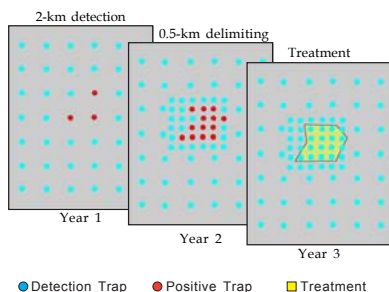
## Survey Methodology



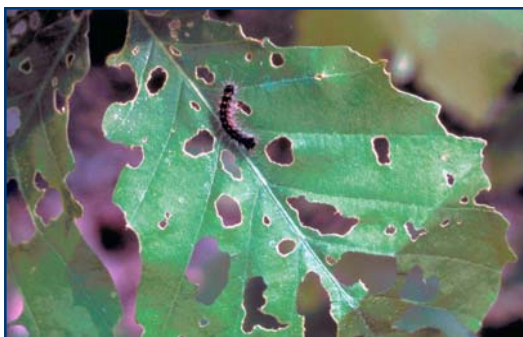
Pheromone-baited traps are used to monitor gypsy moth. Shown is a delta-style gypsy moth trap.

In the spring, before adult gypsy moths emerge, traps are placed to monitor the status of gypsy moth populations and to detect the occurrence of newly established colonies. Traps are placed on a precise grid and their locations are marked using a global positioning system (GPS). A trap catch above a certain threshold triggers more intensive trapping the following year to help delineate the location and extent of the infestation. In the third year, some measure of control is taken through treatment (see figure below).

- Approximately 80,000 pheromone traps are set annually.
- Approximately 94 million acres are monitored project-wide.
- Traps are deployed between March and July.
- Traps are collected between August and September.



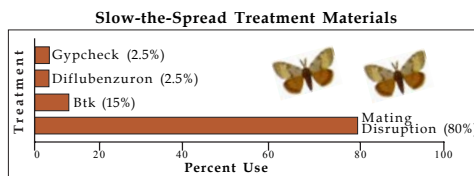
## Treatment



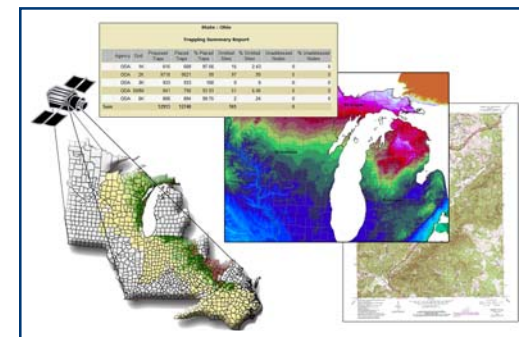
Leaf damage due to feeding of gypsy moth larvae. Shown is an early instar larva on an oak leaf.

It is not economically or environmentally feasible to completely *stop* the spread of gypsy moths. However, *slowing* their spread is economically advantageous and environmentally palatable. Treatment options include:

- **Mating disruption** - A non-insecticidal treatment specific to gypsy moth, it is one of the key elements in the Slow-the-Spread treatment strategy.
- **Btk** (*Bacillus thuringiensis var kurstaki*) - A bacterium found in soils world-wide, which when formulated as an insecticide acts as a stomach poison.
- **Diflubenzuron** - An insect growth regulator insecticide that works by preventing the formation of chitin, which is an important structural component of the external skeleton of the gypsy moth larvae.
- **Gypcheck** (*Nucleopolyhedrosis Virus*) - The gypsy moth virus is one of several naturally occurring infectious microorganisms that control gypsy moth.



## Data Management



Database, GIS, and Information Technology are key components of the project's success.

Slow-the-Spread is technology based and data intensive. A successful transition from multi-state management efforts to a wide-area IPM project has been facilitated by the development of database standards, computer algorithms, and immediate data availability over the Internet (<http://www.gmsts.org/operations>).

The main components of the data management strategy are:

- **Database** - STS employs a distributed Oracle® database. Two interconnected nodes support the processing, automatic loading, validation, and error correction of field data.
- **GIS** - ESRI® GIS tools are utilized for geographic data processing, map production, and the STS ArcIMS® map server ([mapserver.cevl.msu.edu](http://mapserver.cevl.msu.edu)). Specialized GIS applications allow for viewing and handling of STS data. GIS computer programs are written specifically for project cooperators to facilitate data management and decision making.
- **Information Technology** - IT connects data management and field operations. Through the use of real-time Internet database access, discussion forums, on-line data correction, and an operations specific web site we connect the cooperators to their data.