

Gypsy Moth Suppression Using New Technology

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Objectives

- Urban Forestry Program
- History of Gypsy Moth
Outbreak in USA, Ohio, & BG
- Gypsy Suppression Plan
- Future Challenges &
Opportunities

Urban Forestry Plan

- Develop Tree Pruning & Removal Specification for Street & Park Trees.
- Develop Tree Pruning & Removal Specification for Utility Line Clearance for Municipal Facilities.
- Create Tree Planting Specifications for City Trees.
- Create a Master Tree Planting List for Diversity.

Urban Forestry Plan

- Proactive Urban Forestry Program
- Mitigate Priority Trees
- Plan & Organize Routine Maintenance of Trees
- Plant the Right Tree in the Right Place especially under Utilities
- Long-term Planning on Infrastructure Upgrades

Mitigate Priority Trees



Plan & Organize Routine Maintenance

Query Site Listing by Area - Work History

Report Date: 1/19/2006
Report Time: 11:04 AM

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ACRT: GMW

Bowling Green, OH: Query Site Listing by Area - Work History
For Qry: 0162, Routine_LG Maintenance

Location	Th	Area	T/C	Item	DBH	COND	MAINT	WIRES	CLEAR	HDSCP	Inventory Date	By	Site ID
Area: ADA AVE													
121 ADA AVE													
	S	318	2	MAPLE NORWAY -CR	12	FAIR	ROUTI	LOWMU	TRAFF	SIDEW	5/24/2005	MR	11080
126 ADA AVE	S	318	3	ARBOR/ITAE	11	FAIR	ROUTI	LOWMU			5/24/2005	MR	11084
138 ADA AVE	S	318	1	MAPLE NORWAY -	11	FAIR	ROUTI		TRAFF	SIDEW	5/24/2005	MR	11086
202 ADA AVE	S	318	1	MAPLE NORWAY	11	FAIR	ROUTI		TRAFF	SIDEW	5/24/2005	MR	11087
215 ADA AVE	S	318	1	MAPLE SILVER	6	GOOD	ROUTI	LOW	TRAFF	SIDEW	5/24/2005	MR	11089
Area: ADAMS ST													
125 ADAMS ST													
315 ADAMS ST	S	026	1	HAWTHORN, OTHER	8	FAIR	ROUTI	LOW			9/2/2004	JK	315
	S	026	1	ARBOR/ITAE	12	FAIR	ROUTI	LOW			9/3/2004	JK	412
	S	026	2	ARBOR/ITAE	12	POOR	ROUTI	LOW			9/3/2004	JK	413
				<u>Work Date</u>	<u>Work Type</u>	<u>Work Cat</u>	<u>Crew ID</u>	<u>Man Hrs</u>	<u>Cost</u>				
				7/22/2005	PRUNE	R	EL1	0.5	36.21				
Area: ALEXANDRIA BLVD													
ALEXANDRIA BV MDN													
	S	092	1	CRA BAPPLE	4	GOOD	ROUTI				9/17/2004	JK	2050
	S	092	3	CRA BAPPLE	4	GOOD	ROUTI				9/17/2004	JK	2052
Area: ARLINGTON CT													
16 ARLINGTON CT													
	S	034	3	MAPLE SUGAR	13	POOR	ROUTI	HIGH			9/3/2004	JK	456
14 ARLINGTON CT	S	034	1	MAPLE NORWAY	11	FAIR	ROUTI				9/3/2004	JK	504
16 ARLINGTON CT	S	034	1	MAPLE NORWAY	7	POOR	ROUTI				9/3/2004	JK	505
	S	034	2	MAPLE NORWAY	15	FAIR	ROUTI				9/3/2004	JK	506

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Plant the Right Tree in the Right Place

- City removed large tree planted under powers and replace with compatible utility trees such as Japanese Tree Lilac and Serviceberry Trees.



Long-term Planning on Infrastructure Upgrades

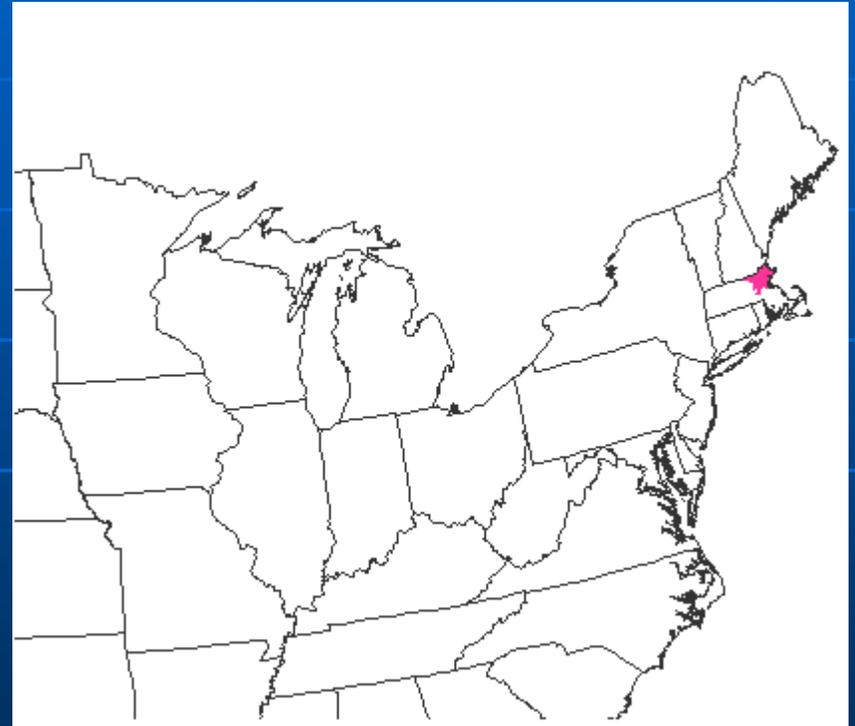


History of Gypsy Moth US Outbreak

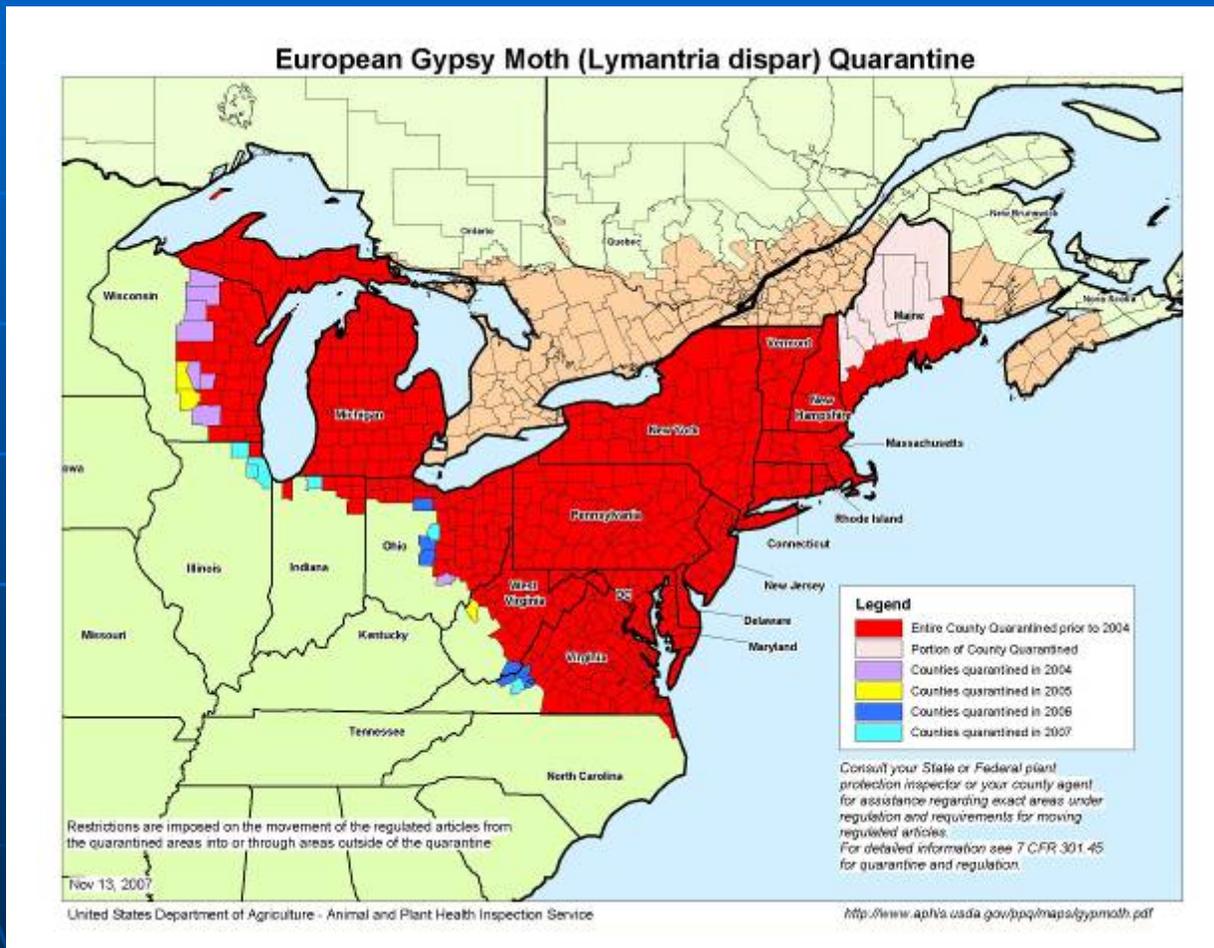


Gypsy Moth in USA

- Introduced into the US in 1869 by French Artist and amateur entomologist, E. Leopold Trouvelot for silk worm production.
- Outbreak in Medford, Massachusetts in 1882 after escape.



Gypsy Moth in USA - 2007



Gypsy Moth Defoliation



Gypsy Moths in Ohio

- First outbreak in Ashtabula County in 1971.
- Eradication efforts began in 1973 to 1989.
- In 1989, the USDA Forest Service/ODA began Suppression Program.
- In 1999, the Slow Spread Program.



Gypsy Moth in Ohio – 1991

24 Counties



Gypsy Moth Outbreak in BG

- 2002 Positively ID at BGSU.
- 2002 Positively ID in Oak Grove Cemetery and City Park. The oak trees were 100-150 years old.
- Suspect movement of infested firewood spread Gypsy Moth into the City of Bowling Green in 2002.





Gypsy Moth Management Plan Implemented in 2003

- *Entomophaga* fungal spores were applied to the soils at City Park by Craig Everett, Wood County OSU Extension Horticulturist in 2003 and 2004 both wet years.
- Burlap applied to oaks trees in City Park and caterpillars scrapped from 2003 through 2006.
- Drought in 2005 and 2006 lead to an epidemic outbreak of Gypsy Moth in 2006. 200+ egg masses per tree.
- City of Bowling Green has not applied any products for mosquitoes in 23 years. Aerial application was not an option for Gypsy Moth Management to the Municipal Arborist.

Sudden Oak Death!

- Gypsy Moth Defoliation began in 2002 through 2006.
- Removed 5 oak trees in fall 2006 and 5 oak trees in spring 2007 due defoliation.



Gypsy Moth Suppression Plan Implemented After Oak Tree Loss

- Federal and State Government Agencies stated without use of products the City Park would be an oak savannah in letter sent to City Administration.



Gypsy Moth Suppression Plan

- City Ordinance
- Street Inventory
- Contact with Lead Agencies
- Develop Gypsy Moth Plan
- Time & Funding



Gypsy Moth Suppression Plan

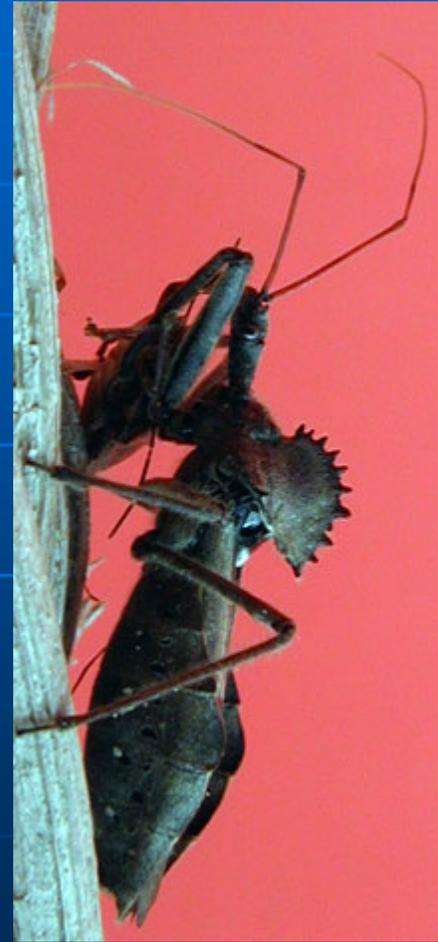
- Proactive Approach to control the outbreak of Gypsy Moth.
- Goal is to preserve 560 Oaks in city parks, rights-of-way, and public green spaces.
- Residents Input



Giant Praying Mantis To Save the Day!



Assassin Bugs To the Rescue!



Trained Parrots



Gypsy Moth Suppression Plan

- Researched safe products such as *Baccillus thuringiensis* (Bt) for Gypsy Moth Suppression from November 2006 to March 2007.
- Contacted John Bell, Head Grounds Keeper for the Rutherford B. Hayes, Presidential Center on a new technology for Gypsy Moth control.



New Technology for Gypsy Moth Control

- Ruth B. Hayes, Presidential Center used of Eradicoat
- Success was a 100% control of Gypsy Moth Larval in 2005 and 2006.
- One application to burlap bands is good for the season. Water proof.
- With Permission from Eradicoat.



Eradicoat® Product

- The Gypsy Moth Control System combines the familiar process of tree banding with a patented insecticide that produces the most effective control of the gypsy moth caterpillar on the market today.
- The Eradicoat® Gypsy moth Insecticide is specially formulated to blend a well-known and effective pesticide (Permethrin) into a latex-based polymer. The result is a liquid, which applies and dries like a clear paint, but maintains the qualities of a highly effective insecticide.
- **With Permission from Eradicoat, Inc.**

Gypsy Moth Suppression Plan

- Presentation to City Administration and City Council on use of products to suppress populations on April 30, 2007.
- Flyers put up at City Park on 20 Oak Trees on May 1, 2007.
- Gypsy Moth Plan posted on City Website on May 1, 2007.



Public Education and Communication Process

- Article announcing the Gypsy Moth Plan on May 1, 2007.
- Closed City Park for the first time in 15 years on May 22, 2007.
- Met with concerned residents.
- Bt and Eradicoat® application on May 22, 2007 on First and Second Instars.



Bt Application

- Bt was applied from the ground standard spray equipment from 1:00 am to 6:00 am.
- Misted over the canopy of the trees.
- Compressor had a silencer on muffler.
- Wind speed was 0-1 mph.



Eradicoat® Application

- Applied Eradicoat® to burlap in Public Works Building and let dry for 2 hours the day before application.
- Put tacks to hold the burlap and then tied string at the 1.5 feet mark and dropped burlap. Used small van bucket.
- Burlap was placed 8 to 12 feet above the ground.
- Applied Eradicoat® direct on the trunks of small trees under 12 inch DBH.



Results

- 98% Reduction in the total population of Gypsy Moths.
- Minimum defoliation to the oak trees and other large trees in City Park.
- Preserved the 130 mature oak trees in City Park.
- Lunch in Park Series had shade in 2007.



Overall Analysis

- Eradicoat® banding and Bt ground application were successful to suppress Gypsy Moth outbreak.
- Low Cost – Bt cost was \$6.20/tree, Eradicoat® cost was \$1.83/tree and the burlap cost was \$0.62/tree.
- No Maintenance (i.e. – No scrapping the burlap). In 2005 and 2006 we had 2 part-time summers (\$8.50/hr) scrapping every morning for 2 hours for 12 weeks at cost of \$4080.
- Total Cost was \$3035 for 355 trees or \$8.55 per tree.
- Plan to use Eradicoat banding in 2008 to continue to manage Gypsy Moth population.

Replacement Program

- 10-20-30 - Rule of Tree Diversity
- 10% Species
- 20% Genus
- 30% Family
- Use Native Species to Northwest Ohio



Public Education



Private Landowners

- City of Bowling Green offers Adopt-A-Tree Program.
- List of Tree Service Suppliers with Certified Arborists.
- Wood Utilization Suppliers with Compliance Agreements from State Dept. of Ag.



Future Challenges

- Future Gypsy Moth Outbreaks in other areas in the city on private property.
- Maintaining stable funding levels.
- Support of City Administration, City Council & Residents



Future Opportunities

- Diversify the Urban Forest
- Educate the Public and School Children on Urban Forestry
- Long-term Planning for Capital Infrastructure Projects.
- Communicate and Educate Internal City Departments.



DOING A GREAT JOB! Your Own Designated Parking



New Street Trees in BG Global Warming



New Streetscape Design for BG Global Warming



Special Thanks

- David Adkins, ODA Gypsy Moth Program Coordinator.
- Dr. Dan Herms, OSU Entomologist
- Dr. David Shetlar, OSU Entomologist.
- Amy Stone, Lucas County OSU Extension.
- Craig Everett, Wood County OSU Extension.
- Stephanie Miller, Division of Forestry

Questions?

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