

**NAME OF SPECIES: *Lymantria dispar* (Linnaeus)**

Synonyms: *Porthetria dispar* (Linnaeus)

Common Name: Asian gypsy moth

**A. CURRENT STATUS AND DISTRIBUTION**

**I. In Wisconsin?**

1. YES                      NO    X

2. Abundance:

3. Geographic Range:

4. Habitat Invaded:

5. Historical Status and Rate of Spread in Wisconsin:

6. Proportion of potential range occupied:

**II. Invasive in Similar Climate Zones**

YES    X                      NO

**III. Invasive in Similar Habitat Types**

YES    X                      NO

**IV. Habitat Affected**

1. Host plants:  
Broader host range than European GM, but prefers conifers, and attacks larch, oak, poplar, elder, willow.

2. Conservation significance of threatened habitats: Coniferous habitats will be more threatened.  
Coniferous forests support endangered mammal species, e.g. martens, pine plantations have become an important avian habitat.

**V. Native Habitat**

1. Countries:  
Asian

2. Hosts:  
Broader host range than European GM, but prefers larch, oak, poplar, elder, willow and some evergreens.

**VI. Legal Classification**

1. Quarantined species?  
YES    X                      NO

2. By what states, countries?  
Asian gypsy moth is related to the European gypsy moth and fall under the same quarantine restrictions.

**B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS**

**I. Life History**

1. Type of insect: Lepidoptera: Lymantriidae

2. Time to Maturity:  
1 generation/year.

3. Methods of Spread:  
Adult female moths, newly hatched caterpillars 'ballooning'.  
Transportation of egg masses, which travel well on logs, lawn furniture, nursery stock, pallets, shipping containers, and on the hulls and riggings of ships.

**II. Climate**

1. Climate restrictions: Better adapted to colder climates than European GM.

2. Effects of potential climate change: Warming temperatures would facilitate establishment and spread.

<b>III. Dispersal Potential</b>	1. Invasion pathways: Moths emerging from ships carrying infested cargo. Female flight and human transport of infested material.
	2. Distinguishing characteristics that aid in its survival and/or inhibit its control: Egg masses are tolerant of extremes in temperature and moisture. Hairy egg masses and caterpillars unpalatable to natural enemies.
<b>IV. Ability to go Undetected</b>	HIGH                      MEDIUM      X                      LOW
	Signs and symptoms: Gypsy moth damage is caused exclusively by the caterpillars, which feed on developing leaves in May. Newly hatched larvae are hairy and black and feed by chewing small holes in the surface of the leaves. Older larvae devour entire leaves. The body of the larvae is dark-colored and hairy, with red and blue spots on the back. Full-grown larvae can be up to 65 mm long. In late July, spongy egg masses covered with tan or buff-colored hairs from the female's abdomen are laid on the trunks and branches of trees or in forest debris near defoliated trees.
<b>C. DAMAGE POTENTIAL</b>	
<b>I. Competitive Ability</b>	1. Presence of Natural Enemies: Predators: deer mice, <i>Peromyscus</i> spp. and shrews, <i>Sorex</i> spp., birds (low); Ants, Carabidae. Parasitoids: Braconidae: <i>Cotesia melanoscelus</i> , <i>Glyptapanteles flavicoxis</i> , <i>G. porthetriae</i> and <i>G. liparidis</i> Encyrtidae: <i>Ooencyrtus kuvanae</i> Chalcididae: <i>Brachymeria intermedia</i> Ichneumonidae: <i>Gelis</i> spp. (hyperparasitoids on <i>C. melanoscelus</i> ) <i>Coccygomimus disparis</i> Tachinidae: <i>Compsilura concinnata</i> , <i>Parasetigena silvestris</i> , <i>Ceranthia samarensis</i> Entomopathogens: <i>Bacillus thuringiensis</i> var. <i>kurstaki</i> , Nucleopolyhedrosis Virus, <i>Entomophaga maimaiga</i> , <i>Nosema</i> sp.
	2. Presence of Competitors: Northern tiger swallowtail, <i>Papilio canadensis</i>
	3. Rate of Spread: Females are able to fly up to 20 miles
<b>II. Environmental Effects</b>	1. Alteration of ecosystem/community composition? YES    X                      NO Notes: Very broad host range, but prefers coniferous species.
	2. Alteration of ecosystem/community structure? YES    X                      NO Notes: Extensive defoliation by larvae that changes forest structure may indirectly affect birds. Mortality in the canopy leads to a reduction in suitable nesting sites for canopy-nesting birds and to an increase in the amount of interior edge. This could augment nest parasitism and predation. However, the increase in shrub and herbaceous species after defoliation of the canopy also can lead to an increase in shrub- and ground-nesting bird species.
	3. Alteration of ecosystem/community functions and processes? YES    X                      NO Notes:
<b>III. Socio-economic</b>	1. Effects of Restricting Entry: No negative effects predicted.
	2. Effects on Human Health: Hairy caterpillars and eggs aggravate respiratory ailments.
<b>D. PREVENTION AND CONTROL</b>	
<b>I. Detection Capability:</b>	Notes: Trapping and monitoring methods well established and signs and symptoms easily recognized.

<b>II. Costs of Prevention :</b>	Notes: Public awareness of the consequences of transport and establishment of this insect. Effective detection and monitoring and adherence to regulations.
<b>III. Responsiveness to prevention efforts:</b>	Notes: There has been interception of the moth at ports and eradication of spot infestations.
<b>IV. Control tactics:</b>	<ol style="list-style-type: none"> <li>1. Cultural: Mass trapping; physical removal of egg masses from infested material.</li> <li>2. Biological: <i>Bacillus thuringiensis var kurstaki</i>; Gypcheck: nucleopolyhedrosis virus; Disparlure: pheromone flakes causing mating disruption; Sterile insect releases.</li> <li>3. Chemical: Diflubenzuron</li> <li>4. Regulatory: Quarantine</li> </ol>
<b>V. Minimum Effort:</b>	Notes: Early detection of isolated pockets has resulted in eradication in these areas.
<b>VI. Most Effective Control:</b>	Notes: <i>Btk</i> and diflubenzuron
<b>VII. Cost of prevention or control vs. Cost of allowing invasion to occur:</b>	Notes: Damage would be more extensive and costly than the European GM. AGM female could lay egg masses that in turn could yield hundreds of voracious caterpillars with appetites for more than 500 species of trees and shrubs. AGM defoliation would severely weaken trees and shrubs, killing them or making them susceptible to diseases and other pests. Caterpillar silk strands, droppings, destroyed leaves, and dead moths would be a nuisance in homes, yards, and parks. A pest-risk assessment prepared by the USDA's APHIS and the USDA's Forest Service concluded that because of similarities between Asian and North American ecosystems, the AGM has great potential for colonization in North American forests.
<b>VIII. Non-Target Effects of Control:</b>	Notes: Risks associated with pesticide use. Some non-target Lepidoptera larvae present in the proposed spray area would likely be killed by the application of Bt.k.
<b>IX. Efficacy of monitoring:</b>	Notes: Early detection isolated pockets has resulted in eradication in these areas
<b>X. Legal and landowner issues:</b>	Notes: Enforcing the Federal Domestic Quarantine to slow down the artificial spread of the gypsy moth by monitoring and/or restricting interstate transport of the gypsy moth, especially by restricting transport of products known to harbor eggs or pupae (e.g. nursery stock, firewood, or timber products) and/or immediately responding to accidentally introduced populations with the use of insecticides. Educate the public about the biology and spread of the gypsy moth to help prevent accidental introductions into new areas.

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