



Forest Service  
Eastern Region  
Superior National Forest



Forest Service  
Northeast Area State and  
Private Forestry

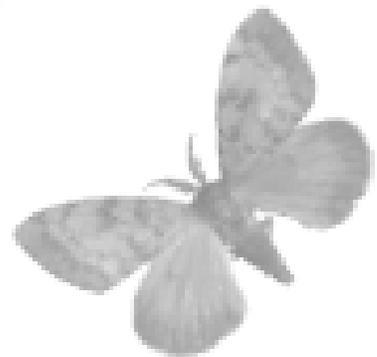
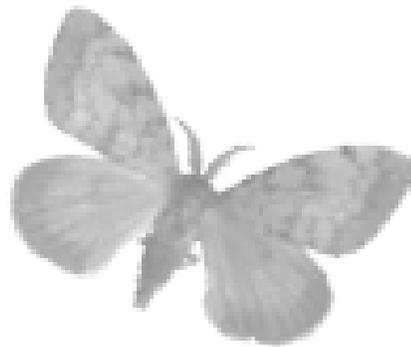


Minnesota Department of  
Agriculture  
Agronomy and Plant  
Protection Division  
Invasive Species Unit

February 2008

# 2008 Cook and Lake Counties

## Gypsy Moth Slow-the-Spread Project Public Involvement Package



**ABBREVIATIONS**

|         |   |
|---------|---|
| Btk     | <i>Bacillus thuringiensis</i> spp. <i>Kurstaki</i>              |
| BWCAW   | Boundary Waters Canoe Area Wilderness                           |
| CFR     | Code of Federal Regulations                                     |
| CWPP    | Community Wildfire Protection Plan                              |
| DEIS    | draft environmental impact statement                            |
| DNR     | Department of Natural Resources (State of Minnesota)            |
| EA      | environmental assessment  |
| ELT     | ecological landtype   |
| FEIS    | final environmental impact statement                            |
| FRCC    | fire regime condition class                                     |
| FS      | Forest Service (USDA)   |
| GYMPAC  | Gypsy Moth Program Advisory Committee (interagency)             |
| HFRA    | Healthy Forest Restoration Act                                  |
| LE      | landscape ecosystem   |
| MA      | management area   |
| MDA     | Minnesota Department of Agriculture (State of Minnesota)        |
| NA S&PF | Northeast Area State and Private Forestry (USDA Forest Service) |
| NF      | National Forest   |
| NFS     | National Forest System (USDA)                                   |
| NNIS    | non-native invasive species                                     |
| NSU     | Northern Superior Uplands                                       |
| PA      | project area  |
| RNA     | Research Natural Area (USDA Forest Service)                     |
| ROD     | record of decision  |
| SNA     | Scientific and Natural Area (State of Minnesota)                |
| SNF     | Superior National Forest (USDA Forest Service)                  |
| STS     | Slow-the-Spread (USDA Forest Service)                           |
| TES     | Threatened, Endangered, and Sensitive (species)                 |
| USDA    | United States Department of Agriculture                         |
| WUI     | wildland urban interface  |

## TABLE OF CONTENTS

|   | Page |
|---|------|
| Overview  | 1    |
| 1 Need and Proposed Action  | 1    |
| 1.1 Non-native Invasive Species   | 1    |
| 1.2 Gypsy moth  | 1    |
| 1.3 Slow-the-Spread Program   | 3    |
| 1.4 Purpose and Need for Action   | 6    |
| 1.5 Proposed Action   | 8    |
| 1.6 Decision to be Made   | 10   |
| 1.7 Public Involvement and Collaboration                                  | 10   |
| 2 Alternatives  | 11   |
| 2.1 Alternatives to be Studied in Detail                                  | 11   |
| 2.2 Alternatives Considered by Eliminated<br>From Detailed Study          | 11   |
| 3 Preliminary Effects Analysis  | 11   |
| 3.1 General Consequences  | 12   |
| 3.2 Consequences to Forest Type and<br>Forest Health                      | 15   |
| 3.3 Consequences to Wildlife  | 19   |
| 3.4 Consequences to Non-native Invasive<br>Plants and to Sensitive Plants | 22   |
| 4 Comment Instructions  | 25   |
| References  | 27   |

## Overview

The purpose of this information package is to provide information on a cooperative proposal to slow the spread of gypsy moth along the North Shore of Lake Superior in Minnesota as well as to learn what concerns or questions people have with the proposed action.

An interdisciplinary team provided input into the proposed action, identified a list of preliminary issues, and prepared the preliminary analysis. The project team will review comments received in response to project scoping and prepare an Environmental Assessment (EA). Based on the EA, a decision will be made and documented in a Decision Notice along with a Finding of No Significant Impact.

This Public Information Package has four sections that:

1. Describe the need for slowing the spread of gypsy moths and describes the proposal.
2. Outline a no-action alternative and the alternatives that have been eliminated from detailed study.
3. Summarize the preliminary effects analysis of the proposal and of taking no action.
4. Provide instructions on how to comment.

This proposed action is part of a larger proposal to treat areas of mixed ownership in Cook and Lake Counties in 2008. A separate Environmental Assessments is being prepared for proposed treatments on the Grand Portage Reservation and another for proposed treatments on private, state and county lands within the overall project area.

## 1 Need for Action & Proposal

### 1.1 Non-native Invasive Species

Non-native invasive species (NNIS) are plants, animals, insects or other organisms whose introduction to an area do or is likely to cause economic or environmental harm or harm to human health. Other names for NNIS include exotic species, noxious weeds, pests, etc.

Invasive species are major threats to our Nation's aquatic and terrestrial ecosystems. Invasives destroy fish and wildlife habitats, alter nutrient cycling and natural fire regimes, and can reduce biodiversity and degrade native ecosystem health.

Invasive species recognize no borders. Prevention and control of invasive species require tremendous cooperation across all landscapes and among public and private stewards of the land.

Invasive species come in all shapes and many guises: nonnative insects (e.g., Asian long horned beetle, emerald ash borer), land-based and aquatic invasive plants (e.g., weeds, ornamentals, trees), diseases and pathogens (e.g., white pine blister rust, Dutch elm disease) — the list and continues to grow with each new introduction.

Invasives have the capacity to dominate, overwhelm, or wipe out native species. Chestnut blight all but killed the American chestnut and Dutch elm disease decimated elm trees from our landscape.

### 1.2 Gypsy Moth

The European gypsy moth (*Lymantria dispar* L.) is not native to the United States. It is currently established in 19 states. Although gypsy moth adults have been found in Minnesota, the State has no known permanently established populations. The closest known populations are in central and northern Wisconsin and in the Upper

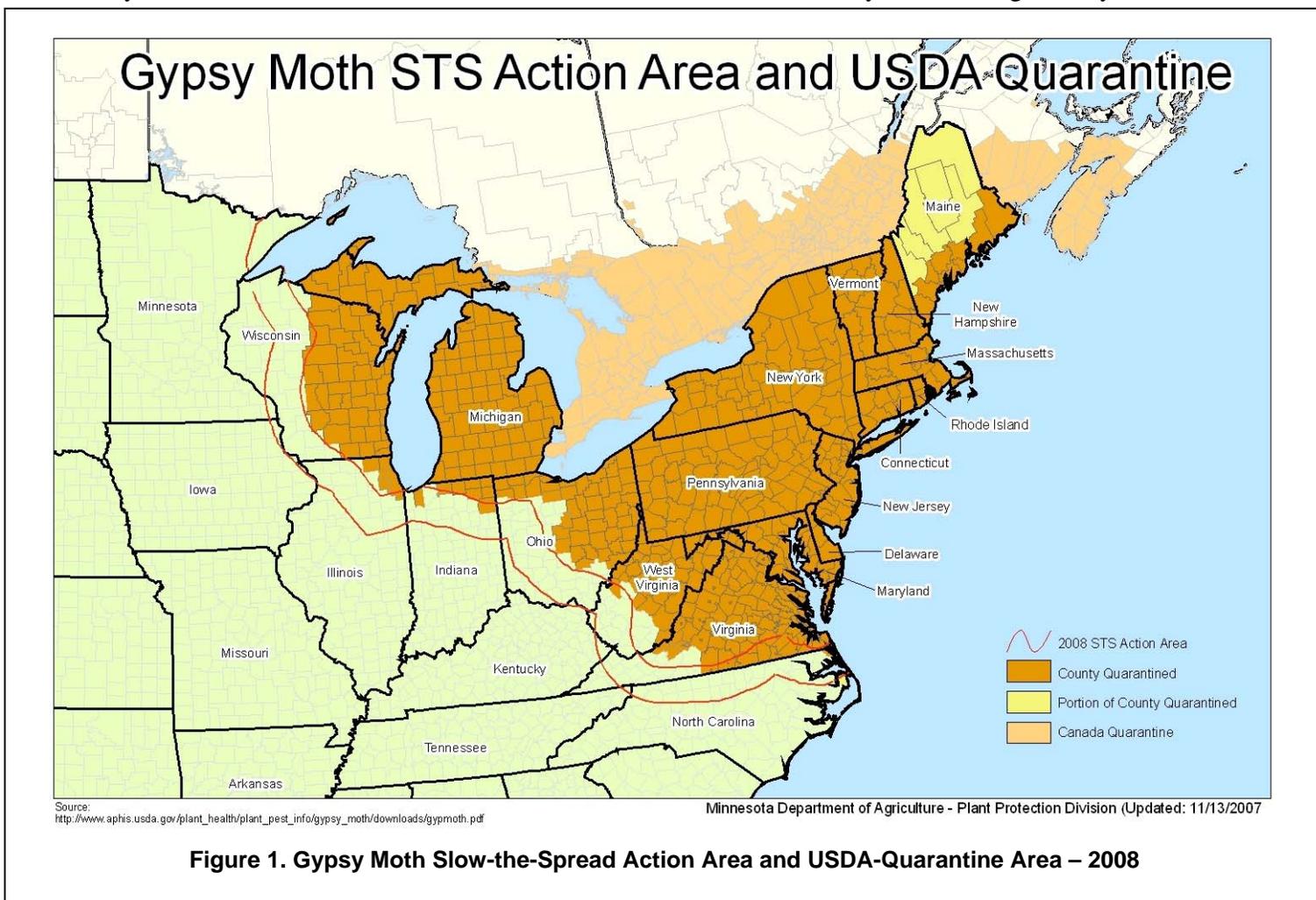
Peninsula of Michigan (see Figure 1 Gypsy Moth Slow-the-Spread Action Area and USDA-Quarantine Area 2008). *‘Established’ means there are reproducing populations near each other, established populations cannot be eliminated by focused treatments.*

Gypsy moths move into new areas primarily in two ways. One is on their own – wind blows the tiny, newly hatched caterpillars a short distance into new areas. The other way is with the help of people – they hitch a ride on cars, boats, lumber, firewood, nursery stock, and other goods and materials and get transported to new locations.

Caterpillars feed on the foliage of many plants, but they prefer oaks, aspens, paper birch, basswood, and willows, which are all very common trees in Minnesota. As the

caterpillars grow older and get larger, they are less selective about what they eat and they will feed on conifers such as white pine. At dense populations, gypsy moth caterpillars may eat all the leaves off trees and shrubs. After severe defoliations, trees and shrubs often become so weakened that other pests, drought, and diseases kill them.

High numbers of gypsy moth caterpillars can cause a substantial public nuisance, a reduction in tree growth, branch dieback and tree mortality. This damage to forests diminishes environmental quality and may affect human health and local economies. Widespread gypsy moth outbreaks can alter water quality, wildlife habitat, microclimate, and soil fertility (USDA 1995, Vol. IV, Appendix G, Ecological Risk Assessment). In eastern states, ecosystems have generally



recovered from gypsy moth damage, however there are still local outbreaks with defoliation.

### 1.3 Slow-the-Spread Program

Currently gypsy moths are migrating westward approximately 13 miles per year. The Slow-the-Spread program (STS) reduces the ecological, social, and economic impacts of the first wave of gypsy moth. The STS program is a national strategy for managing gypsy moths. It uses integrated pest management to reduce the rate of gypsy moth spread into uninfested areas. The goal of the STS program is to decrease the amount of new areas invaded by gypsy moths each year to protect forests, forest-based businesses, parks, and private property. *Areas where gypsy moth is established are called the 'generally infested' area. Next to this area is a band 50 to 100 miles wide, called the 'transition' area, where the gypsy moth is spreading from the generally infested area. The area where the gypsy moth is not established, is called the 'uninfested' area.*

#### **STS Strategies**

Different management strategies apply in these areas: suppression in the generally infested area, slow the spread in the transition area, and eradication of isolated infestations of gypsy moth in the uninfested area. *The objective of 'eradication' is to eliminate isolated infestations of the gypsy moth that are detected in the uninfested area, to prevent the insect from becoming established. The objective of suppression is to reduce outbreak populations of gypsy moth caterpillars, thus minimizing heavy defoliation. Suppression does not eliminate the gypsy moth from the generally infested area, but reduces damage to ecosystems and effects on people in treated areas. The objective of 'slow the spread' is to slow the rate of spread of gypsy moth from the generally infested area, to delay the impacts*

*and costs associated with gypsy moth outbreaks.* This strategy entails intensively surveying the transition area and aggressively treating pockets of low-level gypsy moth populations to keep them from increasing rapidly.

It is likely that gypsy moths will eventually become established in Minnesota, with or without management. Gypsy moth has become established in other states with climates. The Slow-the-Spread program is a critical component for reducing or delaying the impacts and costs associated with gypsy moth outbreaks.

Before the Slow-the-Spread program was underway, the rate of spread was approximately 13 miles per year. Since the STS program, the average rate of spread has been reduced to 6 miles per year along the transition zone. *The 'transition' zone is where the gypsy moth is transitioning from uninfested to generally infested.* The transition area is very dynamic and populations of gypsy moths generally increase over time as the area is colonized by gypsy moths. Comprehensive monitoring since 1993 has demonstrated that Slow-the-Spread projects can reduce the spread of gypsy moth by 50-70% over no treatment controls (A.A. Sharov, D. Leonard, A.M. Liebhold, E. Anderson Roberts, and W. Dickerson. 2002). In Wisconsin, Slow-the-Spread treatment projects have been occurring on state, county, and private forests since 1999.

#### **STS in Minnesota**

Minnesota is an active participant of STS. Gypsy moth populations have been monitored in Minnesota since 1973 and on the Superior NF every year since 1999. In 2001, the Minnesota Gypsy Moth Program Advisory Committee was formed. Committee membership includes

- State of Minnesota - Department of Agriculture and Department of Natural Resources, Parks, and Forestry
- US Department of Agriculture
  - Animal and Plant Health Inspection Service (APHIS)
  - Forest Service - Northeastern Area, State, and Private Forestry
- University of Minnesota

The Committee makes recommendations regarding gypsy moth management. This group interacts with the STS national program to develop recommendations for managing gypsy moth in Minnesota. Since 1980, about thirty infestations of gypsy moths have been detected and eradicated in Minnesota, mostly in the Twin Cities and southeast corner of the State. In 2002 a successful eradication project was conducted on approximately 2260 acres in Hennepin County, Minnesota.

In 2005, the Minnesota Department of Agriculture and Forest Service treated 640 acres with *Bacillus thuringiensis* (Btk) on the Superior NF and adjoining public and private land near Tower because egg masses were found in that area. Monitoring in 2005 and 2006 found no moths in the treated area.

Most recently, in 2006, the Forest Service collaborated with the Minnesota Department of Agriculture to conduct treatments on blocks of land in Cook and Lake Counties. After two years of follow-up survey, those blocks are all considered successfully treated and remain at very low levels of gypsy moth. Treatments proposed for 2008 are in adjacent areas and contain clusters of elevated moth numbers.

Due to the proximity of gypsy moth populations in northern Wisconsin and the Upper Peninsula of Michigan and because of repeated low-level captures of male moths along the North Shore since 2000, the gypsy

moth STS “action” boundary was expanded into northeast Minnesota to include Cook and Lake Counties. *The “action” area is where gypsy moth is intensively monitored and managed to prevent establishment and spread; it moves as the moth front moves so it is always ahead of the infested areas.* Intensive management in the action area is designed to slow the rate of spread of the gypsy moth into the uninfested area.

Statewide, gypsy moths are monitored by baiting traps (See Figure 2) with pheromone to attract male moths and capturing the moths in the traps. Traps are set at different densities, largely depending on the previous years’ monitoring results. The 2005 and 2007 monitoring seasons unexpectedly captured a record number of male moths in Cook and Lake Counties. In 2007, these counties led the state with approximately 3,033 captured gypsy moths (See Figure 3). The jump in moth catches is due partially to increased trapping intensity, but it also suggests a reproducing and building gypsy moth population across the area. The presence of reproducing gypsy moth population in the area is further supported by the repeated moth captures since 2000. However, with the exception of the Tower area infestation in 2005, no egg masses or other life stages have been identified.

At this time there are no quarantined nurseries or mills in Cook, Lake, or St. Louis Counties. However, there are 16 mills and nurseries that



Figure 2 Gypsy Moth Traps

are considered moderate or high risk for gypsy moth introduction in the three counties. Because the arrowhead of Minnesota is adjacent to Canada, it is important to consider the status of gypsy moths north of the border. Much of the area north of the international boundary in the eastern Provinces is regulated for gypsy moths (similar to infested, quarantined areas). Refer to the 2008 Gypsy Moth STS Action Area and USDA Quarantine map. The Canadian Food Inspection Agency restricts the movement of roundwood from infested parts of Ontario into uninfested areas.

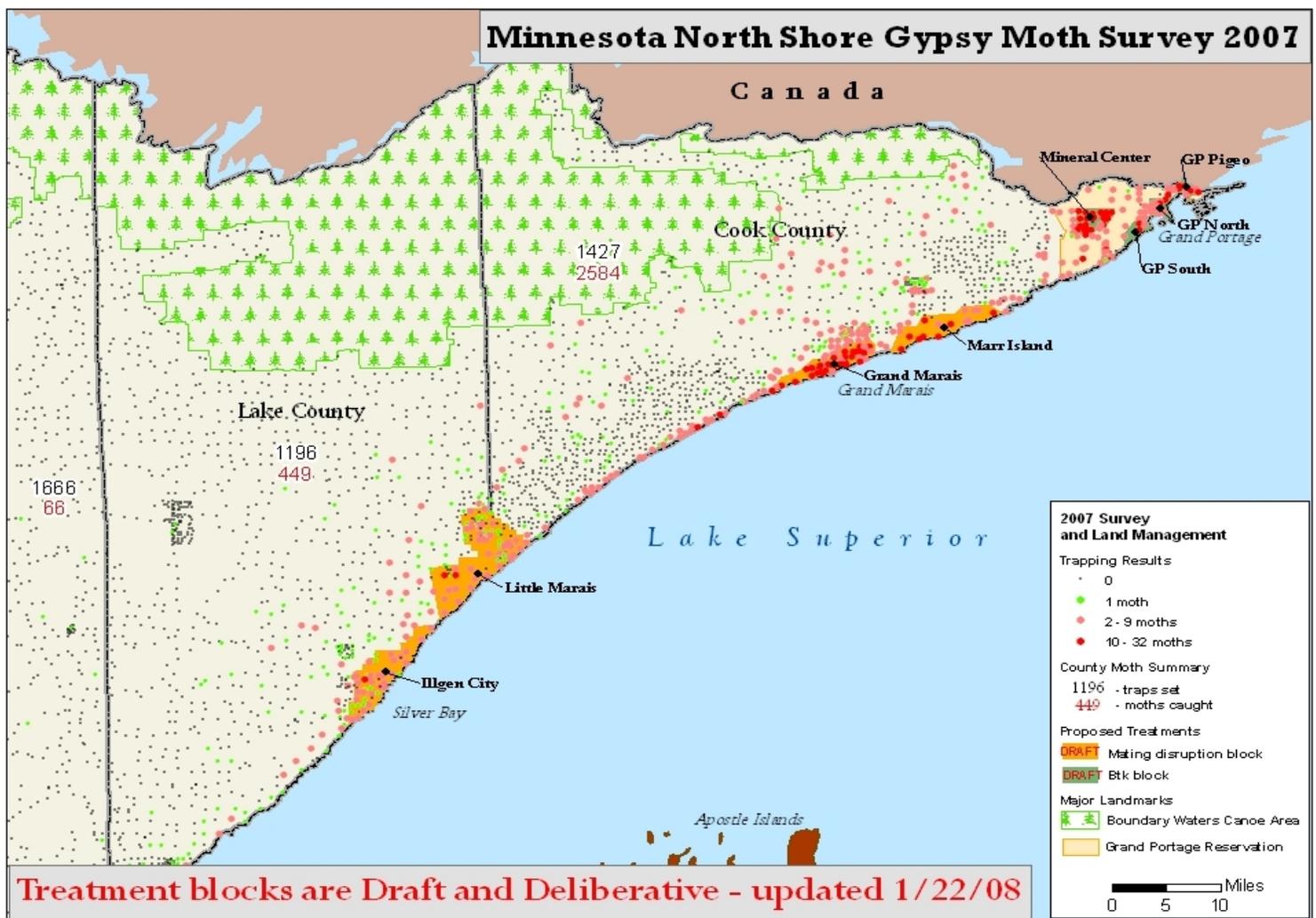


Figure 3 Results of 2007 Gypsy Moth Trapping Along the North Shore

Gypsy moths have been trapped along the Canadian north shore of Lake Superior, around Thunder Bay, and Quetico Provincial Park. At this time, Ontario does not have a formal trapping program; however, northwestern Ontario is not known to be currently infested.

#### 1.4 Purpose and Need for Action

In order to slow the spread of the gypsy moth population, there is a need to effectively manage the gypsy moth population in Cook and Lake Counties with minimal adverse impacts to the environment. It is important to treat gypsy moths now, while the population is low, when treatment methods with fewer adverse environmental impacts are effective.

The objective of the proposed project is to prevent the widespread establishment of reproducing gypsy moth population and to meet State (18G.01) and Federal statutory requirements. At a national level, an integrated pest management approach was selected to manage gypsy moths, which included three management strategies (ROD; USDA, 1996). These management strategies were suppression, eradication, and slow-the-spread.

It is important that the Forest Service cooperates in this project to assure National Forest System lands do not unduly contribute to a rapid spread and establishment of gypsy moth in Minnesota. An established gypsy moth population would make it more likely that gypsy moths would spread to other parts of Minnesota more quickly.

Until recently, all of Minnesota was in the eradication area. Detection traps have caught male gypsy moths in the project area since 2000. Since 2005, there has been a dramatic increase in the number of male moths trapped, indicating that the population is beginning to

increase and the Arrowhead region of Minnesota was designated as an action area in the STS program.

The impacts from gypsy moths are expected to be greater without treatment than if the front advanced with treatment. Once gypsy moth becomes established throughout a county, the annual production and value of agriculture, horticulture, and forestry products may be directly impacted, as well as indirectly impacted through the imposition of quarantines. Federal regulations prohibit the movement of certain items from those parts of the county regulated for gypsy moth to any unregulated part of the United States (7 CFR 301.45). See Figure 1. In general, articles requiring inspection and certification prior to movement include the following

- Nursery stock and Christmas trees
- Logs, pulpwood, and wood chips
- Mobile homes and associated equipment
- Outdoor household articles, such as outdoor furniture, barbecue grills, firewood, doghouses, boats

Infestations can also cost homeowners money to remove and replace trees and to apply pesticides. Loss of shade trees may reduce property values. Skin and hair shed by growing caterpillars may aggravate rashes or respiratory ailments in people with allergies.

It is unknown exactly how long it would take for gypsy moths to become a nuisance in Cook and Lake Counties. Some areas seem to take a number of years to for gypsy moth to build to noticeable levels and in other areas the populations build quickly to noticeable levels. It can take anywhere from 2 to 10 years after an area has established gypsy moth populations to reach levels that cause defoliation, it is assumed that they would be a nuisance at or before that time.

The Slow-the-Spread program calculates a priority index for proposed treatment areas. The priority index indicates how important it is to manage gypsy moth in an area. If priority index is equal to or greater than 2.8, the area is recommended for treatment in the following year. The following are the priority indices for the three treatment units containing National Forest lands:

- Little Marais – 4.42
- Grand Marais – 3.67
- Marr Island – 3.66

An interdisciplinary team compared the existing conditions on the ground in Cook and Lake Counties with the desired conditions and objectives in the Superior NF Forest Plan and found a need to manage gypsy moths. The Superior NF Forest Plan directs the Forest Service to do the following:

- Work cooperatively with other landowners and land managers
- Minimize insect outbreaks
- Use integrated pest management to avoid epidemics of non-native invasive species
- Manage vegetation to control insects at developed recreation sites
- Manage viewsheds for scenic beauty in Recreation Use in a Scenic Landscape Management Area
- Manage vegetation to enhance the recreation experience and maintain the near-natural environment and improve scenic values on Scenic River Segments
- Control non-native invasive species in Research Natural Areas and Candidate Research Natural Areas

The State of Minnesota has a responsibility to protect non-federal land from gypsy moth damage, similar to the need of the Superior National Forest to protect National Forest System land from gypsy moth damage. The NA S&PF is responsible for coordinating

gypsy moth-related activities and for coordinating with States in protecting federal land, as established in the USDA departmental gypsy moth policy (USDA 1990).

The situation in Cook and Lake Counties meets the national criteria for treatment: low numbers of male moth trap catches, virtually no other life stages present, and located close to the infested area. The number of moths are not yet high enough to cause damage but those that are present are too close to the infested areas to remain untreated (USDA 1995).

This project would slow the spread the gypsy moth population in Cook and Lake Counties and delay introduction of the pest further into Minnesota and other parts of the nation. Slow-the-Spread projects are most effective when the gypsy moth population density is low, as is the case in both counties.

Without treatment, gypsy moth populations would continue to build, increasing in numbers and in extent. It is likely that this will occur eventually even with treatment, but the proposed treatments would reduce the speed of this process.

The Forest Service also has national direction to manage gypsy moths. The Chief of the Forest Service identified non-native invasive species as one the major threats to clean air; clean water; wildlife habitat; and fire-safe, healthy forests.

Both Cook and Counties have developed a Community Wildfire Protection Plan (CWPP) working collaboratively with Tribal representatives, federal agencies, state agencies, local governments, landowners, stakeholders, and community-based groups. The Cook County CWPP prioritized four areas as high for protecting life, property, and critical infrastructure; these areas are Tom Lake, Devil Track, Mid-Gunflint Trail, and

Lutsen Township. In Lake County, these priority areas include Birch/Slate Lake, Cloquet Lake, County Road #3 Corridor, Drummond/Knife River, Fernberg Corridor/Kawishiwi/Triangle, among others. In Cook County, the following communities are communities at risk from wildfire: Taconite Harbor, Schroeder, Tofte, Lutsen, Grand Marais, Croftville, Hovland, and Grand Portage. Similar communities at risk in Lake County include Fall Lake, Finland, Beaver Bay, Two Harbors, Isabella, Little Marais, Illgen City, Silver Bay and Knife River. *At risk communities are where fuel conditions are conducive to a large-scale wildland fire disturbance event and there is a significant threat to human life or property exists as a result of a wildland fire disturbance event.* It is especially important to prevent more fuels from being created in these areas, which would be one likely outcome of gypsy moth establishment.

### 1.5 Proposed Action

#### Who, What, How, Where, and When

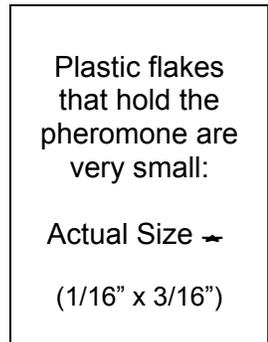
Working cooperatively, the USDA Forest Service Superior National Forest, the Minnesota Department of Agriculture (MDA), and the USDA Forest Service Northeast Area State and Private Forestry (NA S&PF), propose to manage gypsy moth population in the summer of 2008 to slow-the-spread of gypsy moth in Lake and Cook Counties along the north shore of Lake Superior.

The Forest Service and the State proposes to apply a pheromone that disrupts gypsy moth mating. The female pheromone is the scent that attracts male moths. In order for it to be distributed, a synthetic pheromone is embedded into tiny plastic flakes. After flakes are distributed, the pheromone floods the area and confuses the male gypsy moths so they

cannot find female moths. The gypsy moths then die without reproducing. The pheromone is detectable only to gypsy moths, so no other invertebrate species would be harmed and birds and mammals would not be adversely affected. Effects to people from the pheromone have not been documented in the 16+ years that the product has been used ((Reardon et al. 1998, USDA 1995).

The synthetic pheromone proposed for use in this project is called disparlure. Disparlure would be applied by low-elevation airplane flights over 7,328 acres of National Forest in the three project areas (see Table 1 and attached Superior National Forest Gypsy Moth Project – 2008 Proposed Treatments and Ownership map).

The flakes are very small (approximately 1/16” x 3/16”), like confetti, and would be applied at a low dose. Active ingredient applications will be 6 grams per acre in the Little Marais treatment block; and 15 grams per acre in the Grand Marais and Marr Island treatment



blocks. The range of flakes that would land in one square foot is 0-4; average flakes per square foot would be less than two. The flakes would stick to leaves and branches and emit the pheromone into the air.

Aircraft would pass over the entire area one time, flying at approximately 100 to 200 feet above tree tops. From the ground it could appear that a plane is passing over the same area because the aircraft can only treat an area the width of the plane wings with each pass. Treatment would be avoided over lakes, rivers and other open water.



**Figure 4. When aircraft apply pheromone the flakes practically are invisible**

The application would happen once in mid to late July or early August 2008, just before adult moths emerge from pupae (similar to cocoons).

Mating disruption is best suited for areas that have low populations (Reardon et al. 1998, USDA 1995), such as in Cook and Lake Counties at this time.

The proposed treatment area involving National Forest System (Superior NF) lands is broken into three blocks in Cook and Lake Counties. These blocks are identified as Little Marais, Grand Marais and Marr Island (See attached treatment area map).

No treatment is proposed in the Boundary Waters Canoe Area Wilderness.

| <b>Table 1. Proposed pheromone treatment blocks (on the Superior National Forest</b> |                        |                        |              |               |
|--|------------------------|------------------------|--------------|---------------|
| <b>Block</b>   | <b>Ranger District</b> | <b>National Forest</b> | <b>Other</b> | <b>Totals</b> |
| <b>Little Marais</b>   | Tofte                  | 1,533                  | 27,145       | 28,678        |
| <b>Grand Marais</b>  | Gunflint               | 2,841                  | 7,240        | 10,081        |
| <b>Marr Island</b>   | Gunflint               | 2,954                  | 9,401        | 12,355        |
| <b>Totals</b>  |                        | 7,328                  | 43,786       | 51,114        |

Monitoring

Pheromone treatment reduces the reliability of trapping during the year of application (2008); therefore post-treatment trapping would be done in 2009, 2010, and 2011 to monitor treatment effectiveness. Initially, traps would be placed 2 kilometers (1.2 miles) apart. In 2010, traps would be 500 meters (1,640 feet) apart (trapping strategy in 2011 would depend on 2010 monitoring results). Monitoring would continue outside the treatment units.

Success would be measured by subsequent monitoring. When there is at least a threefold reduction in the moth trapping counts after treatment, the project would be considered a success.

An environmental impact statement (*Gypsy Moth Management in the United States; a cooperative approach, USDA 1995*) discloses the effects of implementing overall gypsy moth management programs. The Record of Decision for ) discloses the effects of implementing overall gypsy moth management programs. The Record of Decision for *Gypsy Moth Management in the United States* (January 1996) provides the direction for implementing site-specific treatments. The proposed action tiers to this direction, and the analysis is being done to disclose impacts of this site-specific proposal.

Healthy Forest Restoration Act (HFRA) Authorization

The proposal is authorized under Title IV, Insect Infestations and Related Diseases, of the Healthy Forest Restoration Act because the proposed action is:

- Consistent with the Superior NF Forest Plan
- Not in a wilderness area
- Collaboratively developed proposed action

- Identified through a collaborative process
- On Federal land on which windthrow or blowdown, ice storm damage, the existence of an epidemic of disease or insects, or the presence of such an epidemic on immediately adjacent land and the imminent risk it will spread, poses a significant threat to an ecosystem component, or forest or rangeland resource, on the Federal land or adjacent non-Federal land
- If mitigation measures are needed
- What monitoring is required
- Whether implementation of the selected alternative is likely to have a significant impact that would require further analysis in an environmental impact statement

Because this project is authorized under HFRA, the Forest Service will analyze a no action alternative and the proposed action (see Section 2). HFRA also has requirements for collaboration and public involvement (see Sections 2 and 4). HFRA projects are subject to a pre-decisional objection process (36 CFR 218) (see Section 4).

### 1.6 Decision to be made

Treatments are proposed across multiple ownerships in Lake and Cook Counties. Based on separate Environmental Assessments (EA), there will be one decision for treatment on National Forest System (Superior National Forest) land and a second decision for treatment on the Grand Portage Reservation and a third decision regarding proposed treatment on other ownerships within the proposed treatment blocks.

For each EA, the responsible official will decide whether to implement the proposed action. If the decision were made to implement the proposed action, the official would decide:

- Whether to implement the proposed action or to modify the proposed action

The Forest Supervisor for the Superior National Forest is the responsible official for activities proposed for National Forest System (Superior NF) land.

The Field Representative at USDA Forest Service, Northeastern Area State and Private Forestry, in St. Paul, Minnesota is the responsible official for activities proposed for all other ownerships.

### 1.7 Public Involvement and Collaboration

In November 2007, the Minnesota Department of Agriculture contacted the Forest Service to discuss the gypsy moth trapping results. This led to several interagency meetings between the Forest Service and MDA to develop the proposal. Other agencies were also involved at this point, including Grand Portage Band of Chippewa; Cook, Lake, and St. Louis Counties; and Minnesota Department of Natural Resources Forestry and Parks Divisions.

The Forest Service and the State have met with groups and individuals to discuss ways of getting the most people involved and to identify potential concerns with the proposal.

In January 2008, this project appeared in the Superior NF's quarterly schedule of proposed actions.

During the 30-day pre-decision comment period, there will be public meetings to answer questions about the proposed action.

The Responsible Officials will consider written public comments that are specific to the proposed action when making a decision. Instructions on how to comment on this proposal are in Section 4.

## 2 Alternatives

Because this project is authorized under the Healthy Forest Restoration Act, the Forest Service will study, develop, and describe the proposed action and a no action alternative.

### 2.1 Alternatives to be Studied in Detail

The EA will compare the proposed action to a ‘no-action’ alternative (Section 1.5 describes the proposed action). Under the no action alternative, no measures to manage gypsy moths would be taken in 2008 in the project area by MDA or the FS. The no action alternative would not preclude future treatments (of various kinds). MDA and the Forest Service would continue to monitor gypsy moth populations.

### 2.2 Alternatives Considered but Eliminated from Detailed Study

The Responsible Official and the interdisciplinary team reviewed alternatives that were proposed during collaborative meetings. They determined that some of these alternatives did not meet the purpose and need for the project.

#### Manage Gypsy Moths with Btk

Btk is a bacterial insecticide that is very effective at managing gypsy moths, but it can also kill other caterpillar species that are feeding in the early spring when Btk

applications occur. This alternative was eliminated at this time because, at the current moth densities, pheromone flakes are likely to be equally effective at slowing the spread of gypsy moths as Btk while minimizing negative effects to non-target organisms. Therefore this alternative would not meet the project’s purpose and need of effectively managing gypsy moths and minimizing effects to non-target species.

#### Manage Gypsy Moths with their Natural Predators

This alternative was eliminated because this treatment method is not developed at this time and is not a management option; therefore this alternative would not meet the purpose and need of slowing the spread of gypsy moths.

#### Apply Pheromone without Plastic

This alternative was eliminated because this treatment method is not developed at this time and is not a management option; therefore this alternative would not meet the purpose and need of slowing the spread of gypsy moths.

## 3 Preliminary Environmental Analysis

This analysis is preliminary, it is not finalized yet. This information is presented here so that the public and other agencies can provide us with additional information we have not yet considered. Please see Section 4 for instruction on how to comment.

In addition to a site-level analysis, the environmental assessment (EA) for this project will use the analysis in the Final Environmental Impact Statement (FEIS): *Gypsy Moth Management in the United States: a cooperative approach* (USDA, 1995) to estimate potential effects. The FEIS

is an environmental review and analysis of strategies and treatment options for managing gypsy moths. Analysis contained in the 1995 FEIS is considered in this current project proposal. The current cooperative effort in Minnesota analyzes projects and proposes appropriate local-level treatment.

The EA analysis will also use analysis in the Forest Plan Revision EIS. The Forest Plan EIS analyzed the effects of differing harvest levels and methods on terrestrial and aquatic non-native invasive species, relative fire risk, spruce budworm, and forest tent caterpillar.

Because this project is authorized under the Healthy Forest Restoration Act, the analysis will address the threat from the gypsy moth. This will be done in the discussion of the short- and long-term effects of taking no action. The project record has detailed information on how the specific treatment blocks were developed.

### 3.1 General Consequences

This analysis is based on experience with gypsy moths in other areas of the United States and from the national environmental impact statement on gypsy moth management (USDA 1995).

#### Proposed Action

The national EIS analyzed the risks of gypsy moth treatments. This assessment logically and scientifically studied how pheromone treatments affects human health and the environment (USDA 1995, Appendix F). The analysis concluded that effects to humans have not been documented from exposure to

Disparlure over the 15+ years it has been used.

During the collaborative meetings, the public and other agencies identified some concerns with the proposal; however most of the concern was with the potential adverse effects from gypsy moths rather than from the proposal. The concerns raised about the proposed action were how effective pheromone flakes would be and the effects of plastic from the flakes on the environment.

There is evidence and experience to indicate that pheromone flakes will be effective at slowing the spread of gypsy moths. To reach the goal of reducing the moth catches during monitoring by threefold, it may be necessary to treat the same or similar area in the next few years. Any subsequent treatment would require additional analysis and decision process.

The plastic that the pheromone is embedded in is a laminated polymeric solid dispenser for aerial application. This material can persist in the environment for 10 to 15 years (Reardon et al. 1998). Like all plastics, the flakes are not capable of biodegrading; however, their structure would break down over time and the flakes would turn into even smaller pieces and into dust eventually. At the proposed treatment rates, approximately one to two flakes would be present on each square foot of land, roughly ¼ cup of flakes per acre.

The only documented environmental hazard with this plastic is if it were burned it may produce carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), hydrochloric acid mist (HCl), and chlorine gas (Cl<sub>2</sub>). It is not anticipated that the plastic flakes would catch on fire before they are applied because of the safety precautions that would be taken with storing and transporting chemicals. After the flakes are applied they would burn only if the

vegetation they are stuck to was on fire, in which case the gases given off from the flakes would be miniscule when compared to the volume of gasses and chemicals given off by forest vegetation on fire.

If pheromone flakes were applied every other year in the same area, they could accumulate in very small, isolated areas. However, because of their small size and green color, it is not anticipated that they would be noticeable to people. If the flakes were to accumulate in one spot and break down in one spot, that piece of ground would have more plastic in the soil; again, it is not anticipated that this would measurably affect soil or water quality, particularly when compared to soil and water impacts related to large-scale tree defoliation.

The pheromone flakes are also mixed with an adhesive agency so that the flakes can stick to foliage or other plant surfaces. The adhesive is a multipolymer resin emulsion. The US Environmental Protection Agency considers these compounds to be inert ingredients and are not studied for their environmental effects (Reardon et al. 1998).

### No Action

The potential effects discussed here may happen even if the proposed action were implemented because it is anticipated that the North Shore will eventually have an established gypsy moth population. Taking no action at this time would likely mean that these effects would occur sooner and be more intense. We would lose the opportunity to postpone and possibly reduce negative impacts.

### *Pesticide Use*

Managing non-native invasive species is most effective when done across ownerships. If the State and the Forest Service were to not manage the gypsy moth population, there is a potential for greater insecticide use on private property. It is anticipated that private property owners would use harsher chemicals than the pheromone in this proposal. This could lead to greater impacts to the environment from pesticides than under the proposed action, potentially adversely affecting non-target wildlife species.

### *Quarantine*

It is anticipated that there would eventually be quarantine on mills, firewood, nursery stock, and household items.

Goods can be shipped out of the quarantined area but must be accompanied by documentation that shows that it has been treated or inspected to comply with quarantine regulations. Quarantines do not outright prohibit movement of regulated articles but put conditions in place to ensure that gypsy moths are not shipped along with the regulated articles.

Federal (APHIS) quarantine sets forth the necessary steps to take to move regulated articles to an area that is not regulated. These necessary steps could include inspection and treatment to ensure that the articles do not have gypsy moths. The costs of the treatment would be born by the party (nursery, mill, etc) which wishes to ship or move the regulated articles. It is anticipated that Canada will continue to regulate and manage gypsy moths, which would reduce the potential source of gypsy moths coming to Cook County from the north.

### *Economic Losses*

Potential effects to the local economy from gypsy moth defoliation and quarantine could include financial impacts to mills, nurseries, firewood dealers, tourism industry, and real estate.

Once an area is infested the cost of gypsy moth management and gypsy moth-related lost revenue is at least three times more than the cost of gypsy moth management when populations are still low. Property and business owners would have to pay for treating gypsy moths, removing caterpillars and their droppings, removing egg masses, and repainting buildings.

Some people may spend less time outside recreating or may choose to recreate in areas that do not have noticeable gypsy moth populations. Repeated, heavy defoliation can change the aesthetic character of an area, which could in turn alter the recreation uses of an area.

Private woodlots may also lose value due to mortality, which could reduce property values. Homeowners and local governments may also have to replace damaged or dead trees and shrubs.

The forest products that could be harvested could also change. If there were moderate to heavy defoliation and subsequent mortality, the opportunities for salvage harvesting may increase from current levels in the short term. However, in salvage sales, the wood becomes unmerchantable quickly (one to three years). If there were wide spread mortality the local market may become flooded with salvage sales, which would likely reduce the price of the wood and reduce income to loggers and mills. There would also be a reduction in live harvests.

Firewood sellers may see similar increases in birch to be taken, but if too much wood were to die too quickly it would rot before it could be gathered. (Mortality in aspen would not be a concern for firewood because it is not typically used in commercial firewood sales.)

For other forest products, it would be expected that maples would increase in number and vigor if moderate gypsy moth defoliation increased the mortality of other species in the maple system. This could result in more maple sugar production. If gypsy moth population were very high, the caterpillar may defoliate maple as well, which if repeated a few years in a row could result in maple mortality or reduced sugar maple production.

### **Potential Effects to Wild, Scenic, and Recreational Rivers**

The last 5.1 miles of the scenic Brule River forms whitewater rapids and waterfalls as it makes its descent into Lake Superior. The lower stretches of the river, approximately 2 miles above Lake Superior, are a series of spectacular waterfalls. One of these is in the Devil's Kettle area, a unique geologic formation dividing the river into two sections; one continues on to Lake Superior and the other disappears underground.

Anticipated direct or indirect effects from the proposed treatment are expected to be minimal and could be mitigated with public notification and informational signage being posted at recreation areas within the treatment area. No long term effects from treatment are to be expected.

The no action alternative may result in the frequent defoliation of the canopy along the North Shore eventually leading to tree mortality decreasing the present and long-term scenic quality and recreation value of the North Shore in Northeastern Minnesota.

### Potential Effects to Forest Service Research Natural Areas (RNA) Candidate RNAs, Unique Biological Areas and to State of Minnesota Scientific and Natural Areas (SNA)

None of the proposed treatment areas, as described above, occur within the areas administrated by the National Forest Service.

### 3.2 Consequences to Forest Type and Forest Health

Indicators of potential impacts of gypsy moth on the landscape are best reflected in changes to vegetation composition, structure, and function. The data used to evaluate these changes will primarily involve forest types.

The analysis will use data that are a combination of the most current and accurate data available for all ownerships.

#### Analysis Area

The analysis of direct and indirect effects will include the treatment blocks themselves as well as forest vegetation within a one-mile “buffer” around each block. This inclusive area was chosen because it would allow for consideration of forest conditions outside the treatment blocks and provide a more comprehensive “picture” of general forest conditions. The analysis will also look at the potential effects over five years after implementation. Five years was chosen because the effectiveness of the treatment would surely be evident by then.

#### *Cumulative Effects*

The cumulative effects analysis will examine how no action and proposed action could affect the State of Minnesota over the next 10

years. The cumulative effects analysis may consider the following activities

- Past activities
  - Tower treatment with Bt in 2005 on 640 acres (approximately 40 miles to the west of the project area)
  - Pheromone treatment in 2006 on approximately 134,000 acres along the North Shore
- Current activities
  - Tribal proposal to treat approximately 11,000 acres with a combination of Btk and pheromones on the Grand Portage Reservation in 2008
  - MDA proposal to treat approximately 44,000 acres, with pheromones, along the North Shore in the immediate vicinity of the Little Marais, Grand Marais and Marr Island blocks
  - Treatment to control other non-native invasive species, such as emerald ash borer and non-native invasive plants.
  - Canada’s gypsy moth monitoring and management program
  - East Side Thinning and Inga South vegetation management projects
- Reasonably foreseeable future activities
  - Treatment of gypsy moth, by the Forest Service and the State of Minnesota, using other methods including mating disruption (pheromone) and insecticides (Bt, diflubenzuron, and nucleopolyhedrosis virus)
  - Forest Service proposal to treat non-native invasive plants
  - Mid Temperance, Devil Trout, Ham Salvage and Reforestation, Cascade, Clara and Manitou vegetation proposals

#### Affected Environment

At the present time, trap catches of male gypsy moths indicate that relatively low populations of this insect are scattered over a

large portion of the North Shore landscape. Gypsy moth has shown the ability across the Northeastern United States to expand into new areas where natural enemies do not exist, persist at low levels for several years, and then eventually reach outbreak status. It is believed that this same scenario will also occur in northeastern Minnesota (Katovich, 2006).

Forest land in Minnesota consists of approximately 16,195,000 acres (all ownerships) or approximately 32 percent of the State's total land area. Of this, approximately 14,759,800 acres are considered "timberland", or commercial forest (Miles, 2006).

Aspen/birch (6.3 million acres) and oak (0.9 million acres) dominated forest types make up approximately 44 percent of that total forestland in the State (Miles, 2006). Quaking aspen, northern red oak and paper birch rate as numbers 3, 4 and 9 respectively of the top 20 preferred tree species for consumption by gypsy moth within the coterminous United States (Liebhold, 2003). These three species are expected to be most heavily impacted. Minnesota's forests also commonly contain other tree species that are considered "most preferred" hosts for the gypsy moth including alder, tamarack, basswood, and willow. In addition, other tree species termed "intermediate" in their desirability as a food source for the moth occur and include yellow birch, jack pine, red pine and eastern white pine (Classifying Forest Susceptibility to Gypsy Moth Defoliation, 1985). While the above species often dominate the composition of forested areas, they commonly occur as lesser components in other forested areas that are more mixed in composition.

At least 55% of all forested area in the Minnesota is characterized by land area covered by "highly susceptible stands" (>50%

of the basal area in tree species preferred by the gypsy moth) (Liebhold, 2003).

The proposed project area is located within the Northern Superior Upland section of the National Ecological Hierarchy (USDA 2004a). The predominant Landscape Ecosystem (LE) is the Mesic Birch/Aspen/Spruce-Fir type of which birch and aspen comprise 60% of the forest types represented. Embedded within this larger LE, in a mid-slope band, is a secondary Landscape Ecosystem namely the Sugar Maple. Within this LE, Northern Hardwoods such as Sugar Maple dominate although a wide mix of other tree species occur.

All three proposed treatment blocks are heavily forested and include many of the trees species considered susceptible to gypsy moth. Table 2 displays the percentages of "preferred" and "intermediate" forest species for the gypsy moth as compared to the total forested areas for each block.

Forested areas within the treatment blocks are currently recovering from the most recent (1998-2004) forest tent caterpillar defoliation which primarily impacted aspen/birch and oak forest types. These forest types saw repeated defoliations, to varying degrees, during that time frame. Widespread outbreaks of forest tent caterpillar occur at intervals of 10 to 20 years. Statewide the outbreaks last for three to five years (Minnesota Department of Natural Resources, Division of Forestry 1990).

Paper birch, is a major current component of the forested ecosystem along the North Shore, is in decline and it is anticipated that birch stands will change to aspen over time with or without gypsy moth damage. This is largely due to a resource that is dominated by older age classes. Birch is also stressed by a variety of factors including alternating cycles of drought and forest tent caterpillar defoliation within the last 30 years, drying of soils due to

increased soil disturbing activities such as development (roads, housing, powerlines, etc.) and harvesting; and damage to reproduction by deer. Attack and subsequent mortality of stressed trees due to insects such as the Bronze Birch Borer has contributed to the decline (Steve Katovich, USDA; Mike Albers, Minnesota DNR 2006).

The Mesic Birch/Aspen/Spruce-fir landscape ecosystem is classified as fire regime condition class (FRCC) 2 , indicating a “moderate” departure from historical fire frequency and severity due to changes in vegetation composition. Currently, there is an over-abundance of the late seral stands of hardwoods, a lack of young-aged, and a lack of mid-aged fir within the landscape ecosystem compared to historic conditions . Within this condition class 2 , a moderate risk

exists of losing key ecosystem components from fire. The Sugar Maple landscape ecosystem remains classified as FRCC 1 indicating that the historical fire regimes remain intact. Some departure has occurred from historical vegetation conditions in that there is an overabundance of mid and late seral stages. Fuel conditions along the North Shore of Lake Superior would be currently classified as low to moderate fuel loadings (1-5 tons/acre) and a low to moderate loading of ladder fuels (balsam fir) (Patty Johnson, 2008).

**Table 2. Forest Composition of “Preferred” and “Intermediate”\***

| Treatment Block | “Preferred” and “Intermediate” Gypsy Moth Food Preferences |                |          |          |     |              |
|-----------------|--|----------------|----------|----------|-----|--------------|
|                 | Aspen/birch  | Maple/basswood | Pines ** | Tamarack | Oak | Alder/willow |
| Little Marais   | 64%  | 20%            | 2%       | <1%      | 0   | 6%           |
| Grand Marais    | 77%  | <1%            | 2%       | <1%      | 0   | 7%           |
| Marr Island     | 83%  | 1%             | 4%       | <1%      | 0   | 5%           |

\* expressed as a percentage of all forest and shrub dominated lands within treatment blocks as well as within a one-mile buffer

\*\* eastern white, red and jack pines

**Preliminary Effects Analysis of the Proposed Action on Forest Type and Forest Health**

*Direct and Indirect Effects Analysis*

The proposed action would reduce the short-term negative effects of gypsy moth defoliation. The current forest condition would more likely remain unchanged and/or continue at the present successional rate (USDA 1995). For the near term, preferred host species such as aspen and basswood would be maintained; the forest would also

retain its overall composition and structural diversity.

Adverse effects to fire behavior and risk would still occur due to increased fuel loadings as a result of tree mortality. However, with treatment these effects would be delayed and occur over a longer period (Patty Johnson, 2008)

Gypsy moth would maintain a presence in the area and would be maintained at low levels. Under this proposal, the rate of spread by gypsy moth to other areas could be reduced by more than 50% (Sharov 2002).

## Preliminary Effects Analysis of No Action on Forest Type and Forest Health

### *Direct and Indirect Effects Analysis*

If the current infestation were not treated and allowed to become established, it could spread faster than with treatment. Gypsy moth levels could increase to the point where noticeable pockets of defoliation could occur within five to ten years. Soon after that more widespread defoliation could occur (Katovich, 2006). It is likely that some trees will be killed during the first outbreak in an area and quite possible that others will die in subsequent outbreaks. High-quality canopy trees may die, but mortality is usually heavier among already stressed or weakened trees. If defoliation were heavy for two years in a row or if severe defoliation coincided with drought, 50% mortality of oak, aspen, and birch would be expected (Schweitzer 2004). However this would be an extreme situation.

Impacts to trees would vary by amount of defoliation, tree vigor and species. If less than 50% of a tree crown is defoliated, most hardwoods will experience only a slight reduction (or loss) in radial growth. When more than 50 percent of the foliage is consumed, oaks and most other hardwood species will refoliate in mid-summer. This refoilation will stress and weaken trees as they are forced to use stored starch reserves that would normally be used for protection, seed production and growth. Conifers that are completely defoliated would most likely die since they are unable to refoilate (Forest Insect/Disease Leaflet 162).

While aspen is anticipated to be relatively tolerant to defoliation, at least initially, older aspen stands are likely to deteriorate more quickly as gypsy moth joins forest tent

caterpillar as a major aspen defoliator in the region (Katovich 2006).

The decline of paper birch, already a forest health concern, would be accelerated.

Preferred food sources, described above,



**Figure 5 Paper birch defoliated by gypsy moths, Groveland, Mass.**  
USDA Forest Service Archives, [www.forestryimages.org](http://www.forestryimages.org)

would be most vulnerable with other, less desirable, food sources being more readily affected as the gypsy moth population increases and spreads. Less desirable food sources, such as mountain maple and balsam fir, could be expected to benefit from gypsy moth activity. In most locations where gypsy moth has been active and maple is present, an increase in the abundance and size of the maple at the expense of oak and aspen

(dependant on site quality) can occur (Katovich 2006).

Gypsy moth is generally viewed as an agent that increases the rate of forest succession or moves the vegetation to a more climax condition (Katovich, 2006).

Increases in standing and downed woody fuels due to mortality from gypsy moth activity will further contribute to current fuel loading and ultimately to fire frequency and severity as described for condition class 2 (Patty Johnson, 2008).

Defoliation and mortality in riparian areas or fisheries could cause short-term temperature changes which could adversely affect stream fauna for a generation (often a year) or more (Schweitzer 2004).

#### *Cumulative Effects Analysis*

Long term, gypsy moth populations along the North Shore will spread slowly away from the area eventually reaching the more oak-dominated regions in Minnesota. This spread into other portions of the state will occur with or without established populations along the North Shore; however, the rate of spread could be strongly influenced by the presence of an extensive gypsy moth population in this portion of Minnesota (Katovich 2006).

No action would adversely affect fire behavior and risk due to increased mortality of trees. This would lead to an increase in dead and down fuel loadings in the area. Estimates of up to 50% mortality would substantially alter the fuel characteristics of the area (Patty Johnson, 2008).

### **3.3 Consequences to Wildlife**

This section addresses potential impacts to terrestrial and aquatic animals that are known to occur or could potentially occur in the project area.

The key analysis indicators for wildlife are those forest vegetation-based “management indicator habitats” defined in the Forest Plan (pp. 2-63 to 2-77, Tables-4 for each Landscape Ecosystem) and other habitat types that may be most affected by gypsy moth defoliation:

- northern hardwood forest;
- aspen-birch dominated forest;
- red, white, and jack pine forest
- alder and willow shrub lands

In addition to the above analyses, a more detailed Biological Evaluation and Assessment will be conducted to address in more specifically the potential impacts to Canada lynx and Regional Forester sensitive species.

The potential for collision between low-flying aircraft and eagles and northern goshawk is also considered.

#### **Affected Environment**

The project area currently provides diverse habitats for a wide variety of wildlife, including numerous species of terrestrial and aquatic mammals, birds, amphibians, reptiles, fish, invertebrates, insects, and other organisms. Habitats present in the project area range from aquatic lake, stream, and riparian habitats to young to mature and older deciduous, coniferous, and mixed forests to non-forest grass, sedge, moss, or shrub wetlands and uplands.

The federally threatened Canada lynx is known to occur in the area. Regional Forester

Sensitive Species documented in area include bald eagle, gray wolf, peregrine falcon, northern goshawk, black-throated blue warbler, yellow rail, creek heelsplitter (a mussel), and shortjaw cisco.

Table 3 below shows the percent composition of the habitats most likely to be affected by gypsy moth in each treatment block. Other habitats that occur in the project area but that have a low potential to be affected by gypsy moth (such as spruce-fir forest, lakes, streams, bogs, fens, or grasslands) are not included.

| Habitat  | Treatment Blocks |              |             |
|--|------------------|--------------|-------------|
|  | Little Marais    | Grand Marais | Marr Island |
| MIH = Forest Plan management indicator habitat |                  |              |             |
| MIH 4: Aspen/Birch-dominated Forest            | 64%              | 77%          | 83%         |
| MIH 3: Northern Hardwood Forest                | 20%              | <1%          | 1%          |
| MIH 6 & 7: Red, White and Jack Pine Forest     | 2%               | 2%           | 4%          |
| Alder/Willow Shrub land                        | 6%               | 7%           | 5%          |
| Tamarack Forest                                | <1%              | <1%          | <1%         |
| <i>Total</i>                                   | 92%              | 87%          | 93%         |

All treatment blocks are dominated by aspen-birch forest habitat. These habitats occur in a range of ages, from young to old. Depending on their conditions they provide habitat to numerous species. Examples of species known or with the potential to occur in this habitat – and in northern hardwood forest habitat – include: blue-spotted salamander, red-tailed hawk, pileated woodpecker, ruffed grouse, boreal owl, rose-breasted grosbeak, black-and-white warbler, black-throated blue warbler, and white-tailed deer, moose, snowshoe hare, beaver, and marten.

In the pine forest habitat examples of species that may be found include heather vole, red

squirrel, Nabokov's blue butterfly, Blackburnian warbler, pine warbler, eastern wood pewee, gray jay, white-tailed deer, moose, Canada lynx, and snowshoe hare may be found.

In non-forested shrub lands species such as moose, watershrew, northern harrier, and American woodcock may be found.

### Analysis Area

The analysis for direct and indirect effects will include all ownerships within the treatment areas, including a mile buffer around the planned treatment boundaries. This is an appropriate analysis area because this is where gypsy moth is concentrated and where treatments would occur, thus allowing for effects analysis to identify potential changes to habitat.

The analysis will examine effects to habitats that could occur immediately after treatment until ten years after. This timeframe will be used because, even though defoliation from gypsy moth varies by year in intensity or duration of defoliation, the effectiveness of the treatment would likely be evident by then. For potential effects from low level flights, the analysis considers only the implementation, since any disturbance would occur only due to flights over habitat.

The analysis of cumulative effects will include lands of all ownerships within the Northern Superior Uplands since if treatment is not successful, the populations here would serve as a source for continued spread to other parts of Minnesota. Changes to vegetation would be key indicators of potential cumulative impacts to habitat and species. In the cumulative effects analysis for wildlife, the same timeframe (ten years) and actions listed under forest type and health (Section 3.2 above) are considered.

### Preliminary Effects Analysis of the Proposed Action on Wildlife

This discussion includes threatened, endangered, and sensitive species.

#### *Direct and Indirect Effects Analysis*

The likely effect of the proposal is that alteration of wildlife habitats with tree and shrub species preferred by gypsy moth would be slowed. Although low levels of defoliation of wildlife habitats could occur with or without disparlure treatment, current habitat conditions would likely remain unchanged and/or continue at the present successional rate. No other direct or indirect impacts are expected because, as used in mating disruption, disparlure is not likely to impact non-target wildlife: it is specific and detectable only to gypsy moth and has low toxicity to vertebrates. It does not affect or alter vegetative habitat conditions, water quality, microclimate, or soil productivity and fertility.

Aircraft flying 100-200 feet above tree tops to apply disparlure has potential to disturb roosting or nesting eagles and northern goshawk that have been documented in the project area. However this potential is very low because the flight over the nest would be very short in duration (less than a minute in the direct vicinity) and would occur during a time in the nesting season when the young of both the eagle and goshawk would have fledged. Once the young have fledged, both eagles and goshawk are less territorial or defensive of their nests and thus less likely to be disturbed by aircraft.

#### *Cumulative Effects Analysis*

In the short term (1-2 years) the spread of gypsy moth, associated defoliation, and potential for alteration of forest habitats should result in no cumulative effects or

measurable changes to wildlife. This is because disparlure is specific to gypsy moth and is unlikely to affect habitat..

Over the next ten years it is likely that gypsy moth will spread into Minnesota with or without established populations along the North Shore. But the speed at which the spread could occur could be strongly influenced by North Shore populations. Thus, if this alternative successfully slows the spread, it would have beneficial cumulative effects to wildlife from maintaining habitat.

### Preliminary Effects Analysis from No Action on Wildlife

#### *Direct and Indirect Effects Analysis*

There would be no action taken and therefore there would be no direct effects to any wildlife species.

In the short term (1-2 years), it is likely that there would be no measurable or very minor indirect effects to wildlife from forest habitat defoliation in mid-summer. Any changed condition of the vegetation would alter habitat conditions for wildlife, mainly through increase sunlight in the understory and decrease of shade. This is unlikely to alter wildlife composition in the short term since the area is unlikely to become completely defoliated and wildlife in the area are adaptable to similar changed conditions that in the native ecosystem would have occurred from fire, windthrow, and other native insect defoliation events (such as forest tent caterpillar). Since few species feed on forest tent caterpillars, the increased populations of caterpillars are unlikely to affect insectivorous species such as birds or small mammals.

Long term (3-10 years) the potential for indirect impacts to species would increase and may become measurable depending on the

extent and severity of defoliation. This is described in more detail in Section 3.2. above. Repeated years of defoliation may result in altered habitat conditions, with loss of both canopy and sub-canopy tree layers. Locally, wildlife habitats could change substantially, though on a larger landscape scale effects could be more subtle, gradual, and noticeable only after many years or even decades.

A gradual change from aspen-birch or northern hardwood forest habitats to red maple or conifer habitats would result in local beneficial impacts to species associated with young forest and mixed conifer-deciduous forest and local negative impacts to species associated with mature aspen-birch and northern hardwood forest habitats.

Since there would be action taken, there would be no direct, indirect, or cumulative effects from low-level flights to eagles, northern goshawk, or any other species.

#### *Cumulative Effects Analysis*

In the short term (1-2) years, it is unlikely that any cumulative effects would occur since habitat alteration would not be extensive and gypsy moth populations have not yet significantly invaded other parts of the Northern Superior Uplands.

In the long term (2-10 years), as described under Section 3.2, gypsy moth populations are likely to continue to spread to much of the area. Since this alternative is unlikely to slow the spread, future defoliation events and resulting tree mortality and changes in habitat composition would be likely to occur sooner and may be greater in magnitude, duration, and intensity. Many forest-dependent species may be negatively affected by future defoliation events and the resulting tree mortality and changes in forest habitat composition. Other species may benefit from

changes in the understory brought about by defoliation and tree mortality.

Other past, current, and reasonably foreseeable future activities (Section 3.2:) all have the potential to influence future gypsy moth populations and rates of spread. Refer to The magnitude, duration, and intensity of the cumulative effects of these activities on wildlife species and habitats is difficult to predict, but they would be likely to have greater effects on wildlife since defoliation events would likely be greater than if attempts were made to slow the spread of the moth.

### **3.4 Consequences to Non-native Invasive Plants and to Sensitive Plants**

The analysis of the potential effects to plants will use the same indicators as the analysis of effects on forest type and health.

#### **Analysis Area**

The spatial boundary for the direct and indirect effects analysis for non-native invasive plants (NNIP) and TES plants is land under Forest Service ownership within the Little Marais, Grand Marais, and Marr Island treatment blocks because this is where gypsy moths are concentrated and where treatments and potential impacts will occur. The timeframe for analysis of direct effects is during implementation of the project since this is the only time any potential disturbance could occur. For indirect effects, the time frame for analysis is from project implementation to 5 years after implementation. Five years was chosen because, even though defoliation from gypsy moth varies by year in intensity or duration of defoliation, the effectiveness of the treatment would likely be evident by then.

The geographic boundary for the cumulative effects analysis includes lands of all

ownerships within the North Shore Highlands since, if treatments are not successful, adjacent areas in the North Shore Highlands would likely become infested. This could potentially affect NNIP or TES plants that occur on other adjacent ownerships. The timeframe for this analysis is the same as for the analysis of effects on forest type and health (Section 3.2).

The cumulative effects analysis for plants considers the same activities as listed in the effects analysis for forest type.

### Affected Environment

The project area is composed of a wide variety of sites ranging from non-forested wetlands to heavily forested stands. See Section 3.2 for a breakdown of forest and shrub types. These sites occur on a variety of Ecological Landtypes (ELTs – ecological units that have a distinct combination of natural, physical, chemical and biological properties. ELT's respond in predictable ways to different management practices and are therefore used in environmental analyses).

About half of the Forest Service lands in the project area occur on ELTs that are fairly resistant to invasion by most NNIP. NNIP that disperse into such plant communities tend to get out competed quickly by native shrubs, forbs, and trees. However, some NNIP are exceptions to this general observation. For example, common buckthorn and Siberian peabush can thrive in the understory of mesic native plant communities. There are no known occurrences of such NNIP in the 2008 Gypsy Moth Slow-the-Spread Project area.

The other half of Forest Service lands in the project area is composed of native plant communities typical of well-drained, shallow-soiled sites that are more susceptible to invasion by NNIP. These sites have less

abundant shrub and forb layers, and as a result are more likely to be invaded by NNIP especially if some ground disturbance occurs. These types of sites correspond to Ecological Landtypes 7, 9, 11, 16, 17, and 18 (see the project record for descriptions of these ELTs). In general, the 2008 Gypsy Moth Slow-the-Spread Project area has a fairly low level of NNIP infestation. Orange hawkweed, yellow, hawkweeds, and oxeye daisy are the most abundant NNIP. They are found along most classified roads in the project area and pose a moderate ecological risk to native plant species. The only high ecological risk species known in the project area, Canada thistle, is much less abundant, totaling less than 1 acre of infestation. There are no other documented occurrences of NNIP in the project area.

No surveys for Regional Forester Sensitive plants were conducted as part of this project. Comparison of project area boundaries to the Minnesota Department of Natural Resources' rare features database (MN DNR 2007) showed that there are known occurrences of the following sensitive plants in the project area: common moonwort, Douglas hawthorne, auricled twayblade, Braun's holly fern, Canada yew, and false asphodel. The project area has suitable habitat for the majority of species on the sensitive plant list; the only sensitive plants without suitable habitat in the project area are: alpine milkvetch, Ross'sedge, creeping rush, American shoregrass, sticky locoweed, western Jacob's ladder, and awlwort. All the remaining Regional Forester's Sensitive plants are considered in the following analysis.

## Preliminary Effects Analysis of the Proposed Action on Plants

### *Direct and Indirect Effects Analysis*

Because no ground disturbance would occur, the proposed action would not directly contribute to the spread of non-native invasive plants. Habitat conditions would likely remain unchanged over the analysis timeframe. It is expected that NNIP would continue to invade new areas at their current rate of spread. Because relatively small levels of defoliation would occur, the proposed action would also not directly contribute to the spread of non-native invasive plants. The lack of ground disturbance and small anticipated levels of defoliation would result in no direct or indirect effects to Regional Foresters Sensitive plant species. Because *disparlure* is an insect pheromone and is not expected to affect forest conditions or soil productivity (USDA 1995, p. 4-67), this chemical would have no direct or indirect effects on NNIP or sensitive plants.

### *Cumulative Effects Analysis*

Because there are no direct or indirect effects of the proposed action on non-native invasive plants or Regional Forester Sensitive plants, there would be no cumulative effects on these species either.

## Preliminary Effects Analysis of No Action on Plants

### *Direct and Indirect Effects Analysis*

If no action were taken, non-native invasive plants would likely keep spreading in the project area, but the contribution of gypsy moth defoliation to non-native invasive plant spread would be small. There would be no direct effects of this alternative. Non-native invasive plants would likely spread the most

on Ecological Land Types most at risk to weed invasion. Where pockets of defoliation and tree mortality occur, the risk of weed spread on these ELTs would be greatest. Over the long term, noxious weed spread due to gypsy moth would be minimal because tree mortality from gypsy moth would leave openings that would eventually be occupied by other tree species which would shade out noxious weeds.

There would be no direct effects of the no action alternative to Regional Forester Sensitive plants. Minor indirect adverse effects to some Regional Forester Sensitive plant habitats are possible. The impacts depend on the extent and severity of defoliation of the tree canopy. For the sensitive plants that favor shady upland deciduous forest habitats (Canada yew, moschatel, triangle grapefern, goblin fern, New England sedge, Chilean sweet cicely, ram's head lady's slipper, rough fruited fairy bells, and Braun's holly fern), tree canopy defoliation and potential overstory mortality could increase light on the forest understory; this could cause short term lack of vigor (e.g. decreased flowering or growth) in these species but no long term consequences since other overstory species (less desirable gypsy moth food sources) would eventually occupy the canopy.

Douglas hawthorne occurrences in the project area could in the short term be directly affected by defoliation, since Douglas hawthorne, like oak and aspen, is a preferred gypsy moth food source (Liebhold et al. 1995). If defoliated repeatedly over the long term, these Douglas hawthorne individuals could decline in vigor, decrease in reproductive output, and possibly die. There would still be a sufficient number of occurrences outside the project area to maintain the presence of Douglas hawthorne on the Superior National Forest.

### *Cumulative Effects Analysis*

There would likely be some net beneficial cumulative effects from taking no action on non-native invasive plants. Past and present vegetation management projects in the analysis area would probably contribute to the spread of invasive plants. However, ongoing management of NNIP (analyzed in the EA for the Non-native Invasive Plant Management Project USDA Forest Service, 2006) would probably help to reduce the levels of existing weed infestations and thus minimize the potential spread of non-native invasive plants within the cumulative effects analysis area.

There would be minor cumulative effects to Canada yew, moschatel, triangle grapefern, goblin fern, New England sedge, Chilean sweet cicely, and Braun's holly fern because these species would only experience incidental defoliation from gypsy moth in the cumulative effects analysis area. The no-action alternative could cause Douglas hawthorne in the cumulative effects analysis area to decline and thus result in minor cumulative effects to this species, but there would still be a sufficient number of occurrences outside the project area to maintain the presence of Douglas hawthorne on the Superior National Forest.

## **4 Comment Instructions**

Please provide us with comments specific to the proposed action. Your comments are most useful if they refer to effect and/or location or treatment described in this information package rather than general management of the Superior National Forest.

Your comments will be used to identify issues associated with this project and to refine the analysis of effects.

You may submit your comments by writing, faxing, and emailing. All comments received (including names and addresses) will become part of the project file and are public information. Please be sure to include your name and address and the title of the project regardless of how you submit the comments.

Written comments must be addressed to:

Jim Sanders, Forest Supervisor  
ATTN: 2008 Cook County Gypsy  
Moth STS project  
8901 Grand Avenue Place  
Duluth, MN 55808

Electronic comments must be submitted in a format such as an email message, plain text (.txt), Word (.doc), or any software supported by Microsoft applications to: [comments-eastern-superior@fs.fed.us](mailto:comments-eastern-superior@fs.fed.us). Subject: 2008 Gypsy Moth STS Project

FAXed comments may be submitted to (218) 626-4398, ATTN: Paul Tidwell. Subject: 2008 Gypsy Moth STS Project

**If you do not wish to provide comments at this time, but wish to receive the Environmental Analysis, you must let us know.** To keep our mailing list manageable, we will remove your name from the project mailing list if we do not hear from you,.

### **Pre-decisional Objection Process**

The pre-decisional objection process is applied to projects authorized under the Healthy Forest Restoration Act, such as this project. This process differs from the regular Forest Service appeal process in that it takes place prior to the issuance of a decision document (36 CFR 218). Instead of mailing the decision to interested parties, we will mail the EA to those who provided written comments, and we will publish a legal notice

that the EA is available and opportunity to object exists.

Individuals and organizations who have submitted specific written comments related to the project during the opportunity for public comment provided may file an objection (36 CFR 218.6 (a)).

Please note that comments received from an authorized representative(s) of an organization are considered those of the organization only (36 CFR 218.6 (b)). Individual members of that organization do not meet objection eligibility requirements solely on the basis of membership in an organization (36 CFR 218.6 (b)). A member or an individual must submit comments independently in order to be eligible to file an objection in an individual capacity (36 CFR 218.6 (b)).

## References

- Albers, Mike 2006. Personal Communications.
- Johnson, Patty 2008. Personal Communications.
- Katovich, Steven 2006. Personal Communications.
- Liebhold, Sandy 2003. Evaluation of Forest Susceptibility to the Gypsy Moth across the Coterminous United States. USDA Forest Service. 9 pg.
- Miles, Patrick D. 2006. Forest Inventory Analysis Data. 2 pg.
- Minnesota Dept of Agriculture 2006. Minnesota Moth Quarantine in Minnesota – What does it mean to you? 1 pg.
- Minnesota DNR, Division of Forestry, 1990. Forest Tent Caterpillar. 4 pg.
- Reardon, Richard C., D.S. Leonard, V.C. Mastro, B.A. Leonhardt, W. McLane, S. Talley, K.W. Thorpe, and R.E. Webb. 1998. Using Mating Disruption to Manage Gypsy Moth: A Review. USDA FS Forest Health Technology Enterprise Team, FHTET-98-01, 85p.
- Schweitzer, Dale F. 2004. Gypsy Moth (*Lymantria dispar*): Impacts and Options for Biodiversity-Oriented Land Managers. NatureServe: Arlington, Virginia. 59 pg.
- Sharov, A., Leonard, D., Liebhold A., Roberts, E.Anderson, and Kickerson, W., 2002. Slow the Spread: A National Program to Contain the Gypsy Moth. Journal of Forestry July/August 2002 issue. Pp. 30-35
- Schug, Steven 2006. Personal Communications.
- USDA Forest Service, 1985. Classifying Forest Susceptibility to Gypsy Moth Defoliation, 19 pg.
- USDA Forest Service, 1989. Forest Insect & Disease Leaflet 162, Gypsy Moth. 13 pg
- USDA Forest Service, 1998. Using Mating Disruption to Manage Gypsy Moth: A Review. FHTET-98-01. January, 1998.
- USDA, 1995. Gypsy Moth Management in the United States: A Cooperative Approach. FEIS. Vol 1-5
- USDA Forest Service, 2001. Forest Tent Caterpillar in the Upper Midwest. NA-PR-02-01. 5 pg.
- USDA Forest Service, 2004. Superior National Forest Land and Resource Management Plan.
- USDA Forest Service, 2004b. Final Environmental Impact Statement for Forest Plan Revision.