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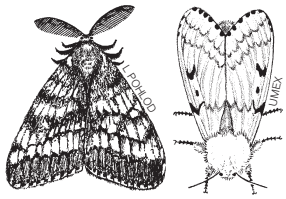

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The Gypsy Moth and Tolerance of Moth Larvae, Tree Defoliation, and Tree Mortality: Public Response to a Proposed Gypsy Moth Management Program

By Jordan B. Petchenik and Elizabeth Ivers

Introduction

The gypsy moth, *Lymantria dispar*, is a non-native species that defoliates and weakens trees, particularly oaks, during periodic outbreaks that occur in June or July. The moth was first introduced into eastern North America in the 1860s (Wisconsin DNR 2002). Through natural migration and accidental movement by humans, the gypsy moth spread slowly westward. In 1971, it was first detected in Wisconsin; the moth is now firmly established in 32 counties in eastern Wisconsin and has been found in nearly every county in the state (Wisconsin DNR 2002).

In the next few years, biologists anticipate gypsy moth populations in southeast Wisconsin to increase to levels that will result in severe tree defoliation and tree mortality. A widespread outbreak of the gypsy moth could have a significant impact on the Southern Unit of the Kettle Moraine State Forest (SUKM), one of the largest tracts of forested land in southeast Wisconsin.

As an initial step in developing a plan to manage gypsy moth infestation in the SUKM, social scientists with the Wisconsin Department of Natural Resources (DNR) conducted a series of focus groups to assess public response to various gypsy moth management alternatives. The study also gathered information on how the public might respond to a new gypsy moth management plan. This report presents participants' responses to questions about their tolerance for tree defoliation, tree mortality, and moth nuisance. Two additional reports (Petchenik and Ivers 2003a, b) present participant reactions to five gypsy moth control options, including concerns about spray notification, and discussion of forest management issues related to the gypsy moth. More detailed information about the complete study and its findings can be found in Petchenik (2002).

Methods

We used focus groups to assess forest users' opinions about gypsy moth management. Researchers typically use this technique to generate insights and ideas. Unlike survey research, focus groups allow participants to listen and respond to one another, as well as to the moderator. Focus groups also give participants a chance to think about and comment on their experiences and concerns. Where statistics are needed, researchers often use focus groups as a first step in developing a survey.

Staff sociologists from the Bureau of Integrated Science Services conducted five focus groups consisting of primary users of and residents within the SUKM (Table 1). Focus groups included a mix of men and women, with a total of 38 study participants.

Table 1. *User groups interviewed, focus group locations, and number of participants.*

User Groups Interviewed	Focus Group Location	Number of Participants
Mountain bikers	Madison	7
Day users	Madison	8
Horse riders	SUKM	8
Homeowners living near SUKM	SUKM	8
Campers	Milwaukee	7
Total		38

Focus group participants were asked to discuss a number of questions about gypsy moths and gypsy moth management. The focus group moderator guided the discussion through the following sequence of topics:

1. recent experiences with and attractions to the SUKM,
2. knowledge of and experience with gypsy moths,
3. tolerance for gypsy moth nuisance, tree defoliation, tree mortality,
4. preferred areas of the SUKM to be protected from gypsy moth damage,
5. effect a gypsy moth outbreak might have on future visits to the SUKM,
6. funding of gypsy moth suppression and its importance relative to other issues within the SUKM, and
7. preferred gypsy moth control method and concerns about aerial spraying.

Because participants in this study did not have extensive firsthand experience of gypsy moths, they were shown photographs and given background information to better understand gypsy moth management issues. We audio-taped each focus group and based our analysis on a verbatim transcript of each session. Illustrative quotations from focus group participants are presented throughout this report in *Italic text*.

Results and Discussion

Public Awareness of Gypsy Moths

Participants' knowledge of gypsy moths ranged from vague familiarity with the term to limited firsthand experience with control efforts. However, participants, in general, were uninformed about the gypsy moth life cycle, its effect on forest ecosystems, or details about management options.

What participants know. Participants had limited prior knowledge of gypsy moths and gypsy moth management.

> *I've heard the word, but have no clue what they are.*
>
> *This summer I noticed a lot of holes [in the leaves], but I'm not sure what it was.*
>
> *I've seen the spraying, the planes go by, in Madison, here.*

Only one participant had significant experience with widespread damage caused by gypsy moths.

> *I've lived here for just nine and a half years, moved here from Connecticut and 15 years ago it was practically total devastation of the forest by the gypsy moth. It's unbelievable. They denuded the whole forest of deciduous trees. It was the middle of July and August and there was nothing, just branches.*

Where participants received gypsy moth information. Participants had learned about gypsy moths and gypsy moth control measures from a variety of sources, including newspapers, park displays, radio announcements, and neighborhood newsletters.

> *I just read an article in the* Milwaukee Journal-Sentinel *saying that Milwaukee has a heavy infestation of [gypsy] moths. I saw that last summer.*
>
> *The nature center at Devil's Lake has a nice display of what [gypsy moths] look like and what it does. That's the place were I've seen the most on it, actually.*

Participants need more information. Participants recognized that they, and the general public, needed to become better informed about gypsy moths and gypsy moth management issues. They had numerous questions about gypsy moths. In addition, participants wanted to better understand the scope of the problem and how it would affect areas adjacent to the SUKM.

> *I need to be educated on the gypsy moths.*
>
> *Nobody knows [about the gypsy moth]. I think the problem goes to public education.*
>
> *Which ones are the males? The white or the dun-colored [moths]?*
>
> *Do [gypsy moth outbreaks] run in cycles? Are they here one year and gone the next or are they here to stay?*
>
> *Is the Southern Unit of Kettle Moraine the only place with a [gypsy moth] problem?*

Nuisance Tolerance

When asked for their reaction to the photos and the information concerning gypsy moth larvae during a severe outbreak, participants responded with varying degrees of concern. Many people were very concerned and felt that the presence of gypsy moth larvae on picnic tables and in camping areas would seriously affect their enjoyment of the forest. Other people were moderately concerned and some did not feel the larvae would be a nuisance.

High populations of gypsy moth larvae are unacceptable. After reviewing the nuisance photos, many participants stated they would definitely alter their recreational activities if the situation in the SUKM reached the level depicted in the photos.

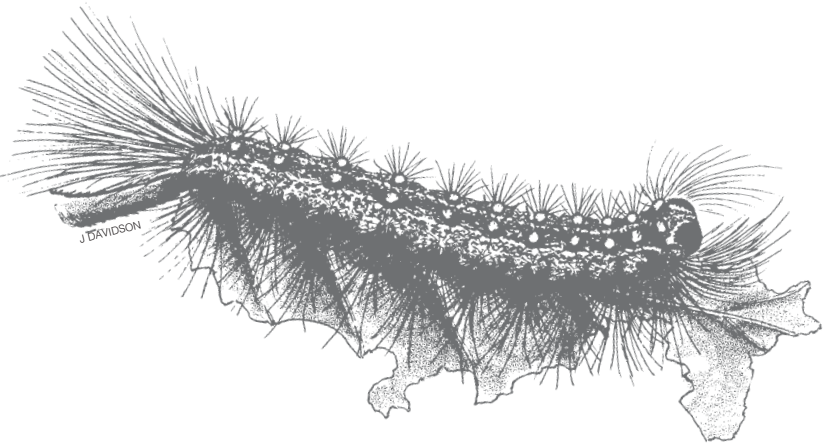
> *I would have to say I'm in complete disagreement with all of this. There's no way [I would picnic]; I'd be completely grossed out.*
>
> *Buy me another campsite. If I pulled up and saw that, I would expect another campsite. If all the sites are like that, then you have a serious problem.*

Larvae are somewhat bothersome. Some participants felt that the caterpillars would be a nuisance but did not seem to be overly concerned about the potential situation. These participants thought that they might alter their recreational plans somewhat but would continue to visit the SUKM.

> *I guess if it were me and after biking, after the fact, I would just not use the picnic table.*
>
> *Yes, [I would still camp], until it got really, really bad.*

Larvae are not a nuisance. Some participants expressed a high tolerance for larval activity. They stated that the presence of caterpillars and frass would not bother them and they would find ways to adapt to the situation. A few participants saw parallels between the gypsy moth problem and other insect problems they had dealt with.

> *No problem. I would just wipe them off the picnic table or eat on the ground.*
>
> *I would still go camping, too. Part of the reason I go camping is because I enjoy teaching kids about the outdoors and [the gypsy moth outbreak] it's something that's happened.*
>
> *My house was totally infested with Asian beetles last year. I just went around everyday and vacuumed them up. If this caterpillar thing lasted three weeks, I'd deal with it.*



Tolerance for Tree Defoliation

After reviewing the photos and background information related to tree defoliation, participants expressed concern that defoliation would impact their enjoyment of the SUKM, particularly when camping and hiking. Most participants, however, felt that they would continue to pursue their recreational activities.

Defoliation is a serious problem. Many participants expressed serious concern about moderate to severe tree defoliation. For some, it was a matter of degree. Some defoliation would not be a concern, but widespread defoliation would be disturbing.

> *I can endure the infestation of these things; I just wouldn't have a picnic or something. But we live in Wisconsin and we look at bare trees most of the year. The last thing you want to see is to go outside and see trees with no leaves. You wait all year for that [for the trees to leaf out].*
>
> *Setting up the tent in June or August, it's a nice 90-degree day, and you're sitting in the direct sunlight. It doesn't sound real appealing.*
>
> *Most of us would understand it's a natural process. So, if we see some moderate defoliation, it's probably not going to be bothersome. But if we see a picture like this, a whole grove with no leaves, it's going to bother us.*

Defoliation is mildly bothersome or not a concern. Some participants felt that although defoliation would affect their enjoyment of the forest, it would not be a serious deterrent to visiting the SUKM. Other participants did not feel that defoliation would diminish their experiences or cause them to alter their visitation plans.

> *My major concern is that I don't want the trees hurt for the long run. I can deal with three weeks of ugliness in my life. If I'm going to ride the trail for the next 20 years, I don't want the trail to look like that forever.*
>
> *I could deal with no leaves for one year.*
>
> *If I'm going out on my mountain bike, why would trees without leaves affect my plans?*

Tolerance of Tree Mortality

In all of the discussions, participants considered any level of tree mortality resulting from gypsy moth infestation to be unacceptable. Participants felt that the trees were an important reason they visited the SUKM and were therefore more interested in focusing on preventative measures.

Gypsy moths should be stopped prior to tree mortality. Most participants felt that something should be done before trees die from gypsy moth damage.

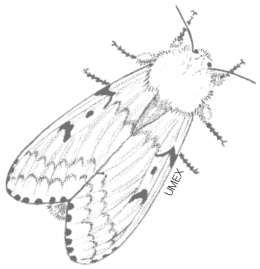
> *If defoliation is a step to mortality, why let it progress to that point?*
>
> *What's the cost of treating [for gypsy moths] versus replanting trees? Isn't it cheaper to stop it in the first place?*
>
> *Most people would not care about [defoliation]; they would care if trees would die.*
>
> *I would hate to see any tree lost because of this.*

Participants would alter plans to visit SUKM. For almost all participants, tree mortality would compromise their enjoyment of the forest. For many participants, tree mortality would cause them to change their use of the forest.

> *[Tree mortality] would make a big difference because we were all talking about how we don't like all the sun. We want shade trees.*
>
> *We would go there because of our [horseback] rides, our endurance rides, because that's where it is. But to go there for pleasure camping, probably not.*
>
> *Knowing that things were in that condition, I wouldn't specifically go there for the purpose of having a picnic or something like that.*
>
> *If I knew I was going to be out mountain biking in the bare sun for a couple of hours and it was hot out, I probably wouldn't go.*

Homeowners expressed concerns. Homeowners were concerned about losing trees on their property due to gypsy moth activity. They felt, however, that the threat of tree mortality was a fact of nature.

> *There are certain trees that are always in peril. The elms went a while ago; others have gone. If you know there is a peril to a certain species of trees and it's coming, you want to do something about it. You don't want to lose your trees; it's part of the value of your property. It's why we live out here.*
>
> *Certain trees give your property a certain look, and if that changed, your home changes; it wouldn't be as pleasant. But if that's something that happens in nature, you deal with it and keep moving on.*



Management Recommendations

The focus groups suggest that, while the public would not find widespread tree defoliation and tree mortality to be acceptable, at least a portion of the public would tolerate the short-term, moderate effects a gypsy moth outbreak. Based on this information, forest managers should work to contain the spread of gypsy moths, but they do not need to set a goal of complete moth eradication. The focus group responses suggest that forest managers can allow for low-to-moderate levels of moth larvae and tree defoliation without seriously affecting visitation to the SUKM. It is important to keep in mind, however, that a focus group does not always accurately reflect the broader public opinion and that a survey would need to be conducted to provide a clearer assessment of the public's tolerance levels for different aspects of a moth infestation.

The focus groups also suggest the need for greater public information concerning gypsy moths and gypsy moth management. Photos used by the focus group moderator to show participants widespread larvae debris and tree defoliation were particularly effective in helping the participants understand the need for management. Such photos displayed in highly frequented areas (e.g., picnic areas, campgrounds, and restroom facilities) may be helpful in illustrating to SUKM visitors the potential impacts of a gypsy moth outbreak and the need for management.

Literature Cited

Petchenik, J.B. 2002. *Public Response to a Proposed Gypsy Moth Management Control Program in the Southern Unit of the Kettle Moraine State Forest.* Wisconsin Dept. of Natural Resources, Madison. [PUB-SS-976 2002]

Petchenik. J.B. and Ivers, E. 2003a. The gypsy moth and methods of control: Public response to a proposed gypsy moth management program. Wisconsin Dept. of Natural Resources *Research/Management Findings* (48):1-4.

Petchenik. J.B. and Ivers, E. 2003b. The gypsy moth and forest management issues: Public response to a proposed gypsy moth management program. Wisconsin Dept. of Natural Resources *Research/Management Findings* (49):1-4.

Wisconsin DNR. 2002. Oct. 6-12 designated 'Gypsy Moth Awareness Week' in Wisconsin. Wisconsin DNR, Madison, *DNR News and Outdoor Report*, October 3, 2002.

About the Authors

Jordan Petchenik is a resource sociologist with the DNR's Bureau of Integrated Science Services. His two principal research interests include human dimensions of outdoor recreation and social science methodologies. Elizabeth Ivers is a free-lance writer and editor. She has an MS in Land Resources from the Institute for Environmental Studies at UW-Madison and has held several positions with the DATCP and the DNR.

Address: DNR Bureau of Integrated Science Services
P.O. Box 7921, Madison, WI 53707-7921
Telephone: (608) 266-8523
E-mail: **Jordan.Petchenik@dnr.state.wi.us**

Editor: Dreux J. Watermolen
Layout: Michelle E. Voss

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