

Briefing Paper
Gypsy Moth Outbreak Allegany State Park
March 2013

Background: State Parks Environmental Management Bureau received notice via an email from Mark Whitmore (Cornell Cooperative Extension) of a high population of gypsy moth in Allegany State Park. Contact with park staff confirmed that there were very high egg mass concentrations in some areas of the park and that there had been complaints during the summer of gypsy moth caterpillar droppings falling onto picnic tables and into food and adult gypsy moths inundating cabin areas in the park. NYS DEC aerial surveys of the park showed a significant amount of defoliation and reported to the US Forest Service that approximately 9,000 acres of defoliation potentially caused by gypsy moths was recorded in 2012.

Gypsy moth outbreaks can have substantial impact on the quality of recreation and can represent a threat to important forest ecosystems such as the old growth areas in Allegany. Gypsy moth food sources include both deciduous and evergreen tree species. With the latter a single defoliation results in higher tree mortality rates, thus the concern over hemlock old growth areas.

High Use Areas - Allegany State Park is one of the most popular parks in the NY State Park system. It is located in western New York and serves as a recreation destination point for persons living in the Buffalo Niagara Falls areas as well as points outside of New York such as Ohio and Pennsylvania. Each year over one million people enjoy the recreational and natural resources of the park. In particular the day use and camping areas are subject to high visitor use year round. There are 318 campsites and 370 cabins (167 utilized year round) and 5 group camps. Attendance at these overnight facilities (YTD July 2012) is 247,375 with an estimated 500,000 annual use anticipated by the end of the year.

Public health and safety is a great concern in high use areas. Based on past experience in state parks, not only is the quality of recreation greatly reduced due to tree defoliation and frass (i.e. caterpillar feces) falling as a fine mist, but the invasion of final growth stage of the caterpillars essentially covers recreation areas and creates a big public nuisance and slipping hazards to patrons. This is of particular concern to at risk segments of the population such as the very elderly. Larvae and adult moths can also pose a hazard to human health due to an allergic reaction to airborne hairs and scales. Trees in high use areas are already under stress and with defoliation comes a greater risk of tree mortality and creation of hazardous trees and tree limbs above high use public areas.

Other gypsy moth impacts include excess nitrogen in streams and bacterial blooms (Liebold 2009).

Old Growth Hemlock Forest - While State Parks policy does not call for treatment of general forest areas against gypsy moth it does provide for steps to protect special and

sensitive areas. Allegany State Park is part of the largest, most intact forested landscape in western New York (70,000 acres of forest) and contains over 5,000 acres of old-growth forest, the largest acreage of old-growth forest known in NY State outside of the Adirondacks and Catskills. The Big Basin area is the most visible and the largest patch of old-growth (3,631 acres) in the park and half of this is old-growth hemlock-northern hardwood forest containing mature trees of up to 36 inches in diameter, 110 feet tall, and 150 to 225 years old. These forests support important ecological processes and a high diversity of native species including forest-interior songbirds and raptors (Lundgren et. al. 2010).

It is very important to note that the scientific literature has shown that hemlock needles are a preferred source of food for the later caterpillar stages of the gypsy moth (Kraus 2012). This, coupled with the fact that hemlock mortality is often associated with single defoliation by gypsy moths (Schweitzer, 2004), contributes to a very high risk of devastation in this unique area by the current outbreak.

State Parks policy. Gypsy moth outbreaks occur periodically throughout the state park system. The overall policy of the agency has been to treat heavily infested high use recreation areas to ward off the significant impacts to users and their recreation experience. General forest areas are not treated unless there are significant ecological communities or species that require protection.

Steps taken:

1. Egg mass counts. OPRHP staff coordinated a formal survey for egg masses at the park using the Field Protocol for Sampling Gypsy Moth Egg Mass Counts (Kraus, 2005). The survey took place on October 24-25, with additional sampling on Oct. 26 and 30 as well as Nov. 6-7. Twenty high use areas were surveyed with 150 – 1/40 acre plots sampled for a minimum of 7 plots in each high use area. Results showed that within high use recreation areas the egg mass counts ranged from 1,131 to 14,754 per acre. The average egg mass count in park high use areas was 5,700/acre. The NYS DEC threshold used to indicate a high level of egg masses is 1,000 egg masses/acre indicating likely tree mortality. Thus, the levels recorded in recreation areas are clearly extremely high indicating a major outbreak in 2013. Another indicator of a growing population is the length of the average egg mass. Egg masses >30 mm in length are indicative of a growing population. The egg masses measured in ASP were all > 30 mm in size.

Counts were also taken in areas of high ecological value (i.e. old growth hemlock northern hardwood forest). Sixteen plots were sampled in 4 locations within the Big Basin old growth hemlock-northern hardwoods area. These counts ranged from 1,990 to 16,430 egg masses per acre.

2. Treatment Areas. A map (attached) has been prepared by the GIS/Resource Analysis Unit showing high use areas of high infestation (approx. 1,050 acres) and requiring treatment. In addition, Parks staff and Natural Heritage scientists have selected a core

1,002 acre area of significant old growth Hemlock-northern hardwood forest out of the 5,000 acres in the park that is recommended for treatment.

3. Treatment options. With most instances of Gypsy Moth outbreaks in State Parks, *Bacillus thuringiensis* (Bt), a bacterium, has been used to control gypsy moth. This is a biological insecticide considered safe for humans, wildlife, and most other beneficial insects. However, Bt is not specific to only the larval forms of gypsy moths but is lethal to all larval Lepidoptera (butterflies and moths). A rare butterfly, the West Virginia White (*Pieris virginiensis*) is present in hardwood forests and open habitats within the park. This species could be harmed by use of Bt

Another treatment option is Gypchek which is a naturally occurring virus that affects only gypsy moths. The highly host specific Gypchek is produced by the Federal government and is reported to be available for State Parks use in 2013 for treating an estimated 2,052 acres in Allegany State Park.

Chemical sprays have also been used including Sevin during a previous outbreak in Allegany State Park.

Gypchek is the preferred treatment material.

4. Cost. Cost for the treatment will depend on the final scope of the work and the result of bidding. Initial and very preliminary cost estimates range from \$60,000 to \$190,000.

The most recent control conducted in State Parks was at Ft. Niagara in 2008. This included aerial spraying of 2 applications for about 135 acres at a cost of about \$10,000. At Allegany State Park it is estimated that approx. 1,050 acres of high use recreation areas will require 1 treatment next spring. In addition it is estimated that 1,002 acres of important ecological areas will require 2 treatments due to the elevation changes in this area of the park. Of the treatment options, Gypchek is less costly and host specific. Gypchek is provided for free by the federal government. A carrier chemical, however, is needed to disperse Gypchek at a cost of \$10/acre per treatment. The cost of treating 2052 acres of parkland is estimated at \$ 85,863.

5. Procurement. This work will be done under contract. This project was advertised in the New York State Contract Reporter on February 25, 2013 and bids will be opened on March 18.

6.Environmental Review. The project is subject to SEQR. It is considered an Unlisted action under SEQR and will require the completion of a Short Environmental Assessment Form. In addition, since Federal Funding for this project is being sought, additional environmental review, including a public information meeting is being required by the USDA Forest Service under NEPA. The public meeting is scheduled for **Wednesday, March 27, at 7:00PM at the classroom building at Camp Allegany in Allegany State Park. Comments may be forwarded to: Karen Terbush, NYS Office of Parks,**

Recreation and Historic Preservation, Albany, NY 12238 or
Karen.terbush@parks.ny.gov.

7. Timing. Eggs begin to hatch in April to May and the larvae go through several molts culminating in June, the time of greatest feeding. Park staff will monitor the egg masses and caterpillar molt stages to determine the optimum time for application. It is estimated that this will occur around late April to mid-May. Public notice will be provided to park users prior to any spraying.

Literature Cited:

Kraus, Naja 2012. *All you ever wanted to know about Gypsy Moths and much more.* Power Point presentation by Naja Kraus, NYS DEC, Division of Lands and Forests, Forest Health and Protection.

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Liebhold, Andrew 2009. Gypsy Moth Ecology and Management in North America. Forest Connect Webinar, May 20, 2009. US Forest Service Northern Research Station.

Lundgren, Julie, Kimberly J. Smith and D.J. Evans, 2010. *Rare Species and Ecological Communities of Allegany State Park.* New York State Office of Parks, Recreation and Historic Preservation and New York Natural Heritage Program, August 2010.

Schweitzer, Dale F. 2004. *Gypsy Moth (Lymantria dispar): Impacts and Options for Biodiversity-oriented Land Managers.* 59 pages. Nature Serve, Arlington, Virginia © 2004 Nature Serve.

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