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March 2, 2010

Bureau of Forestry

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To: Forest Landowners of McKean and Potter Counties

Re: Dealing with the Forest tent and eastern tent caterpillar 2010

As a forest landowner, you may wonder what to do about defoliation next year from one or both of these insects in your woodlands. A little background is necessary before you formulate a plan of doing nothing or spraying. The Commonwealth of Pennsylvania does not spray for native forest defoliating insects and any spraying will be on your own through private initiatives or contractors. We are available, however, for advice and support.

2010 predictions and 2009 Aerial Survey Summary

Egg mass inventories conducted since September indicate that defoliation caused by the forest tent caterpillar and eastern tent caterpillar is expected to be more widespread in 2010 than it was in 2009 throughout most of Potter and Eastern McKean Counties. Around 320,000 acres of defoliation on public and private land were mapped from the air by DCNR Bureau of Forestry personnel in June of 2009. Approximately another 180,000 acres saw some level of leaf feeding not visible from the air. In 2008, approximately 50,000 acres of defoliation were mapped.

Brief Descriptions and Feeding Preferences

The forest tent caterpillar, *Malacosoma distria*, is closely related to the eastern tent caterpillar, *Malacosoma americanum*, but does not make silk tents like the eastern tent caterpillar. The forest tent caterpillar prefers to feed on sugar maple, aspen, beech and red oak trees. Pin oak trees planted in towns and yards also are preferred. The Eastern tent caterpillar prefers members of the rose family including cherry, apple, crab apple, peach, pear and hawthorn. The tents are common most years along highways, fence rows, and in yards and parks. In recent years its population has exploded to include the defoliation of black cherry trees in the forest. Following the leaf feeding stage, the caterpillars of both species spin cocoons and enter the pupae stage. After 3 to 4 weeks, adult moths emerge to mate and lay eggs on the twigs. Historically in the northeast, defoliating outbreaks last about 3 years (plus or minus a year or two) with ten to fifteen years between outbreaks. Included is a handout that describes these two insects in more detail.

Predation

The main predators of the forest tent and eastern tent caterpillar are fungal and viral diseases of the caterpillar and insect parasites of the pupae stage. In 2009, there was massive mortality of caterpillars caused by *Entomophthora* fungus (caterpillars died hanging straight down from the hind legs) and a virus (caterpillars died clinging by the middle legs in a V shape). A large percentage of the pupae were killed by native wasps and flies including the friendly fly, *Sarcophaga aldrichi*. Birds and mammals preyed on the adult moths. Even with this high level of predation, large numbers of adult moths emerged, bred and laid eggs. This coming year we hope to see some pockets where the caterpillars die before creating the 3rd year of defoliation or pupae predation is total, resulting in a collapse of the population in those pockets. A total collapse everywhere is possible this year but is not expected. Predators should bring about an end to the current infestation in the next 2 to 3 years.

Potential of Secondary Attack

Prolonged wet and damp weather conditions in the late spring and after new leaf out following defoliation may favor outbreaks of a leaf fungal disease called Anthracnose. This disease can stunt the new leaves or result in a second defoliation in the same year, a knockout blow to stressed trees.

How Defoliation Affects Trees

Defoliation causes stress on all species of trees but affects them differently. Tree decline and mortality following defoliation is magnified by drought conditions and poor growing sites. Sugar maple in northern Pennsylvania has been fairly tolerant of other insect defoliators in the mid 1970's, mid 1980's and early 1990's. Two successive years of defoliation has generally resulted in some branch dieback on healthy trees and increased dieback and mortality on the weaker trees. Three years of defoliation increased the severity of dieback all around and very light mortality of healthy trees. New York and Vermont have reported some branch dieback and very little mortality of sugar maple and light to moderate red oak mortality resulting from their recent outbreaks of the forest tent caterpillar. In the Pocono region of Pennsylvania recently, sugar maple mortality was not heavy until Anthracnose caused a second defoliation in the same year. Black cherry trees have exhibited signs of branch dieback from other causes and the impact from the eastern tent caterpillar may be magnified.

Making The Decision To Aerial Spray

1. Spraying is really a personal choice based on COSTS, how much damage you are willing to sustain and tolerance to hordes of crawling caterpillars climbing on your house or other structures. Whether to spray or not also will also depend upon the susceptibility of your forest based on species preferences as explained above, health of the trees, sawtimber quality of the trees, previous defoliation history, and size of your property.
2. The main goals of spraying a forest for leaf feeding caterpillars are to protect tree health, maintain timber value and to minimize the nuisance factor. The following scenarios with spraying priorities are based on tree protection only. You will need to weigh the costs and nuisance factor if you have a house or camp in or next to the woods.
 - A. Red maple and all conifer trees are non-susceptible species. There is no need to spray pure stands of these species. Stands with even 10 to 20% of susceptible species should be further evaluated.
 - B. Areas of susceptible species (sugar maple, beech, red oak and aspen) to the forest tent and those susceptible to the eastern tent (areas with black cherry) that were not defoliated in 2009 will probably experience their first defoliation this year. Tree decline and mortality should be minimal.
 - C. Stands defoliated in 2009 will most likely be defoliated again. Spraying priority is moderate for good quality stands.
 - D. Stands that were defoliated 2008 and 2009 will be defoliated for the 3rd year. Spraying priority is moderate to high for good quality stands.
 - E. Poor quality stands of susceptible species that have been or will be defoliated are a low priority for spraying. These stands are typically where all the good trees have been cut or fully stocked stands growing on poor growing sites such as steep south to west facing slopes. Consider spraying only if you have a house or camp where you will be spending a lot of time.
 - F. Realistically if you spray, some areas that do not need sprayed will have to be included to make spray blocks.
3. No spraying but watchful waiting is an ok plan of action. Monitor for decline and individual trees or pockets of mortality and plan salvage harvesting if needed.

Aerial application basics, Applicators, and Insecticide Choices

1. There are two ways to spray forests – helicopter and fixed wing. Both are capable of spraying large tracts. Fixed wing aircraft are not suitable to spraying small parcels of a few acres. They are best suited to block sizes of around 50 acres. Expect costs to be in the neighborhood of \$20 to \$40 per acre range. Helicopter rates may or may not be the higher than fixed wing rates and they can do smaller blocks.
2. The most commonly used and recommended pesticide is the non-chemical B.t. (formulations based on the bacterium *Bacillus thuringiensis*). It is not a contact insecticide and needs to be swallowed to be effective. B.t only affects butterfly and moth caterpillars. It is safe to humans and all other forms of life. Another insecticide to consider is CONFIRM, an insect growth regulator of moth and butterfly caterpillars and is registered for forest tent caterpillar. Prices per acre for CONFIRM are expected to be somewhat lower than B.t.
3. While DCNR does not spray for the control of native insects such as these, included are two lists of contractors, fixed and rotary, that are willing to spray private forestland. Since these lists were developed for Gypsy moth spraying, landowners will have to make contacts to see who on this list are willing to spray for forest tent caterpillar and for price comparisons. A few of the contractors may gear up to solicit business in the northern tier. As of 2/12/10 I only know of Tallman Aerial Spraying teaming up with Forecon Consulting Foresters. Landowners can call Tallman at 717/921-2476 or Forecon at 814/887-8731. In addition to those on the list, there is a local initiative by Ken Kane of Keith Horn Consulting Foresters, Inc. in Kane that has made an arrangement with a fixed wing contractor out of Maine. For more information on the size and criteria of their program, contact Ken at 814-837-9391. Applicators in Pennsylvania must be certified and insecticides need to be registered for target species and by use such as forest, ornamental, or agriculture.
4. Pooling of adjacent landowners is a good idea.
5. More information about these insects and insecticides can be found on our website, www.dcnr.state.pa.us/forestry, and the Penn State Cooperative Extension website. Also check out state forestry and Cooperative Extension websites for the states of Vermont, New York, Michigan, Wisconsin, and Minnesota. Feel free to contact me or Forester Andy Sidelinger any time for more information.

For those of you unfamiliar with the Bureau of Forestry, we offer free on-site examinations to help you identify goals such as timber production, watershed, wildlife, recreation or a combination of these, and how to manage for maximum benefits. Included are brochures on “Tending Your Piece of the Forest”, the Stewardship Program and the North Central Forest Landowners Association. Contact me if you would like to set up an appointment.

Sincerely,

Stan Hess
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