Thoughts on Forest Tent Caterpillars

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The Forest Tent Caterpillar (FTC) is a native insect pest that has had documented periodic outbreaks in New York for at least the past 50 years. According to Cornell Cooperative Extension Educator Steve Vandermark, who has researched this topic extensively; between 1950 and 1953 fifteen million acres statewide were defoliated. Between 1980 and 1982, 200,000 acres were defoliated in Delaware County and between 1989 and 1992 90,000 acres were defoliated in northern New York. In 2005 some 22,000 acres were defoliated in Greene County alone and it is likely that much more acreage was defoliated in 2006.

This most recent outbreak has generated many questions, particularly regarding aerial spray programs to combat this pest. This article is an attempt to try to answer actual questions I have received in past years.

"Last summer much of the forested land nearby my property was completely defoliated by FTC, Should I have my 200 acres of forest land sprayed to protect it?"

Well, before you even begin to plan to spray you need to determine if your land will be similarly affected. There is a suggested protocol for predicting FTC defoliation on the following DEC website.
http://www.dec.state.ny.us/website/dlf/privland/forprot/health/caterpillar/ftcprot2005.pdf
Unfortunately, this protocol is pretty complicated but if you find 2 or more egg masses per ten branches sampled, you will likely have serious defoliation. If you find les than one egg mass per 10 branches keep sampling until you have sampled at least a dozen or more trees.

If your survey indicates that your land will indeed be defoliated, you still have to consider many other factors.

The decision of whether to spray or not to spray is quite complex. Therefore it must be broken down into several different components to answer. In terms of pure economics, when the cost of spraying is less than the loss of income from not spraying, spraying is justified. For maple syrup producers, campground operators, arboreta, resorts and others whose income depends on having leaves on their trees the economic justification is easily achieved. For forested landowners who are managing their forest for timber production, the cost of spraying is also easily achieved since the loss of even a few timber trees per acre (which is likely in outbreak situations) exceeds the cost of spraying.

"I don't manage my land for timber, I just use it recreationally. Should I have it sprayed anyway? I love my forest and would hate to lose it!"

One thing is pretty certain; you will not lose your forest if you do not spray it! Our forests have survived many insect and disease outbreaks in the past and while the tree species composition may be altered by the specific pest's feeding preference, the overall forest will remain. For example, FTC seem to ignore red maple and hickory while preferentially eating sugar maple, ash, oak and other hardwood species, although in a major outbreak situation even these non preferred trees species may also be defoliated. All the trees in your forest will not all die as result of defoliation but some most likely will.

“Last summer, my neighbor’s house, about a half mile down the road, was covered with the caterpillars for almost two weeks. This was disgusting! Caterpillars don’t eat houses, why did they crawl all over and linger on his house?”

Unfortunately, these leaf eating caterpillars don’t limit themselves to the forest. They often move from one area to another en masse seeking food. If your house is within or very close to an infested forest, they will crawl all over it. They are more or less “programmed” to crawl upward and over anything in front of them and they often linger when they reach some sort of barrier. As they travel they emit an “aggregation pheromone” which is a chemical that causes them to gather in groups.

“So, should I have my house and surrounding forest sprayed to keep them away?”

Now you are dealing with an aesthetic decision versus an economic one. It is uncertain how big a buffer zone would need to be sprayed around your immediate premises to keep the caterpillars away from your house. A 200 foot buffer zone around a house would require 4 acres to be sprayed with your house at the center. A 300 foot buffer zone around your house would require 9 acres to be sprayed.

“What type of spray would be used? Isn’t it dangerous to spray poison on my house?”

There are two types of insecticides that have been aerially applied in New York. One type is chemical and one type is a biological agent. The most commonly applied chemical is known as carbaryl which is sometimes sold as Sevin. This is a broad spectrum insecticide with documented toxicity to most insects including honey bees. It is potentially poisonous to other wildlife, including humans, but at the rate it is applied aerially, human toxicity is highly unlikely. Carbaryl will kill both target and non targeted insect species when applied aerially. Cornell Cooperative Extension recommends that the least toxic materials be used for any insecticide application. For tent caterpillars there is a far less toxic alternative. The other insecticide is known as Bt. This is a biological agent. It is a naturally occurring toxin produced by certain types of bacteria. The type of Bt used for FTC is toxic only to Lepidopterous larvae, that is caterpillars that turn into moths or butterflies. It is not toxic to other wildlife or humans. Bt is sold under various brand names including Dipel, Thuricide and others. No pesticide should be applied without reading and following the labeled directions.

“When will this outbreak go away? I have had these caterpillars for the past 3 years”

FTC outbreaks usually crash due to natural controls within 3 years of noticeable defoliation but there have been some places in New York where they have persisted for 4 or 5 years. Generally, there is noticeable defoliation in the first year, major defoliation in the second year and slight defoliation in the third year.

“Will spraying my 200 acres delay the crash? If I spray this year will I have to do it again next year as a result of spraying this year?”

It is possible that spraying large blocks of land may delay the crash within a given area but typically when a FTC population crashes due to naturally occurring diseases or parasites or combinations of diseases and parasites, the area affected covers many thousands of acres. Spraying relatively small blocks of 5 to 10 acres is unlikely to affect overall population crashes.

“Other than potentially harming my forest trees, will the FTC outbreak have any other environmental consequences?”

Forest defoliation has profound environmental consequences that go far beyond tree damage. Streams within forests that lose their summer shade will have warmer water temperatures. This will affect the aquatic ecosystems they sustain. Cool, shaded pools provide habitat for trout and other fish species. Higher water temperature reduces the oxygen holding capacity of water. FTC droppings may literally add tons of nutrients to waterways in a relatively short time. The effects of this nutrient influx are generally negative to existing ecosystems. Vernal pools within forests will also dry up sooner and have warmer water with consequences for amphibians and invertebrates. Forest understory plants that require shade such as trilliums, lady slipper orchids, ginseng, baneberry, blue cohosh and Mt Laurel may be stressed as a result while other plants that can tolerate sunlight such as blackberries, poison ivy, jewelweed and Indian tobacco will show enhanced growth. The undergrowth of a defoliated forest looks very different in July and August from the undergrowth of a forest with leaves on most of the trees. FTC caterpillars have food preferences that may affect the species composition within a forest over time. They do not readily consume most vines including grape vines, Virginia creeper and poison ivy nor do they readily eat pines, most other evergreens, hickory, red maple or Norway maple. This favors the status of these species while sugar maple and other preferred foods will suffer disproportionately. Last summer it was very easy to spot grapevines, red maple and hickory in my forest as these were the only green plants to see in June!

"Are there any other alternatives to aerially spraying?"

Yes, individual trees may be injected or sprayed by a certified applicator at a cost of about $50 per tree for injections or trees may be sprayed by the homeowner with a trombone or pump type sprayer using either Bt, or one of several chemical insecticides. Trees may also be banded with burlap and Tangle foot sticky tape but my experience with this technique is that it is not very effective in an outbreak situation.

"Could Mother Nature bail us out?"

Possibly, the literature says that FTC egg masses perish at minus 40 degrees F. and that is not a "wind chill" temperature. We rarely have ambient temperatures that low in this area. There is no data that predicts cumulative effects of lower temperatures, i.e. ten consecutive days of minus 5 or zero. We have had the coldest temperatures in several years this winter. There is also widespread evidence of parasite activity on the pupa of the FTC. In the long run, natural causes always end these outbreaks. Right now I am cautiously optimistic that the areas hardest hit last summer will be spared this season based on the few egg mass surveys I have been able to conduct.

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