Delaware Forest Service Spring 2024 Proposed Spongy (former known as Gypsy) Moth Spray Program

In response to increased levels of leaf-eating caterpillars of the spongy moth (formerly named gypsy moth, latin name: *Lymantria dispar dispar*) in southern Sussex County in the last two years, the Delaware Forest Service is proposing a one-time aerial application of bio-rational insecticides to thirteen pre-selected neighborhoods in the spring of 2024. Ground surveys for spongy moth egg masses were conducted by the Delaware Forest Service in the late summer of 2023 to determine which areas are at risk for additional spring 2024 caterpillar outbreaks. The selected neighborhoods are around the Cypress Swamp and the Phillips Landing Road/Nanticoke State Wildlife Area. The proposed spray areas total about 670 acres in these 13 residential neiborhoods (see attached list). Landowners are being contacted by individual letters and will have the option to refuse the spray for their property. The dates for the spray depend on spring leaf development, larval development, and forecasted weather, however, typical dates are from about April 15 to May 15. This is a no-cost, voluntary spray that will utilize one of three bio-rational insecticides depending on location, weather, and insect development stage. These insecticides are: “dimilin”, “mimic”, or Bacillus thuringiensis kurstaki (Btk). Only one of the three products would be sprayed in a selected area. Information and neighborhood spray updates will also be recorded on the spray program hotline number: (302) 698-4619.

Please Contact the Delaware Forest Service Forest Health Specialist at (302) 698-4553, or leave a message at the above hotline number if you **do not** live in one of the Sussex County neighborhoods listed below, and suspect you have fresh spongy moth egg masses at your residence or woodlands.

UPDATES:

- The Delaware Forest Service observed some spongy moth egg masses hatching on the 4th and 5th of April. The warmer temperatures of the week of April 8th will likely cause most of last year’s overwintering egg masses to hatch into the very small (about 1/8” long) first instar (first growth stage) larvae. These larvae will begin to move away from the egg mass and disperse out in search of young leaves to feed on.

- If warm April weather continues and tree’s leaves develop out to about 2 and ½” length, it could be possible to spray as early as the week of the 22nd of April. All neighborhoods are set to be sprayed with Foray 48B https://www.valentbiosciences.com/foresthealth/products/foray/48b/ , a Btk formulation that is certified safe for organic farms and gardens.

- Neighborhood residents with enough fresh egg masses nearby were sent a notification letter the week of January 8th, 2024 with information and details about how to contact the Delaware Forest Service to opt out of the no-cost spray. The deadline to opt out of the spray program was March 22, 2024. The final number of residents opting out in each proposed neighborhood is listed in the table below.

The leaf-eating larvae are found from mid April to early June (figure 1), but are more apparent in the later stages. Pupal cases are formed in mid June. Adult moths are found from late June to August. Female moths lay fresh egg masses mostly in July and August (figure 2). Prior years egg masses look faded and often tattered (bottom of figure 3). Only fresh egg masses (top of figure 3) are a source of larvae for the following spring.

Figure 1: Spongy Moth fully developed larvae.
Credit: https://www.scriver.org/gypsy-moth-an-unwelcome-start-to-summer/

Figure 2: Spongy Moth female adult laying an egg mass which might have about 50 to 500 eggs.
Credit:
https://pikeconservation.org/programs-services/spongy-moth/

Figure 3. Newly laid Spongy Moth egg mass at top; previous year's egg mass at bottom (NO viable eggs).
Credit: https://bygl.osu.edu/node/499

Remaining Areas to be sprayed AFTER March 22 deadline:

Proposed sprays with owner opt-outs after March 22 DEADLINE				
Name	aveeggmassperacre	original acres	# opt outs	Acres opted-out
Philips Landing Estates	320	59		
River Road	307	100.1	4	2
White Owl and Mill Creek	250	127.4	2	1.7
Bethel Road	240	64.7		
Nine Foot Road	800	19.1	2	8
Fox Chase Farm	360	36.7		
Molly Field Road	400	77.1		
Winter and Summer	240	60.4	2	2.3
Catmans Road (west)	250	18		
McCabe Development	250	30.1	2	1.75
Catmans Road (east)	250	7.3		
Moore Street Park	620	110.4		
Cherry Walk Woods	250	36.4	3	2.08
		746.7		17.83

SPONGY (GYPSY) MOTH B.T. FACT SHEET

Fact Sheet on the Biological Insecticide Bacillus thuringiensis var. kurstaki

What is Bacillus thuringiensis?

Bacillus thuringiensis, or B.t., is a spore-forming bacterium that occurs naturally in the environment. Spores are highly resistant bacterial cells that are formed in response to environmental conditions. During the process of spore formation, the bacterium also produces crystalline bodies that contain delta-endotoxin, which is a natural substance toxic to certain lepidopteran (butterflies and moths) caterpillars. B.t. is effective for control of gypsy moth and many other forest and agriculture insect pests.

How does B.t. work?

B.t. is a biological insecticide that attacks the digestive tracts of caterpillars. Caterpillars do not die from being sprayed with B.t., or by coming into contact with treated surfaces. The spores and crystals must be eaten before they can act. Shortly after ingestion, the crystals are broken down by the highly alkaline (pH=9) digestive system of the caterpillar. This causes the release of the toxin. Within one to two hours, the toxin ruptures the cells in the gut wall and causes the caterpillar to stop feeding. Bacterial cells in the gut can now contaminate the blood of the caterpillar through the ruptured gut wall. Once in the blood, the bacterial cells multiply, causing the death of the caterpillar in seven to ten days. Susceptibility to B.t. is generally dependent on the species, size, and age of the caterpillar, with smaller gypsy moth caterpillars being more susceptible. Larger caterpillars often survive ingesting B.t. and continue to feed and develop.

Is B.t. safe to beneficial and non-target insects?

B.t. is safe to use around beneficial insects, such as honeybees, gypsy moth parasites and predators, and ladybugs. The only non-target organisms that might be affected are other leaf-eating lepidopteran caterpillars present at the time of application. Since susceptibility to B.t. varies from one species to another, the effects on these other organisms could range from no effect to mortality, depending on the susceptibility. Those lepidopteran species that are not feeding in the forest canopy for the few days that B.t. is active are physically removed from any possible effects.

How effective is B.t.?

B.t. works best on small gypsy moth caterpillars (5/8 inch in length or smaller), so the earlier B.t. is applied after egg hatch, the more effective it will be. B.t. provides the best foliage protection when used to treat gypsy moth populations of 1,000 egg masses per acre or less. B.t. is easily rendered ineffective by sunlight, so its effectiveness lasts for only 3 to 10 days. More than one application may be needed if egg hatch is prolonged over a long time. In Delaware, egg mass density reduction can average between 50 % and 90% during any given year. Defoliation damage is typically kept to less than 30% of the tree's foliage, but results are strongly influenced by the weather conditions at the time of application. Cold temperatures and rain can reduce the effectiveness of B.t.

Is B.t. safe to the environment?

B.t. is the most environmentally safe insecticide commercially available for gypsy moth control. Numerous studies over the past 20 years have shown that B.t. has no adverse effects on humans, animals, fish, birds, or other organisms. This lack of toxicity has caused the U.S. Environmental Protection Agency to exempt B.t. from any residue tolerance requirements on raw agricultural commodities. B.t. spray-drops on cars will wash off easily and will not spot the finish.