

Cascade Charter Township
Gypsy Moth Post-Spray Evaluation

Conducted: 6/17/19
 By
 Aquatic Consulting Services LLC

Block #	Acres	Spray Result Observations
Cas01	45	Excellent results. Evidence of feeding cessation and caterpillar mortality. Little evidence of defoliation.
Cas02	34	See above.
Cas03	60	Overall very good results. Evidence of feeding cessation and caterpillar mortality. A few trees with $\approx 10\%$ defoliation, but the vast majority showed minimal defoliation. Nuisance level should be low.
Cas04	160	Very good results. Defoliation was $<10\%$ in the vast majority of trees. A few trees did see 20-25% defoliation, but evidence of feeding cessation and caterpillar mortality was obvious throughout. Nuisance should be low.
Cas05	178	Overall good/very good results. Little evidence of damaging defoliation, most trees $<10-20\%$. Evidence of feeding cessation.
Cas06	127	Very good results overall. Few trees with $>10\%$ defoliation. Evidence of feeding cessation and caterpillar mortality.
Cas07	53	Excellent results. Most trees showed minimal defoliation and caterpillar mortality was evident throughout.
Cas08	151	Good/very good results overall. A few trees with $\approx 10\%$ defoliation. Evidence of feeding cessation and caterpillar mortality was common. Nuisance level should remain low.
Cas09	146	Good results overall. Evidence of caterpillar mortality and feeding cessation was visible throughout. A few trees did sustain 20-25% defoliation, but feeding cessation was notable, so further defoliation is unlikely. Nuisance level should be low, but remnant population levels could still be visible through the summer.
Cas10	79	Good results overall. Most trees saw $<10\%$ defoliation. A few trees in one area outside of the spray block did see $\approx 25\%$ defoliation, but this level of feeding is not overly damaging. Nuisance level in the surrounding area may be slightly elevated, but tree damage is not a concern.
Cas11	807	A large spray block with varied conditions. Overall, good/very good results. The vast majority of trees experienced $<10\%$ defoliation, and feeding cessation was evident. A few trees along Whitneyville Ave did see 25-50% defoliation. While this is not ideal, this level of defoliation should not cause long term tree damage. Caterpillar mortality was notable in all areas as well. Nuisance levels should be fairly low overall. The lack of a spray program in the adjacent Caledonia township may have contributed to some re-infestation in the southern areas of the block post-spray.

Cas12	60	Excellent results overall. Evidence of caterpillar mortality and feeding cessation was evident throughout. Most trees saw <10% defoliation.
Cas13	12	Excellent results. Caterpillar mortality was notable. Some post-spray re-infestation is possible from the adjacent Caledonia Township. However, nuisance level should remain low.
Areas Outside Spray Blocks	NA	Few areas outside of spray areas showed any notable feeding or defoliation. One area north of spray block Cas10 did show elevated defoliation and should be an area of interest in future surveys.

The overall spray program was highly successful in Cascade for 2019. As I'm sure you are aware, gypsy moth populations across West Michigan have grown to alarmingly high numbers over the past few years. The goal of any gypsy moth suppression program is not to eradicate the gypsy moth populations (which is impossible), but to reduce the likelihood of long-term tree damage and ideally, reduce nuisance levels. This is accomplished through an integrated pest management (IPM) strategy, which focuses on techniques with the lowest possible ecological footprint (use of *Bacillus thuringiensis* bacterial insecticides, focused surveys and spray timing). This strategy also relies on assistance from environmental controls such as the gypsy moth specific fungus, virus, and parasitoid wasp that will help to reduce populations to near undetectable numbers. Fortunately, the conditions this year have been favorable for the growth of these environmental controls, so populations should be on a downward trend for the next few years. This said, you will see that several of the spray blocks saw some level of defoliation. This is expected in all years where gypsy moth populations are active, due mainly to the fact that the caterpillars must be actively feeding for the B.t. to be effective. The application of B.t. is intended to be ~80% effective under ideal conditions. Frequent rain events made spray timing challenging again this year, but I was confident spray timing and caterpillar development was as good as possible this season, and the post-spray evaluation has confirmed that.

The conditions this spring were again, quite abnormal. This just reinforces the ability to adapt quickly to seasonal and annual variations. While the gypsy moth populations appear to be on a downward trend, I encourage Cascade Township not to let their guard down. At this point monitoring is vital to reduce the chance of a rebound in the populations. The rapid changes in gypsy moth infestations through the recent cycle were challenging but not unprecedented, and the proactive survey and spray methods we use have been proven to be the best approach for enduring these spikes in gypsy moth populations.