Town of Red Hook 2025 Spongy Moth Prognosis

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Spongy moth in Red Hook

The spongy moth defoliated trees in many areas of the Hudson Valley in 2023 and in 2024 and the Town of Red Hook was no exception. You may well have seen many caterpillars and leafless trees in your yard or neighborhood. The New York State Department of Environmental Conservation spongy moth defoliation aerial survey (hereafter DEC. Figure 1a, b) reported defoliation in 2023 only in the southeastern portion of the town. More extensive defoliation was reported by DEC in 2024, again in the east but now also in the south central to southwestern area of the town. However, the more westerly portions of the town, as well as much of the center other than the south, were not reported as having any defoliation in 2024.



Figure 1. New York State Department of Environmental Conservation spongy moth aerial defoliation survey of the Hudson Valley in a. 2023 and b. 2024, with the general location of the Village of Red Hook circled. The threshold value for recording a location as being defoliated was not reported. If the defoliation threshold was relatively high (e.g., >40%), then lower levels of defoliation that may well have been apparent from the ground may not have been recorded as defoliated in their survey. Credit: DEC Media Releases, 2023, 2024.

So what is the current situation in the areas that have been reported by DEC as defoliated two years in a row, or were defoliated only last year, or were not reported as defoliated in either year? Is the outbreak over with little or no likelihood of defoliation in 2025? Is the outbreak still going on, and if so, what are the prospects for 2025 defoliation and beyond? And since the history of defoliation in the town has been far from uniform east to west and north to south, what should these different areas expect?

To help try and answer these questions we did a field trip to the Township of Red Hook and the northwestern area of the Town of Rhinebeck at the beginning of March this year, before egg masses hatch in late April/early May.

What we did and why we did it

We sampled numerous (mostly) oak trees – the preferred host plant of spongy moth – at 9 locations across western, central and eastern Red Hook and northwestern Rhinebeck, more or less covering areas from the north to the south, and encompassing areas with different histories of defoliation as reported by DEC. We sampled accessible egg masses <6' above the ground on each tree where we could distinguish old egg masses that hatched in 2024 (and likely some 2023 remnants) from new egg masses that will hatch this spring. We did this by gently pressing the egg mass. Old masses are 'spongy' to the touch; new masses are firm. We recorded the number of old and new egg masses <6' above the ground per tree. The ratio of new to old egg masses is a useful indicator of the trajectory of the outbreak. For example, many new masses and no or few old masses indicate a rising moth population; whereas many old egg masses and few or no new egg masses indicate moth population collapse. We also counted the total number of egg masses visible above 6' which could be old or new as they cannot be distinguished from afar. This is also a useful index. In low densities at the start of outbreaks, spongy moths mostly lay egg masses at the base of trees, but they will lay them all over the tree as the moth population explodes, and the old masses up the tree remain visible for a year or more. We also recorded evidence of parasitism by a small parasitic wasp, *Ooencyrtus kuvanae*, which lays eggs in spongy moth eggs and leaves traces of its success as tiny emergence holes in the scale hair covering of new egg masses. This wasp becomes more and more abundant as an outbreak progresses and is a good indicator of the abundance of natural enemies of the moth that help end outbreaks.

What we found

In eastern Red Hook, our survey of two locations on private property indicated outbreak collapse with a low likelihood of any significant defoliation in 2025. This area was recorded by DEC as having been defoliated in 2023 and 2024. There were no or few new egg masses and many old egg masses. The same situation was apparent in an adjacent, westward part of the Town of Milan where we already had observations. The collapse in Milan also more or less followed what we <u>recorded in detail at Cary</u>. Institute in central Dutchess County – a fungal epidemic, a virus and starvation killed most caterpillars; very few females survived to egg-laying adults. Two back-to-back years of defoliation are often sufficient to cause a moth outbreak to end, and the fungal epidemic of 2024 was likely a key part of the collapse. Our expectation is that while eastern areas of the town may still see spongy moth caterpillars, they will not be particularly numerous and there will not be any significant defoliation in 2025 (and until the next outbreak!). Residents in this area can very likely relax and not worry, except for checking to see that their trees made it through the onslaught, and where feasible, helping those trees that got defoliated deal with

any additional stress. Feel free to check out the <u>Spongy Moth Chronicles</u> for information on spongy moth and tree health, and watch for the 2025 update on how previously defoliated trees in the forest at the Cary Institute are coping that we will tell everyone about in late spring.

In central areas of Red Hook, one site at Sawkill Trail that was not recorded by DEC as having been defoliated in 2023 or 2024 had an isolated oak tree with sufficient new egg masses for defoliation but no old egg masses. This might have been the result of immigration via larval ballooning on silk from other areas. Other trees at that site had no old or new egg masses. Two additional sites in the area, Cookingham East and Cookingham West, which were not recorded by DEC as being defoliated in 2023 or 2024 (Cookingham West was recorded by one of us as having a low level of defoliation in 2023) had ongoing outbreaks in plantations of scarlet oaks with many new egg masses and some indications of old masses (remnants). These sites appear likely to experience significant defoliation in 2025. In contrast to the East where the outbreak seems to have collapsed, the outbreak in this area of central Red Hook appears to be continuing.

In the northwest close by the Hudson River, two sites (Tivoli Bay Multiple Use Area and Blythewood at Bard, Red Hook) that were not recorded as defoliated by DEC in 2023 or 2024 had a few new egg masses and a few old egg masses, hence a low likelihood of defoliation in 2025. There was no clear indication of an outbreak either increasing or collapsing. It is possible that the spongy moth in these areas was the result of immigration from the east and the future trajectory in those locales is uncertain; they may increase or peter out. In contrast, of three other westerly sites recorded by DEC as having been defoliated in 2024, one site (Poets Walk, Red Hook) showed signs of population collapse with few new egg masses and many old egg masses; a second site in northwest Rhinebeck (River Road, Rhinebeck) indicated new establishment via larval immigration onto isolated oak trees with potential for localized defoliation (some to many new masses, no old masses); and a third site in northern Rhinebeck (Ferncliff) indicated imminent collapse with many new and many old egg masses but with potential for some 2025 defoliation. Overall, these western locations varied considerably from place to place with respect to that state of the moth population, its trajectory and the likelihood of 2025 defoliation. Nevertheless, it appears that areas recorded by DEC as defoliated in 2024 are more likely to have collapsed or be collapsing than areas that were not recorded as having been defoliated.

It is worth noting that we found evidence of high levels of egg parasitism by the wasp, *Ooencyrtus kuvanae*, at all locales. This was expected. Although it takes two to three years for the wasp population to catch up with the spongy moth population, eventually it does, and it then contributes to the downfall of the moth. In contrast to egg masses at the start of an outbreak that will have low egg parasitism, the same few masses will now have high rates of parasitism. More importantly, the wasp and other insect parasites of larvae and pupae are highly mobile, which bodes well for them to get to otherwise isolated moth populations and contribute to their demise.

Summary

It would appear that the spongy moth outbreak has collapsed in the east, appears to be collapsing in south central areas, but may well be ongoing in parts of the center. The west ranges from isolated populations that may grow or peter out, to sites that may be rising, to sites that are collapsing. The outbreak in the center and the west is not yet over and there is a lot of variability from place to place. This kind of spatial variability over time is to be expected until all locales have boomed and busted or winked out! So be prepared for some defoliation even though this is likely to be quite patchy and not as extensive as was the case in 2024. It would also appear the outbreak has collapsed in areas reported by DEC as being defoliated two years in a row; is either ongoing but showing signs of imminent collapse or has collapsed in areas where DEC reported defoliation in 2024 only; and is quite variable where no defoliation has yet been recorded by DEC, encompassing areas with small, isolated moth populations and a low likelihood of defoliation, to areas where an outbreak is ongoing and defoliation is likely.

Stay tuned for our forecast for Dutchess County and the Hudson Valley in late April. For more information on the spongy moth, including homeowner control options, go to the Cary Institute of Ecosystem Studies spongy moth information

https://www.caryinstitute.org/topics/spongy-moth.

For further information or if you have questions, please contact <u>qullienl@caryinstitute.org</u>





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