

Forest Health Highlights Vermont 2024

Forest Insects and Diseases

Asian Longhorned Beetle

Asian longhorned beetle (*Anoplophora glabripennis*; ALB) is an introduced and ecologically harmful (invasive) wood-boring beetle of a variety of hardwood species including, but not limited to, maples, horse chestnut, willows, American elm, birch and sycamores. This insect has not been detected in VT. As part of early detection efforts, six ALB combination pheromone traps were deployed statewide in mid-summer. No ALB were trapped this season.

Balsam Woolly Adelgid

Damage from balsam woolly adelgid (*Adelges piceae*; BWA) is routinely observed in our annual aerial detection surveys. In 2024, BWA-induced mortality was observed on 2,193 acres in Vermont. Fluctuations in soil moisture due to drought and/or excessive precipitation may be contributing to the increase of mortality.

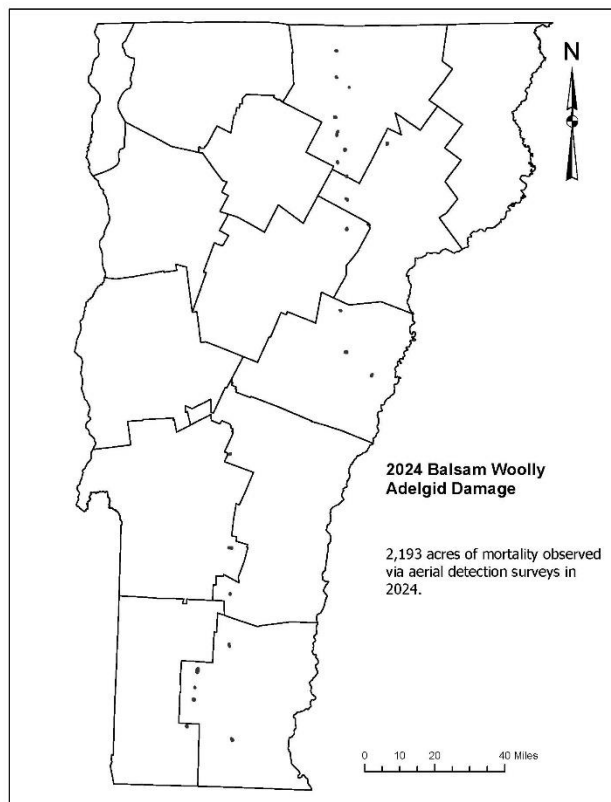


Figure 1. Tree mortality due to balsam woolly adelgid in 2024. A total of 2,193 acres of mortality were observed through aerial detection surveys.

Beech Bark Disease

Dieback from beech bark disease, caused by *Cryptococcus fagisuga* and *Nectria coccinea* var. *faginata*, was mapped on 19,959 acres in 2024, a large increase from 2,154 acres mapped in 2023. Bark symptoms remain common and crown symptoms including early yellowing and dieback were increasingly noticeable by mid-summer.

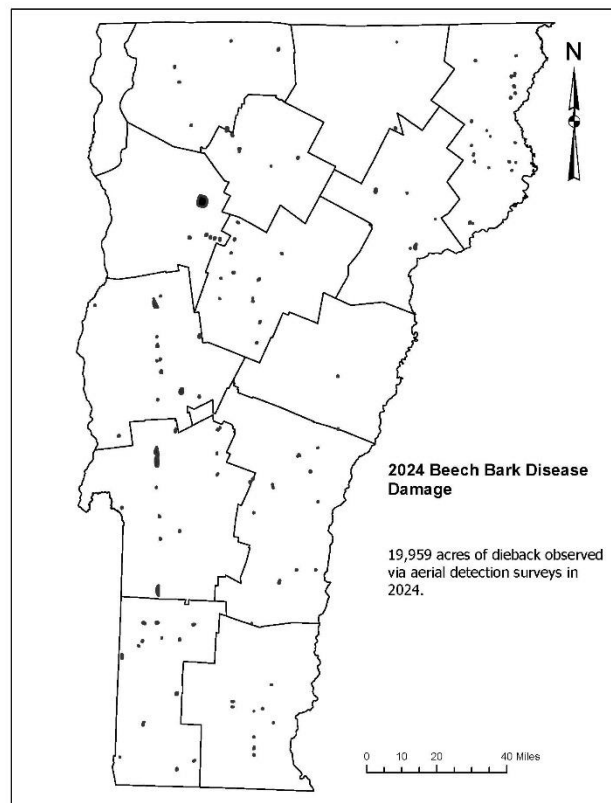


Figure 2. Locations of beech bark disease mapped during 2024 Aerial Detection Surveys. In total, 19,959 acres were affected by the disease complex.

Beech Leaf Disease

Eight long-term Beech Leaf Disease (BLD) monitoring sites were established across Vermont in 2021 and are monitored annually. Beech leaf disease affects all species of beech trees and causes leaf deformation, dieback, and mortality of infested hosts. The causal agent of BLD is an introduced nematode, *Litylenchus crenatae mccannii*. This pest can affect all ages and sizes of beech, being most deadly to saplings and understory beech. BLD was not observed in our monitoring plots but was observed in forty-three new towns in 4 new counties in 2024, expanding the infestation area to Bennington, Chittenden, Orange, Windham, and Windsor counties.

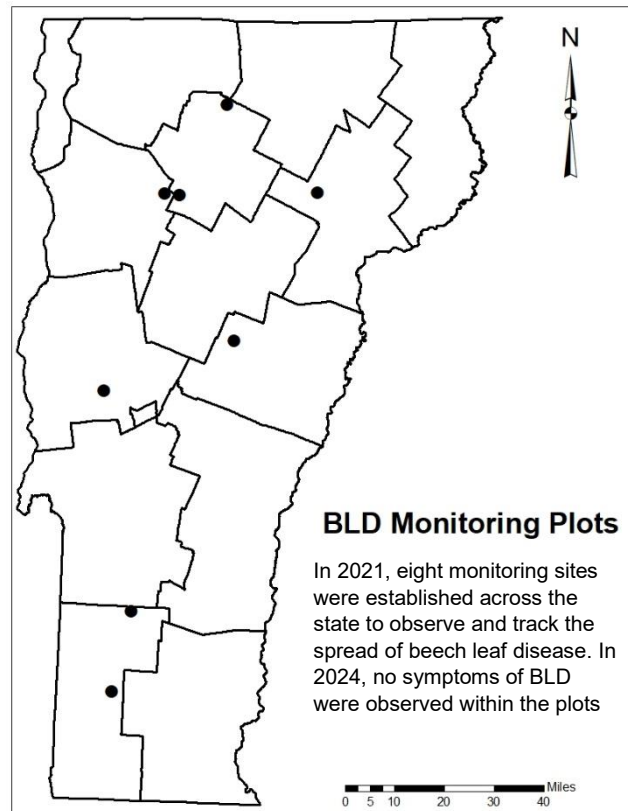


Figure 3. Locations of 8 beech leaf disease (BLD) monitoring plots in Vermont. Plots were established on public land in Addison, Bennington, Caledonia, Chittenden, Lamoille and Orange Counties in 2021. In 2024, no symptoms of BLD were observed within the plots.

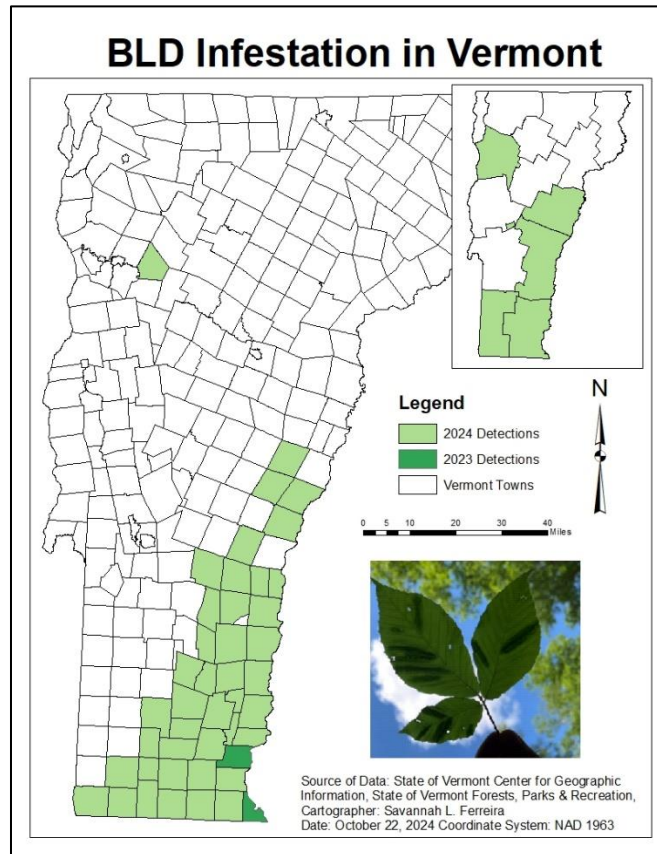


Figure 4: Towns in Vermont where beech leaf disease (BLD) has been confirmed. Forty-three new towns in 4 new counties were confirmed to have BLD in 2024.

Emerald Ash Borer

After first detecting emerald ash borer (EAB) in Vermont in 2018, efforts have been made across the state to identify new detections, and to track the spread of the current infestation. In 2024, a total of 12 purple prism traps were established and monitored by a state forestry staff. Girdled trap trees were also established by state forestry staff on state lands ($n = 18$). Detections have now been found in a total of 88 towns. Essex county is currently the only county in the state without a confirmed detection. A total of 6,745 acres of ash mortality due to EAB were observed through aerial surveys in Franklin, Grand Isle, Orange, Washington, Windham and Windsor counties.

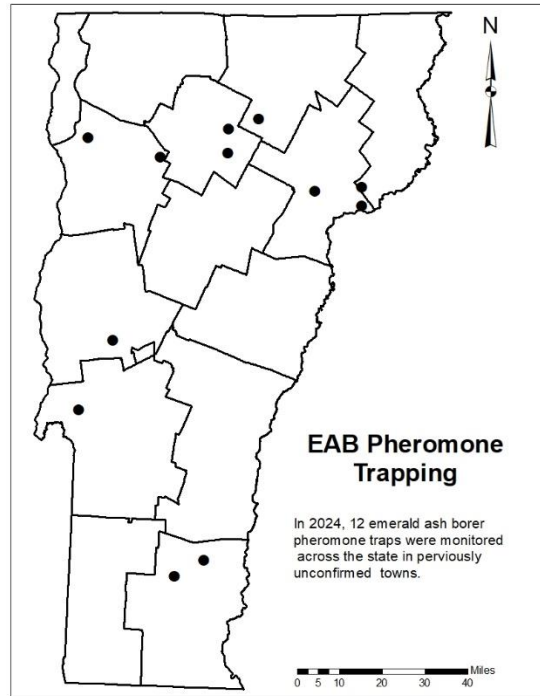


Figure 5. Locations of emerald ash borer (EAB) purple traps in Vermont in 2024. Traps were deployed in Addison County (n=1), Caledonia County (n=2), Chittenden County (n=2), Essex County (n=1), Lamoille County (n=2), Orleans County (n=1), Rutland County (n=1), and Windham County (n=2).

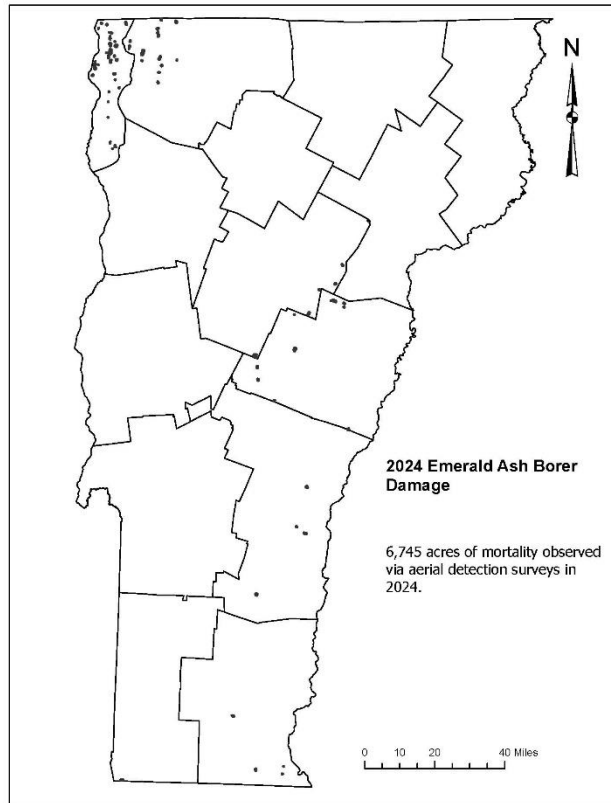


Figure 6. Mortality due to Emerald Ash Borer in 2024. A total of 6,745 acres of mortality were mapped via aerial detection surveys.

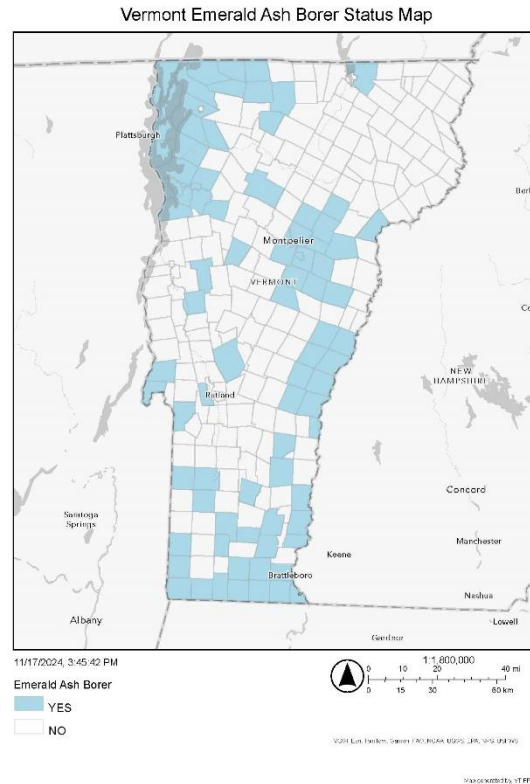


Figure 7. A total of 88 towns in Vermont have been confirmed to have EAB present as of 2024. All counties except for Essex county in northeastern Vermont have had confirmations.

EAB Biocontrol

EAB biocontrol releases began in 2020 at two sites in Vermont, and as of 2024 a total of 6 sites have had EAB biocontrol releases. All sites, with the exception of one site in Fayston, VT, have received all releases available and will be monitored for parasitoid establishment in the winters of 2024 and 2025. Additional sites in counties that have not received parasitoids are being submitted to USDA-APHIS for consideration for the 2025 release season.

Elm Zigzag Sawfly

Elm zigzag sawfly (*Aproceros leucopoda*; EZS) was first confirmed in Vermont in 2023 in the northwest corner of the state. This introduced defoliator has caused full defoliation of American elm and Siberian elm trees in portions of the state. While present in 3 counties in 2023, EZS was confirmed in ten new counties in 2024, extending the number of counties in Vermont with EZS to thirteen. Although no mortality has been observed due to EZS in Vermont, it is new to the area and we will see how severe its impacts are in the coming years.

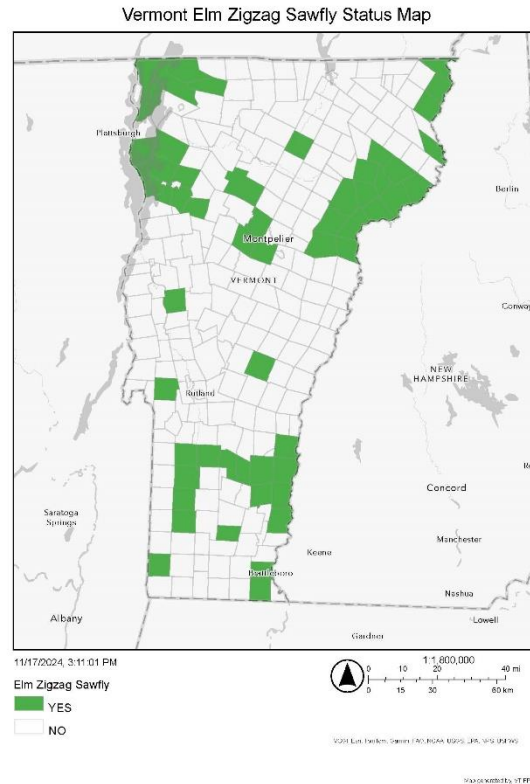


Figure 8. Elm zigzag sawfly (EZZS) confirmed towns in Vermont as of 2024. Orange county is the only county in the state without a positive confirmation of EZZS.

Forest Tent Caterpillar

Forest tent caterpillar (FTC, *Malacosoma disstria*) is a native hardwood defoliator commonly found feeding on sugar maples and ash in mixed hardwood forests. In consecutive years of severe outbreaks, trees may experience complete defoliation which can lead to dieback and mortality of infested hosts. To track population outbreaks, pheromone traps for FTC were deployed statewide in mid-summer. In 2024, the number of moths per trap averaged 0.03, evidence that populations are continuing to decrease in Vermont following a 2016-2018 outbreak.

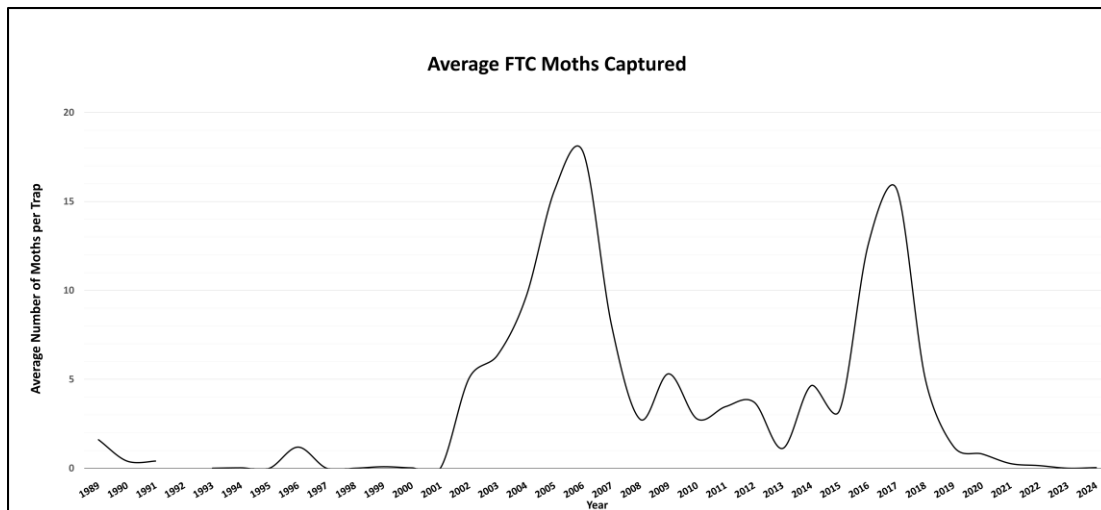


Figure 9: Average number of forest tent caterpillar moths per trap over time.

Spongy Moth

Vermont experienced a significant outbreak of spongy moth caterpillars (*Lymantria dispar dispar*) from 2021-2023. The outbreak came to a close after receiving sufficient precipitation that helped fungal and viral controls to become more active. Despite this, tree mortality from the outbreak was mapped on 3,489 acres in 2024.

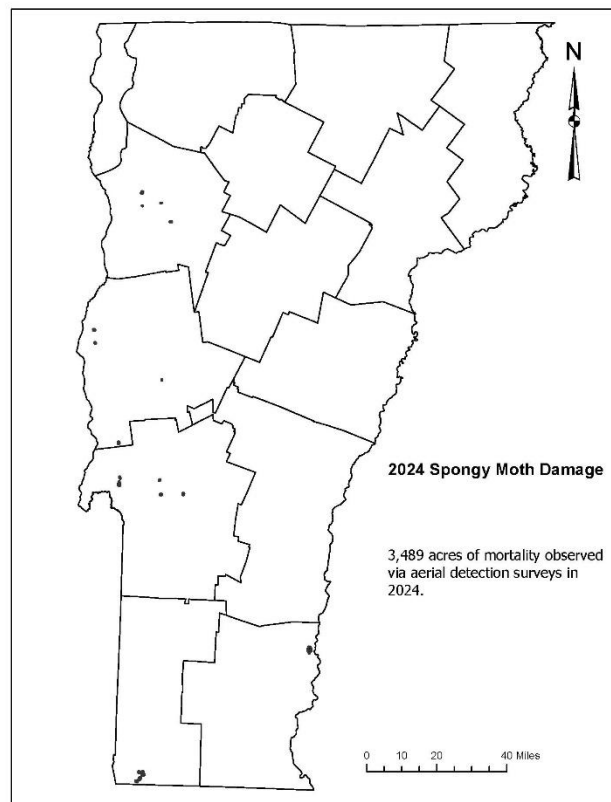


Figure 10. Tree mortality from the 2021-2023 spongy moth outbreak was observed on 3,489 acres in 2024.

Spongy moth egg mass surveys have been completed for 2024 from our 9 long-term monitoring plots, and numbers were found to be lower than 2023 with an average of 0.28 egg masses per 1/25-acre plot, compared to 261.7 egg masses per 1/25-acre plot during the peak outbreak in 2021.

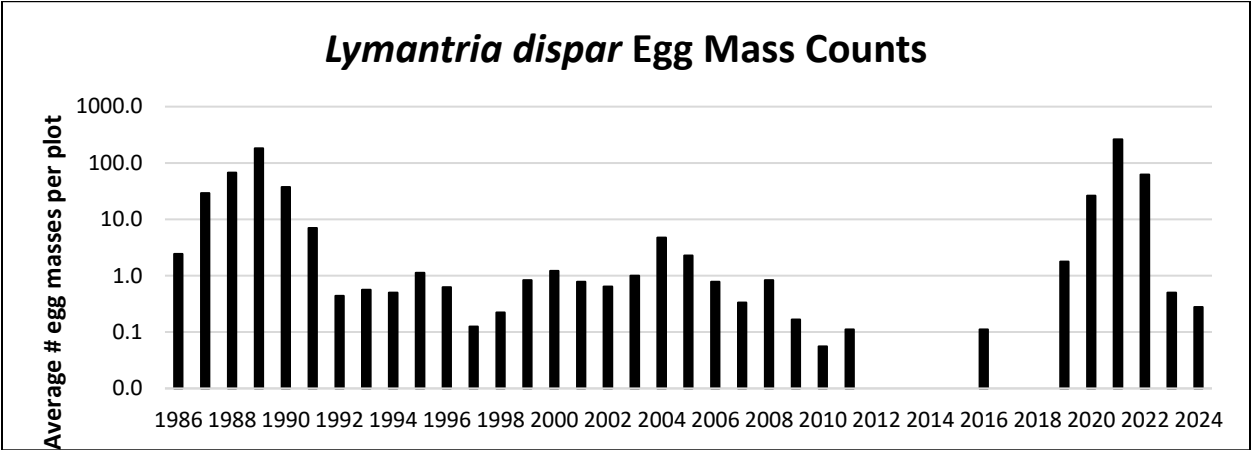


Figure 11. Spongy moth egg mass counts from long-term monitoring plots (*n* = 9) in Vermont.

Hemlock Woolly Adelgid

Hemlock Woolly Adelgid (*Adelges tsugae*; HWA), continues to threaten hemlock trees in southern Vermont, especially in combination with drought and elongate hemlock scale. Traditionally infested sites are still infested, with five new towns observed along the northwestern leading infestation edge. As of 2024, known infested counties include Windham, Windsor, and Bennington counties.

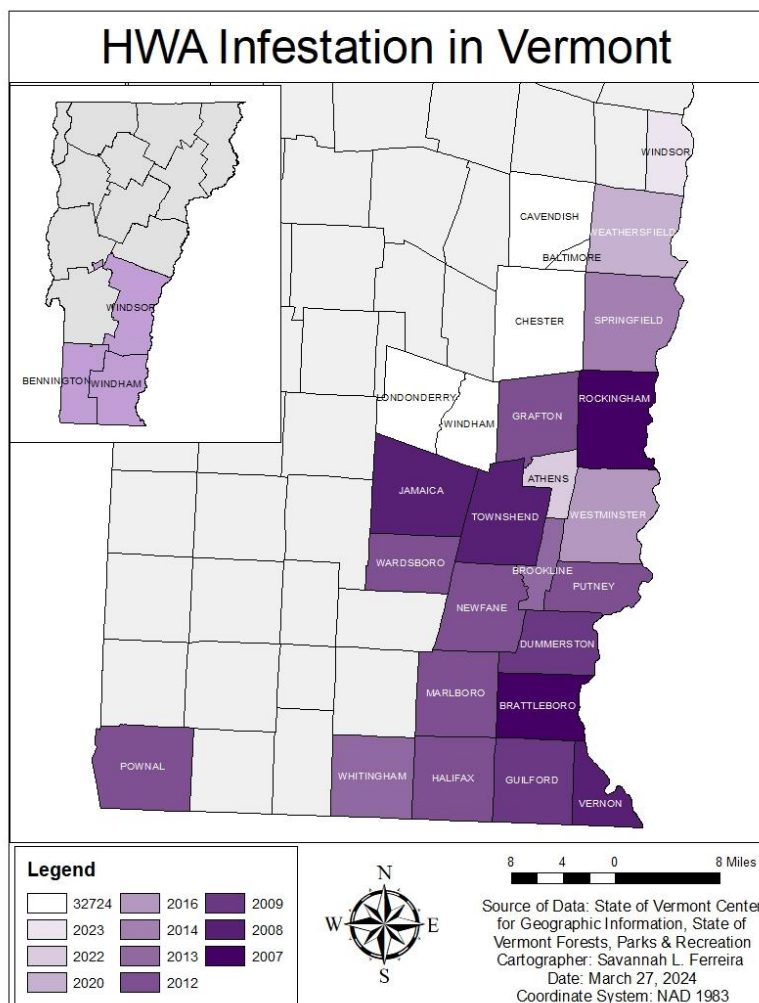


Figure 12. Map of hemlock woolly adelgid infestation by year in Vermont.

We continue to maintain five HWA impact monitoring plots. Biocontrol efforts continue in 2024 with an expected 1200 predatory beetles (*Laricobius nigrinus*) to be released at Townshend State Park. Additionally, 2024 marks the first year the *Laricobius osakensis*, another HWA predator, will be released in Vermont. An expected 1100 *L. osakensis* beetles are expected to be released.

Thirty-seven percent of the HWA examined during the annual winter mortality survey were dead. Winter temperatures were warmer than 2023, however temperature fluctuations in late winter could have contributed to winter mortality by killing otherwise surviving HWA before they could reproduce. We have often found infestations in new locations following years with mild winters and low levels of HWA mortality, a trend evident with the 2024 new town confirmations.

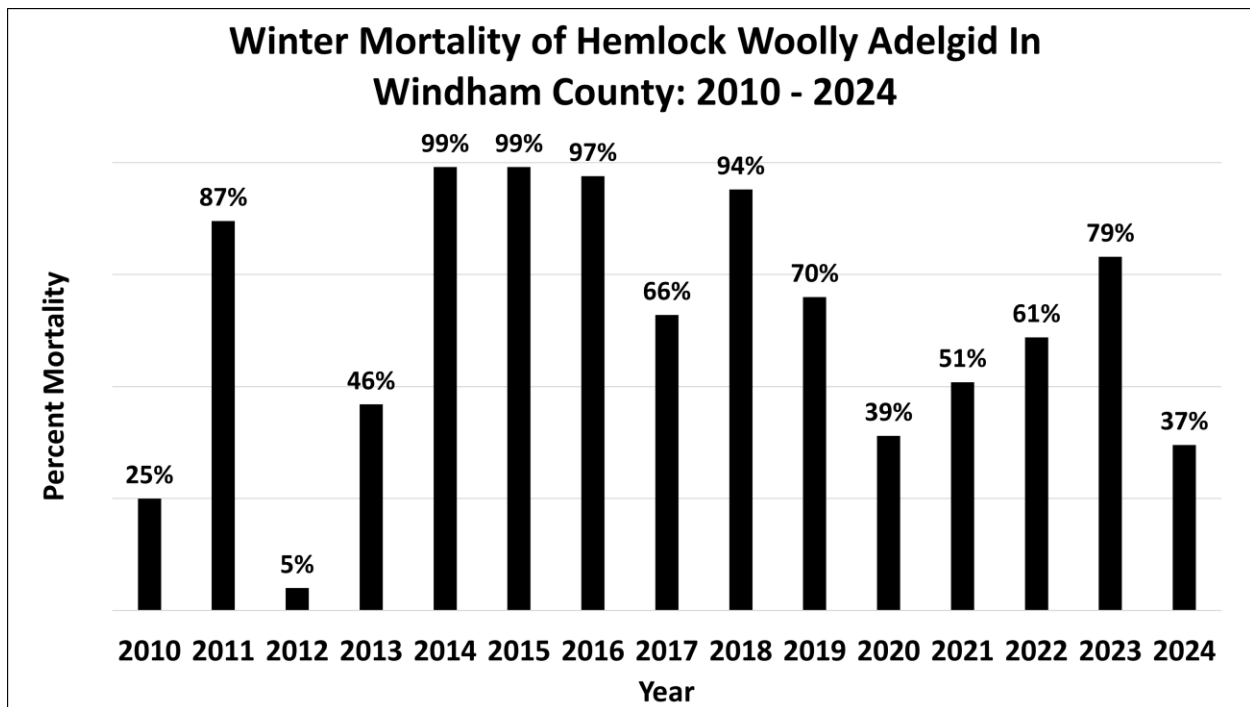


Figure 13. Average overwintering mortality of hemlock woolly adelgid at four sites in Windham County, 2010-2024.

Spruce Budworm

Spruce Budworm (*Choristoneura fumiferana*, SBW) are native softwood defoliators of fir, spruce and occasionally larch, pine and hemlocks. In consecutive years of severe outbreaks, trees may experience complete defoliation which can lead to dieback and mortality of infested hosts. In 2024, SBW moth trap catches in Vermont increased slightly to 10.48 moths per trap. This low trap average is evidence that an outbreak in 2025 is unlikely. However, L2 larval sampling is being conducted in our trapping areas and being sent to the University of Maine for analysis to confirm that an impending outbreak is not likely.

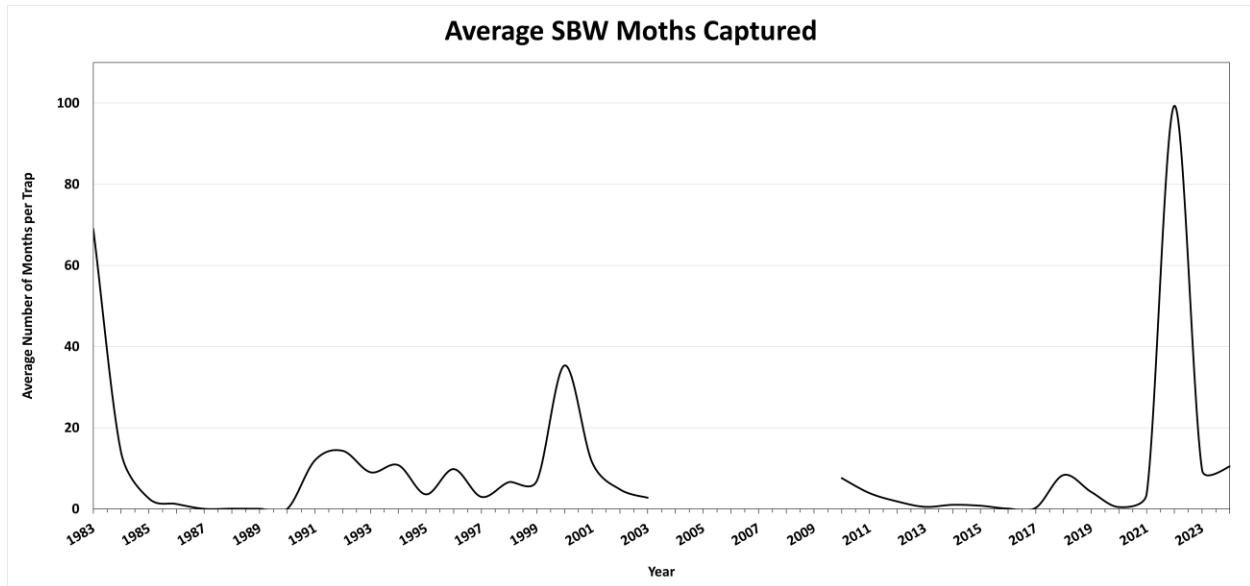


Figure 14. Average number of spruce budworm moths caught in pheromone traps 1983-2024. Trapping was discontinued, 2004-2009. Average of seven locations in 2024. Three multi-pher pheromone traps per site were used in 2024.

Saddled Prominent

Saddled prominent (*Heterocampa guttivitta*; SP) are hardwood defoliators native to the northeastern United States. Although a native insect, heavy and repeated defoliation can lead to dieback and mortality of infested hosts. Increased reports of defoliation during the growing season of 2020 led to trapping efforts to resume in 2021. To track population outbreaks, pheromone traps for SP were deployed statewide in late spring 2024. The average number of moths per trap increased slightly to 0.77. This low trap average is evidence that an outbreak in 2025 is unlikely.

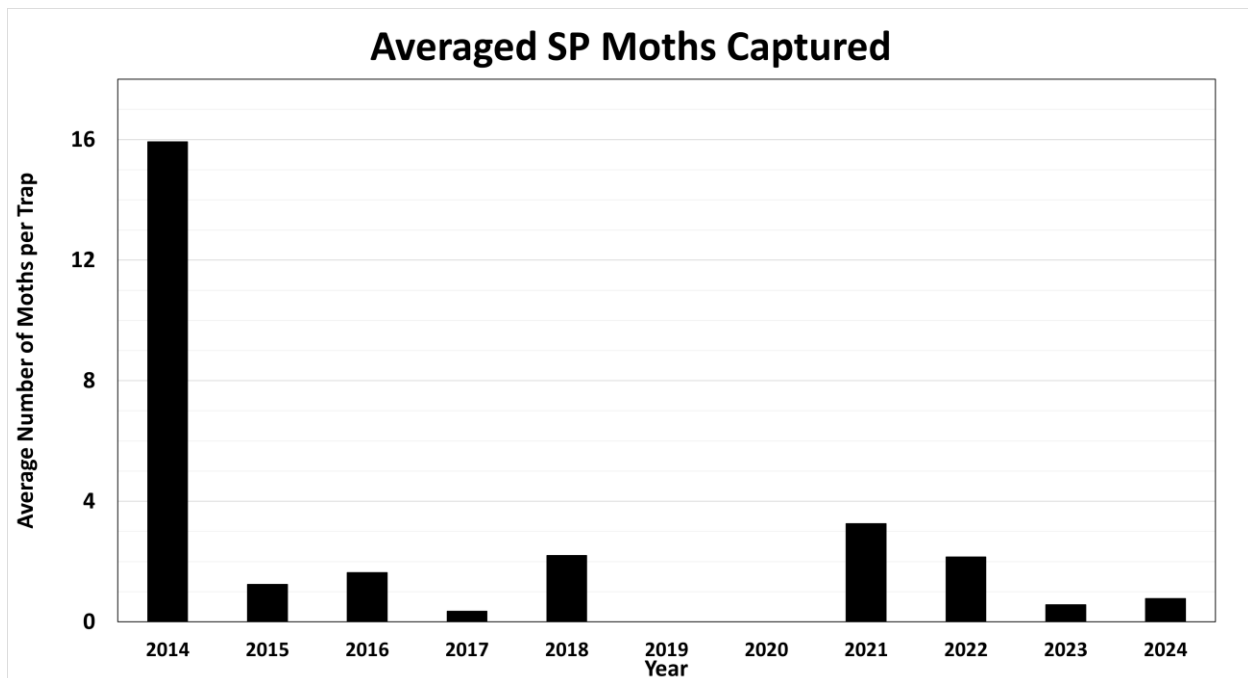


Figure 15. Average number of Saddled Prominent (SP) moths caught per trap. No trapping for SP was conducted in 2019 or 2020.

Oak Wilt

Oak Wilt, caused by the fungal pathogen *Bretziella fagacearum*, is not known to occur in Vermont. Due to recent detections in New York State, and DNA-only detections in New Hampshire, Vermont and nearby states are participating in a regional effort to monitor for this pathogen. In Vermont, the primary detection method is outreach and response to suspects submitted by the public. As a result of this effort, three oak wilt suspects were reported in 2024, none of which had symptoms consistent with oak wilt and therefore no samples were collected.

White Pine Needle Disease

White pine needle disease (WPND) is a fungal complex of four different foliar pathogens, *Bifusella linearis*, *Lecanosticta acicola*, *Lophophacidium dooksii*, and *Septorioides strobi*, that have been associated with both needle cast and needle blight on eastern white pine trees throughout Vermont. Although this is an increasingly damaging complex, individually these pathogens are not documented as causal agents of large-scale defoliation. Chlorosis (yellowing) and necrosis (browning) of 1-year-old needles from infected trees have been observed, with heavy infections causing defoliation and dieback. WPND accounted for 80,534 acres of observable damage on white pine trees throughout the state in 2023. This was the highest acreage for WPND that has ever been reported, and damage values from our long-term monitoring sites reflected this with higher yellowing and defoliation values than ever observed. The expression of WPND is linked to the amount of humidity and moisture from the previous spring (e.g., 2024 damage is influenced by 2023 weather). Spore production typically peaks in June

during shoot elongation. We expect WPND to be present again in 2025, and similarly severe compared to 2024 due to excess precipitation.

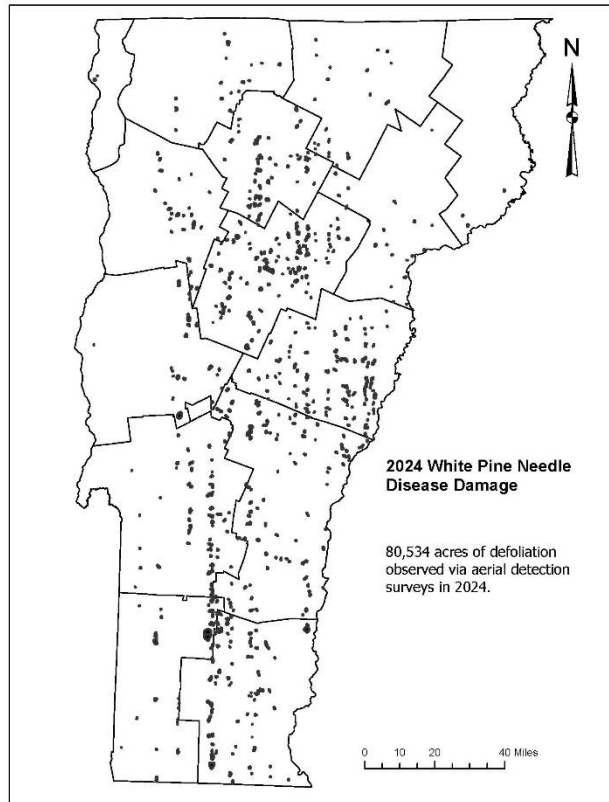


Figure 16. Defoliation from white pine needle disease (WPND) was mapped on 80,534 acres in Vermont in 2024.

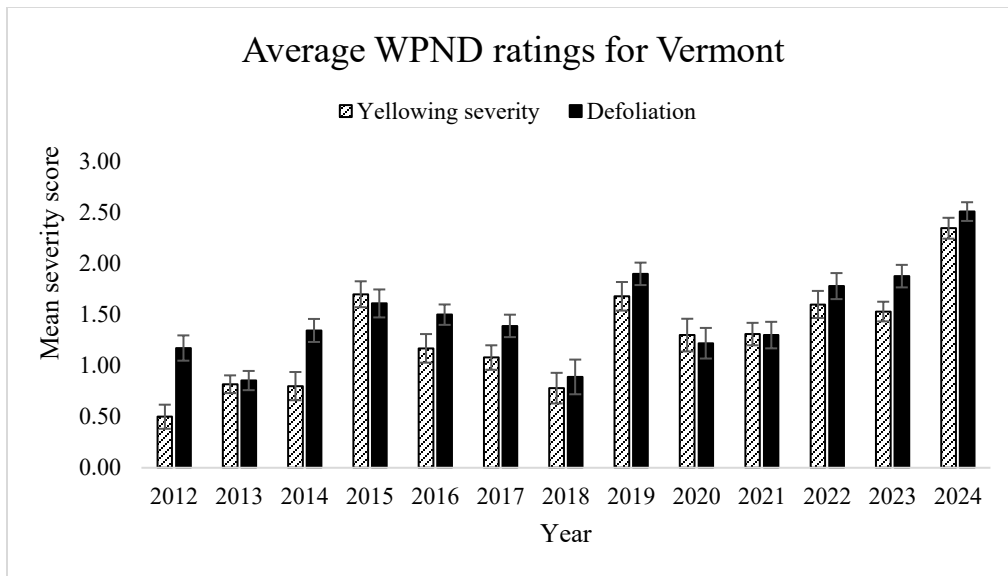


Figure 17. Average chlorosis (yellowing) and defoliation due to white pine needle disease (WPND) in Vermont.