



AGENCY OF AGRICULTURE, FOOD & MARKETS

**Public Health & Agricultural Resource Management Division**

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**Vermont Agency of Agriculture, Food and Markets**  
**Division of Public Health and Resource Management**  
**Plant Health Team Annual Report**

## Summary of 2022 Activities

<b>2022 Plant Health Annual Report Snapshot</b>
115 nurseries (13 counties) surveyed for state and federal pests
16 federal and state pests surveyed for
504 total trap samples screened for target pests
24 trap locations in 7 counties
78 individual traps
213 tissue samples collected for <i>P. ramorum</i> national survey from 10 counties
18 federal phytosanitary certificates issued (17 Canada, 1 Germany)
3 federal/state pests intercepted/detected and eradicated (Spotted Lanternfly, <i>Phytophthora ramorum</i> , <i>Trichoferus campestris</i> ). Monitoring will be implemented at select locations.
1 Identified and 1 suspect elm pest investigated
122 emailed insect identification requests answered
SLF 1 live interception, 6 dead and 1 trace forward, no established populations have been found.
6,000+ trees at 4 Vermont Christmas tree farms were inspected and certified for interstate tree sales
4 ginseng certifications were issued for a total of 29.88 green pounds and 19.34 dry pounds of ginseng
11 media interviews (TV/radio), 7 written articles (VNLA, VTinvasives, Agriview, PAR)
2 kiln certifications

<b>Boards, Councils and Committees</b>
National/Eastern Plant Board
Northeast Cooperative Agricultural Pest Survey Committee
Urban and Community Forestry Council
Food, Agriculture & Veterinary Defense Program
Invertebrate Species Advisory Group
Forest Pest Advisory Committee

## Overview of the year 2022 in Plant Health

In 2022 Vermont continued to experience a record high number of significant invasive pest species with the ongoing spongy moth outbreak; the continued spread of the ash tree killing emerald ash borer; national awareness of jumping worms with VT named as a distributor of them and efforts to prevent the establishment of the spotted lanternfly (SLF). We have one new and one suspected elm pest of Federal concern. The CAPS/PPA survey work detected one Federal pest, the oomycete *Phytophthora ramorum*, that resulted in cooperative work with PPQ for its successful eradication, and one pest of concern, *Trichoferus campestris*, that does not appear to be established in VT.

Plant Health hired a new State Survey Coordinator, Ben Dillner, who will also be the team leader for nursery work. VT had one confirmed live spotted lanternfly interception this year and are awaiting the results of the tree-of-heaven survey which will help us assess SLF risk in the state.

Plant Health worked closely with partners at USDA-APHIS-PPQ, UVM Extension and at Forests, Parks and Recreation to address these invasive species.

### Cooperative Agricultural Pest Survey (CAPS):

The Cooperative Agricultural Pest Survey (CAPS) is a federally funded pest detection program that supports the USDA-Animal and Plant Health Inspection Service (APHIS)-[Plant Protection and Quarantine](#) as it works to safeguard U.S. agricultural and environmental resources by ensuring that new introductions of harmful plant pests and diseases are detected as soon as possible. Early detection often reduces the likelihood of these pests causing significant damage. The program conducts science-based national and state surveys targeted at specific exotic plant pests, diseases and weeds identified as threats to U.S. agriculture and/or the environment. Surveys conducted through the CAPS program represent a second line of defense against the entry of harmful plant pests and weeds.

These surveys enable the program to target high-risk hosts and commodities, gather data about pests specific to a commodity, and establish better baseline data about pests that were recently introduced in the United States. The mission of the CAPS program is to provide a survey profile of exotic plant pests in the U.S. deemed to be of regulatory significance through early detection and surveillance activities.

The CAPS program also facilitates the Plant Protection Act funded surveys for Vermont. In addition to submitting survey proposals for VAAFM's Plant Health Team, plant health also works with UVM-extension's plant diagnostic clinic to identify and support supplemental pest survey proposals that are managed by UVM. Plant health works closely with the director of the plant diagnostic laboratory to select federal pests to survey for, ensure lure and trap orders are placed for those surveys, and to enter and upload survey results into the required federal database, [NAPIS](#).

### **Federal and State 2022 Pest Surveillance Target Species**

\*For more information about target pests please visit the national CAPS [website](#)

Scientific Name	Common Name	Survey Methodology	Associated Survey(s)
<i>Adelges tsugae</i>	Hemlock woolly adelgid	Visual	Nursery
<i>Anoplophora chinensis</i>	Citrus longhorned beetle	Visual	Nursery
<i>Anoplophora glabripennis</i>	Asian longhorned beetle	Visual	Nursery
<i>Fiorinia externa</i>	Elongate hemlock scale	Visual	Nursery
<i>Lycorma delicatula</i>	Spotted lanternfly	Visual	Nursery
<i>Tobamovirus Tomato Brown Rugose Fruit Virus</i>	Tomato Brown Rugose Fruit (ToBRFV)	Visual	Nursery
<i>Agrilus biguttatus</i>	Oak splendor beetle	Trap	Nursery

<i>Lymantria mathura</i>	Rosy moth	Trap	Nursery
<i>Trichoferus campestris</i>	Velvet longhorned beetle	Trap	Nursery/EWBB
<i>Monochamus urussovii</i>	Black fir sawyer	Trap	Nursery/Christmas Tree/Pine/EWBB
<i>Hylobius abietis</i>	Large pine weevil	Trap	Nursery/Christmas Tree/Pine/EWBB
<i>Ips sexdentatus</i>	Sixtoothed bark beetle	Trap	Christmas Tree/EWBB
<i>Ips typographus</i>	European spruce bark beetle	Trap	Christmas Tree/EWBB
<i>Tetropium castaneum</i>	Black spruce beetle	Trap	Christmas Tree/Pine/EWBB
<i>Tetropium fuscum</i>	Brown spruce longhorned beetle	Trap	Christmas Tree/Pine/EWBB
<i>Panolis flammea</i>	Pine beauty moth	Trap	Pine
<i>Phytophthora ramorum</i>	Sudden Oak Death	Trap	<i>Phytophthora ramorum</i>

### **Nursery and Retail Plants Pest Survey**

The 2022 CAPS Nursery Survey, a survey with visual and trapping components, was conducted to determine the presence / absence of 11 pests of federal and state concern. In addition to the visual surveys for target pests, 6 high volume nurseries agreed to participate in a trapping survey targeting 5 federal pests. Nursery locations were distributed through 6 counties.

One adult velvet long horned beetle (VLB) was identified in a sample collected in early August from a trap located in Chittenden County. A follow up visual inspection at the location was conducted, and no additional VLBs were observed. Monitoring for VLB at this location will continue in 2023. At this time, the velvet long horned beetle is not considered to be established anywhere in VT.

### **Pine Commodity Pest Survey**

The pine commodity survey was conducted to determine the presence / absence of 5 federal pests in 6 mixed pine stands in 6 counties. Locations were selected based on risk of pest introduction. Pine stands situated near places where there are high numbers of out of state visitors or traffic, such as state parks and campgrounds were chosen for this survey. Results were negative for all target pests.

### **Christmas Tree Farm Pest Survey**

The Christmas tree pest survey was conducted at 6 tree farms to determine the presence / absence of 6 federal pests. Farm locations were distributed through 6 counties. The results were negative for all target pests.

### **Exotic Wood Boring/Bark Beetle (EWBB) Survey-Plant Protection Act**

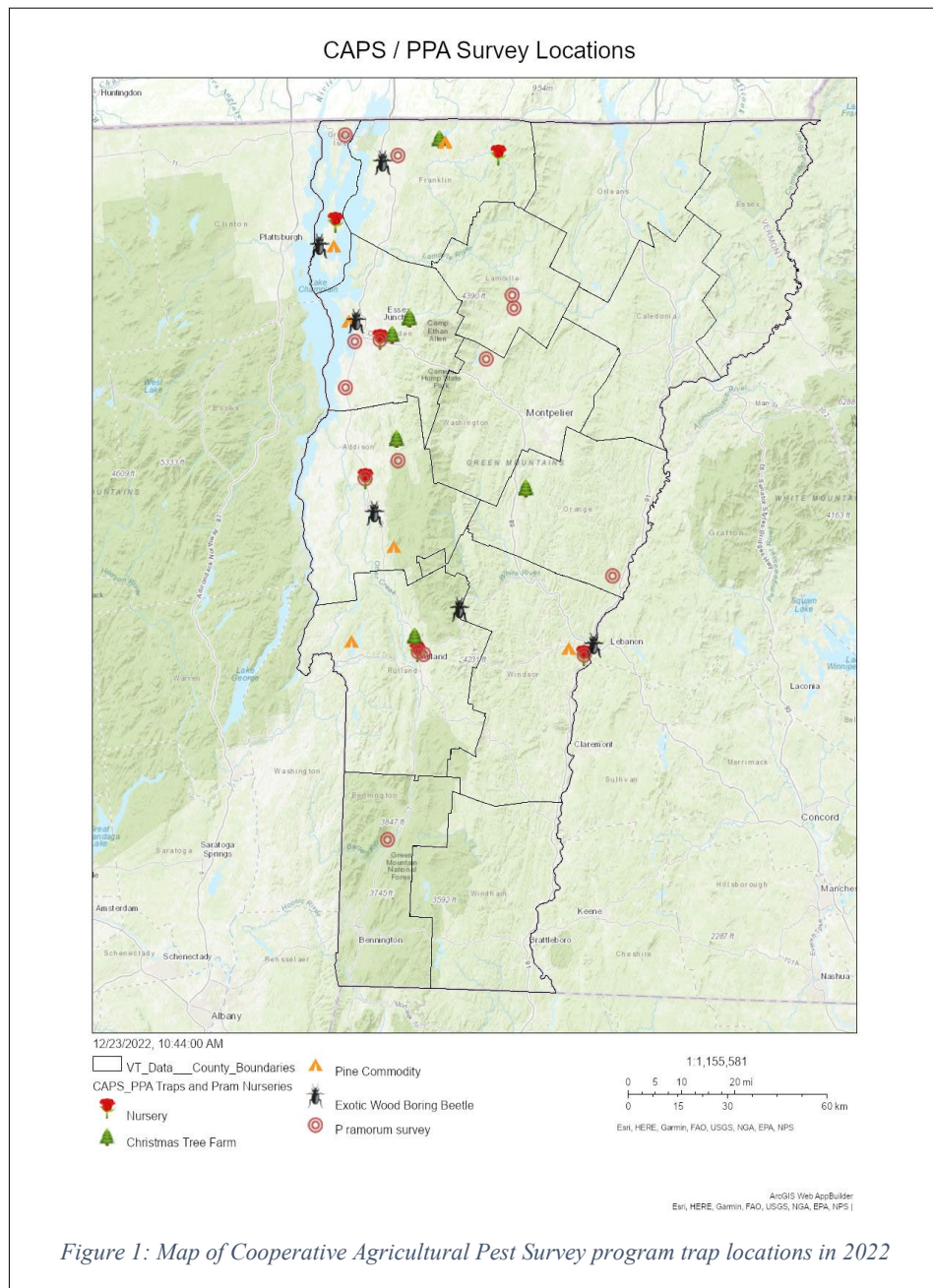
The EWBB survey was conducted at 6 locations in different counties. The national EWBB survey is a plant protection act funded pest survey and is designed to detect or delimit an infestation of exotic wood-boring or bark beetles in the United States. Seven target insects were surveyed for at locations identified as 'hotzones' based on pathway and risk analyses. The survey results were negative for target pests.

### **National Phytophthora ramorum Survey -Plant Protection Act**

The purpose of this survey was to determine whether *Phytophthora ramorum* (Ramorum blight, Sudden Oak Death), a pathogen that poses a serious threat to the nursery industry as well as to the natural landscape, is present in Vermont. Nursery and greenhouse products are important agricultural commodities in Vermont, and the key host genera for *P. ramorum*, are a significant part of that business. VT nurseries receive a significant amount of susceptible stock from out of state, including from nurseries that have in the past tested positive for *P. ramorum*, putting these businesses at continual risk for the introduction of this pathogen.

During the survey tissue samples were collected from host plants for this pathogen, including *Rhododendron spp.*, *Viburnum spp.*, *Pieris spp.*, *Syringa vulgaris* and others at 15 nurseries distributed throughout 10 counties. A total of 213 samples were processed and sent to the Pennsylvania Department of Agriculture’s Plant Pathology laboratory where molecular testing was conducted to determine the presence or absence of the pathogen.

One *Phytophthora ramorum* positive sample was detected in a leaf sample taken at a nursery located in the Northwestern region of the state during this survey. VAAFM staff subsequently supported federal PPQ officers in conducting a follow-up survey at the nursery. The second survey confirmed the presence of the pathogen in the single *Rhododendron* plant that tested positive during the first survey. The positive plant was disposed of following federal protocols and poses no ongoing threat. Ongoing monitoring and surveillance for the pathogen will be conducted by PPQ officers according to standard procedures. Plant health staff at VAAFM will support federal activities when requested/required.



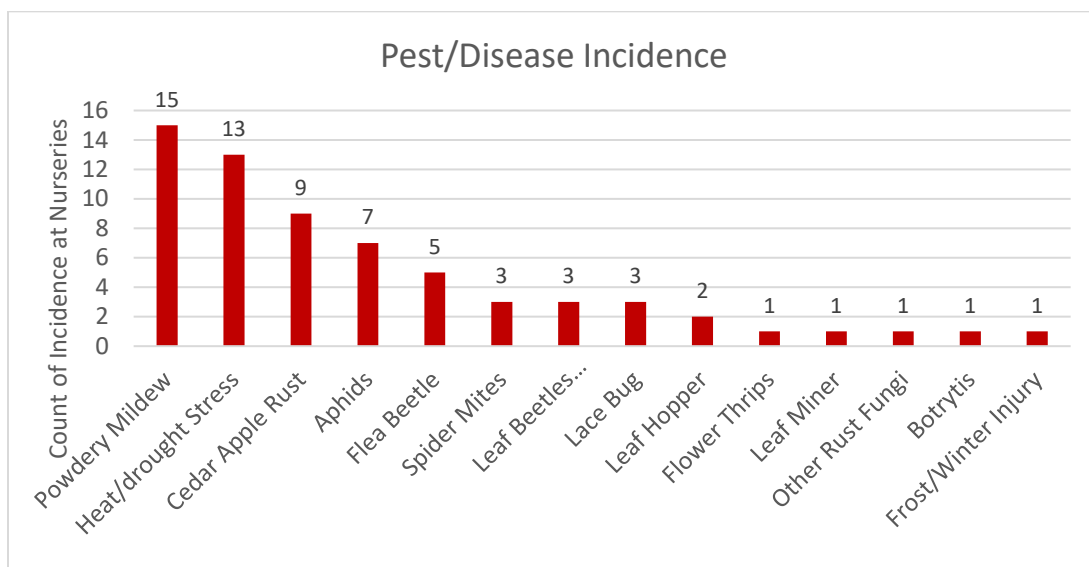
## **NURSERY REPORT:**

Inspection of Vermont's plant nurseries is a critical way of protecting our landscape and the horticultural industries. Inspection also ensures compliance with State Statutes (6 V.S.A., Chapter 206 & Chapter 84) and provides an opportunity for outreach to nursery managers. There are 542 registered nurseries in the state (this includes conservation districts and grocery stores, etc.). During the 2022 field season, Plant Health staff carried out 115 nursery inspections, primarily in the months of July through September. Inspections were conducted in 13 of 14 counties in the state with Chittenden and Addison counties having the greatest number of inspections (Essex co. has no registered nurseries).

### ***Pest and Disease Observations***

During the 2022 growing season, Vermont experienced drier than average conditions which were a continuation of a drought that began in 2020. Drought/ heat stress was observed across the state and was one of the main causes of nursery stock damage. The Plant Health team also saw decline of lilacs at several nurseries which was likely due to a combination of abiotic stress (drought and/or frost) and fungal wilts. Fruit trees, as well, showed symptoms of winter damage (dieback of entire branches) in some more northern areas. Due to the drier conditions, there was a low incidence of botrytis (gray mold) and fungal leaf spotting infections on nursery plants; however, powdery mildew and cedar apple rust were prevalent. Serviceberry, Aronia, Monarda, roses and Phlox appeared to be the most susceptible to powdery mildew.

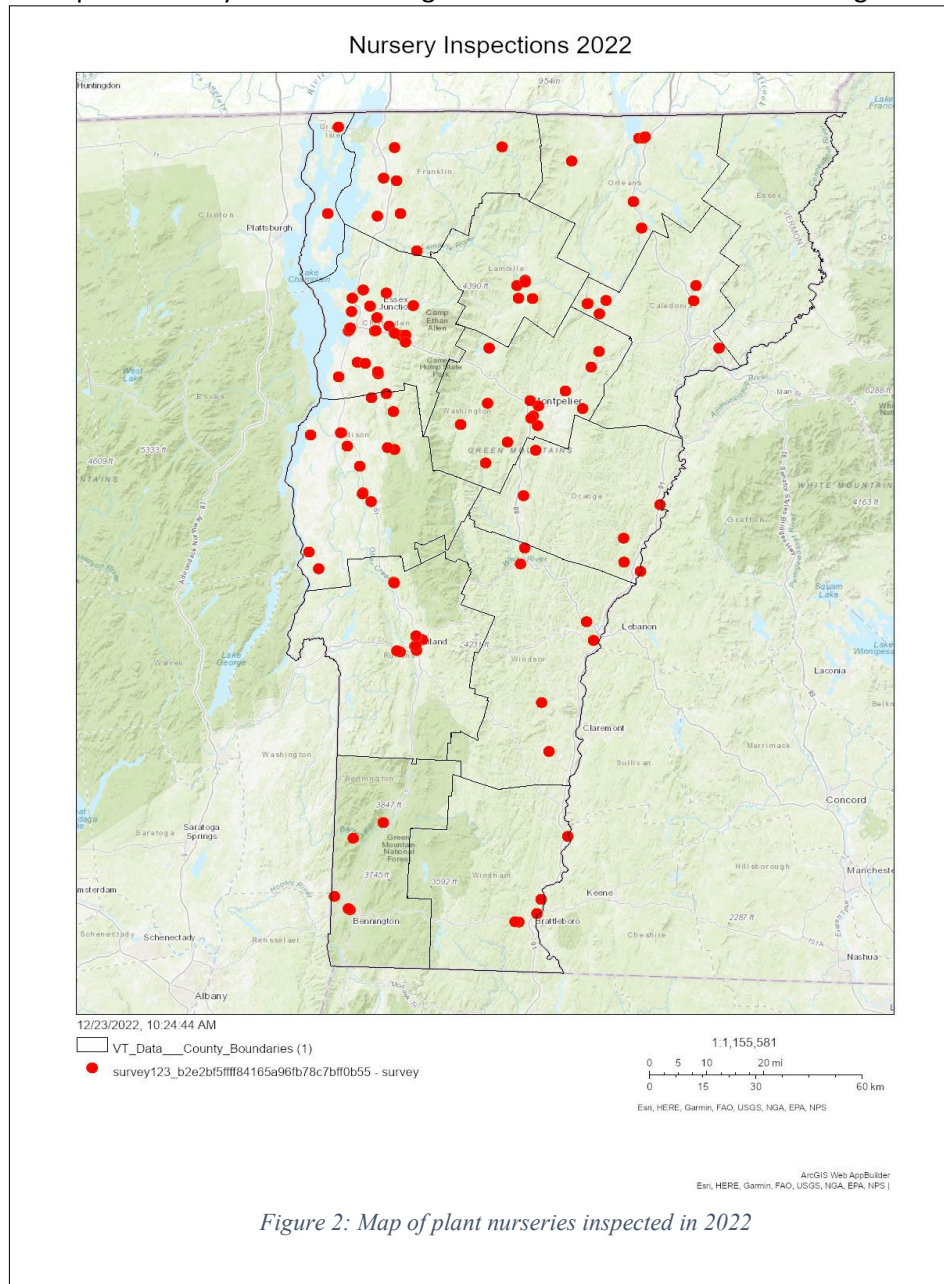
In the early summer, many nurseries reported issues with abundant aphids. The aphids infested a range of plants from hanging basket annuals to vegetables to perennials. Flea beetles, spider mites and leaf beetles were also commonly observed. No state or federally regulated pests were found to be established at any Vermont nurseries. However, there were two instances of spotted lanternfly (SLF) individuals that hitchhiked on nursery stock or vehicles used to move stock. These spotted lanternflies were either already dead or killed immediately by nursery managers. SLF is a major threat to Vermont's green industries and nursery stock coming from heavily infested states has a high risk of being an SLF vector. The jumping worm is another pest that continues to be of concern for the Plant Health team and some growers. Jumping worms were observed at several nurseries across the state, usually in the leaf litter at the edge of growing areas or in the mulch surrounding balled & burlap trees. Jumping worms can deplete organic matter in nursery substrates and customers may be concerned about purchasing plants that have infested root balls. Nurseries can use best management practices to limit spread of these earthworms and UVM researchers are exploring biocontrol treatments.





### Enforcement and Violations

Vermont Statute requires that all businesses selling more than \$1000 of plant stock maintain a nursery growers or dealers license (6 V.S.A., Chapter 206). During the 2022 season, five unlicensed nurseries were discovered. These nurseries were given a copy of the nursery rule and the registration form to become licensed; Plant Health will follow up to ensure they are licensed by spring of 2023. Nurseries are also subject to enforcement if they are selling banned noxious weeds or plants infested with regulated pests (6 V.S.A., Chapter 84). Three separate stop sales were issued to nurseries found to be selling noxious weeds, namely Norway maple (*Acer platanoides*) cultivars and hybrids. In two of the cases, the owners opted to destroy the trees on site and in the other case the owner was able to return the stock to the wholesaler (outside of VT). Plant Health staff also responded to one complaint that a nursery was selling Norway maples, but no Norway Maples were observed in their possession. In all cases, nursery owners were provided with copies of the Noxious Weed Rule and lists of prohibited plants. No fines or penalties were imposed on any nurseries during the 2022 season other than late registration fees.



## **USDA-PLANT PROTECTION AND QUARANTINE (PPQ) ENGAGEMENT**

In 2022 the State Plant Health Director (SPHD) position was held by two temporary duty personnel (TDY). PPQ supplied VAAFM with SLF traps and sticky bands. The acting SPHD in April/May participated and provided valuable input in the hiring process for the State Survey Coordinator. On the National Plant Board (NPB) level the light brown apple moth (LBAM) and chrysanthemum white rust are currently being considered for deregulation. Several states including VT objected to LBAM deregulation. On the national level, the plant disease *Phytophthora ramorum* (P ram) received a new pest risk assessment which NPB discussed; APHIS is trying a systems approach to regulating grapes from Chile; box tree moth is of great concern and PPQ and the NPB have finally negotiated a Strategic Alliance Framework for 2023.

The State Plant Regulatory Official (SPRO) participated in Eastern Plant Board quarterly meetings; attended ACO quarterly trainings; participated in 3 NPB special topic webinars including online enforcement and NPDN data access; took part in the NPB Safeguarding meeting in SC with site visits to ALB eradication sites and worked on the Goal 6 Suggestion Review for Plant Protection Act project proposals. The VT SPRO serves on the EPB Annual Meeting Agenda committee and the EPB Awards committee.

Federal regulatory incidents included an investigation of live mealworms of international origin; a minor and a major P ram trace forward; a live SLF find and the report of elm zigzag sawfly which resulted in the discovery of a different exotic elm pest. The elm zigzag sawfly has not been confirmed in VT but surveys will continue. Regional plant health threats include the chili pepper virus in ME; potato wart in Prince Edward Island, Canada; the ongoing boxwood moth and European cherry fruit fly incursions into NYS and the deregulation of *Trichoferus campestris*, a woodboring insect which has been found in nearby states.

## **STATE ENTOMOLOGIST**

There were 122 emailed insect identification requests, many of which concerned the spongy moth or fall home invading insects like the box elder bug. Other entomological responsibilities include the maintenance of the VAAFM insect collection and associated records.

The revision of the Hemlock woolly adelgid quarantine was passed. As a precautionary measure hemlock entering from quarantined areas were inspected.

Other work involved commenting on the pesticide rule, following up on insect reports and requests and continuing to cooperate with ANR's FPR on insects of mutual concern such as EAB, HWA/EHS and SLF and two new elm pests.

## **NOXIOUS WEED PROGRAM**

The noxious weed rule regulates the importation, movement, sale, possession, cultivation and/or distribution of certain plants known to adversely impact the economy, environment, or human or animal health. Discussion at institutional and individual levels took place concerning disposal of noxious weeds. The Plant Health team had meetings with representatives from the Agency of Transportation to discuss grant collaboration opportunities through the Infrastructure Investment and Jobs Act (IIJA) to address noxious weed disposal issues. No grants were ultimately submitted due to capacity constraints and limitations around how IIJA funding could be utilized.

A collaborative effort was made by the VAAFM (PH & AgDev), ANR-FPR and UVM-extension to submit a joint grant addressing a wide range of issues related to noxious weed regulation and outreach/education in September of 2022. FPR brought the Richard King Mellon Foundation's request for proposals to the Plant Health Team's attention with an offer to help strategize and write a



comprehensive grant proposal to improve invasive plant monitoring and regulatory efficacy by amending rules, establishing an advisory committee, and encourage proactivity of industry/consumers by unifying outreach approach. This proposal was not ultimately selected for funding by RKMf, but the concentrated, committed and uniquely collaborative effort between different agencies and UVM-extension to complete and submit a robust proposal was a valuable experience for all participants.

The formal process for establishing the Vermont Invasive and Exotic Plant Advisory Committee began in December when official requests for member nominations were sent by the Secretary’s office to select organizations. The committee will meet in the first quarter of 2023.

**PLANT PEST UPDATES**



Figure 3. Elongate hemlock scale, *Fiorinia externa*, in VT

Hemlock woolly adelgid (HWA), elongate hemlock scale (EHS), emerald ash borer (EAB), and jumping worm are the primary established pests of concern in Vermont. The Asian longhorned beetle (ALB) and Spotted Lanternfly (SLF) are the threats of greatest concern that are not established in the state. The Vermont HWA quarantine remains in effect; all live hemlock entering the state require a phytosanitary certificate and are subject to inspection. As of November 2021, hemlocks from infested counties may be brought into the state if they have been effectively treated and are inspected upon arrival.

The scleroderris quarantine has been removed. We have just heard that Canada has rescinded its previous restrictions on importation of VT hemlocks due to the quarantine.

Two live reports of SLF were made in 2022; one confirmed at a local nursery and one not confirmed from a gentleman driving up Interstate 91. Traps were set at the nursery and no additional life stages were found. Four dead SLF reports were pursued to ensure the states of origin had the senders under compliance agreements. One trace forward to Lowe’s came in; during the subsequent inspection one dead adult SLF was found. National distribution of SLF can be seen in the map below:

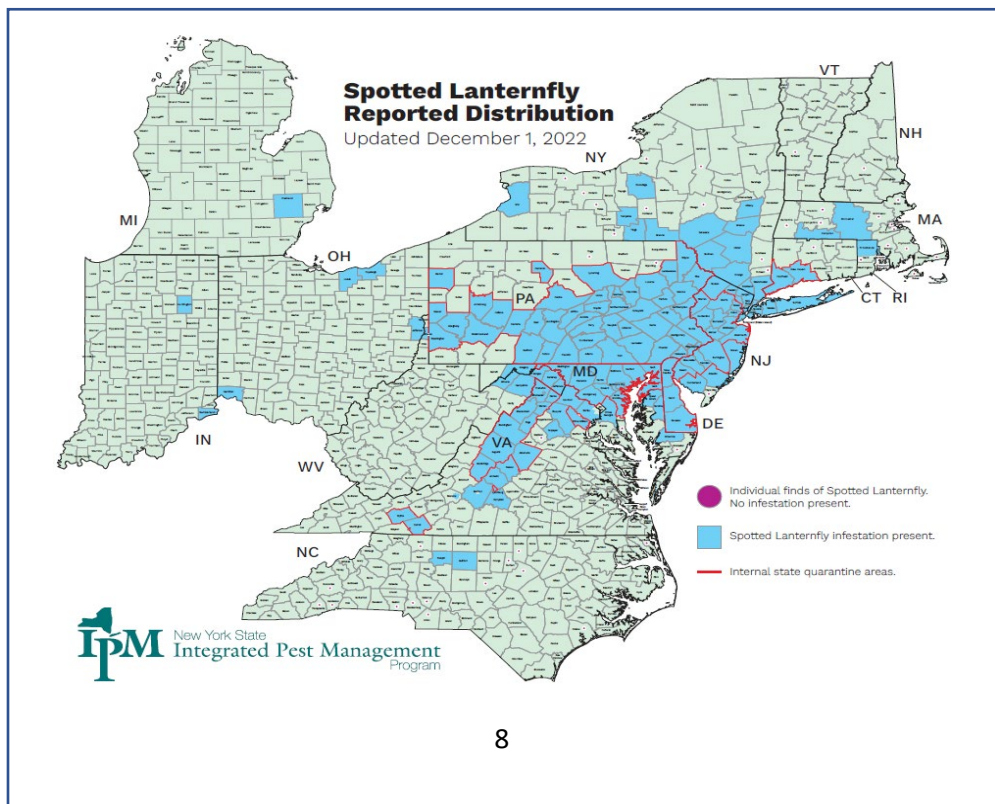


Figure 4: Current map of SLF infestation in the US. Map updated 01 December 2022, courtesy of NYS Integrated Pest Management Program

Emerald ash borer is widespread in VT and has been found in all counties except for Essex County. In 2022, EAB was found in 10 new towns around the state.

VAAF Plant Health staff continue to work with the Agency of Natural Resources Forest, Parks and Recreation staff on confirming the presence of EAB in new towns and in deploying bio-control agents. Biocontrols agents are provided by USDA APHIS PPQ. The map of known EAB infestations below indicates density of EAB populations (red is most dense) and location.

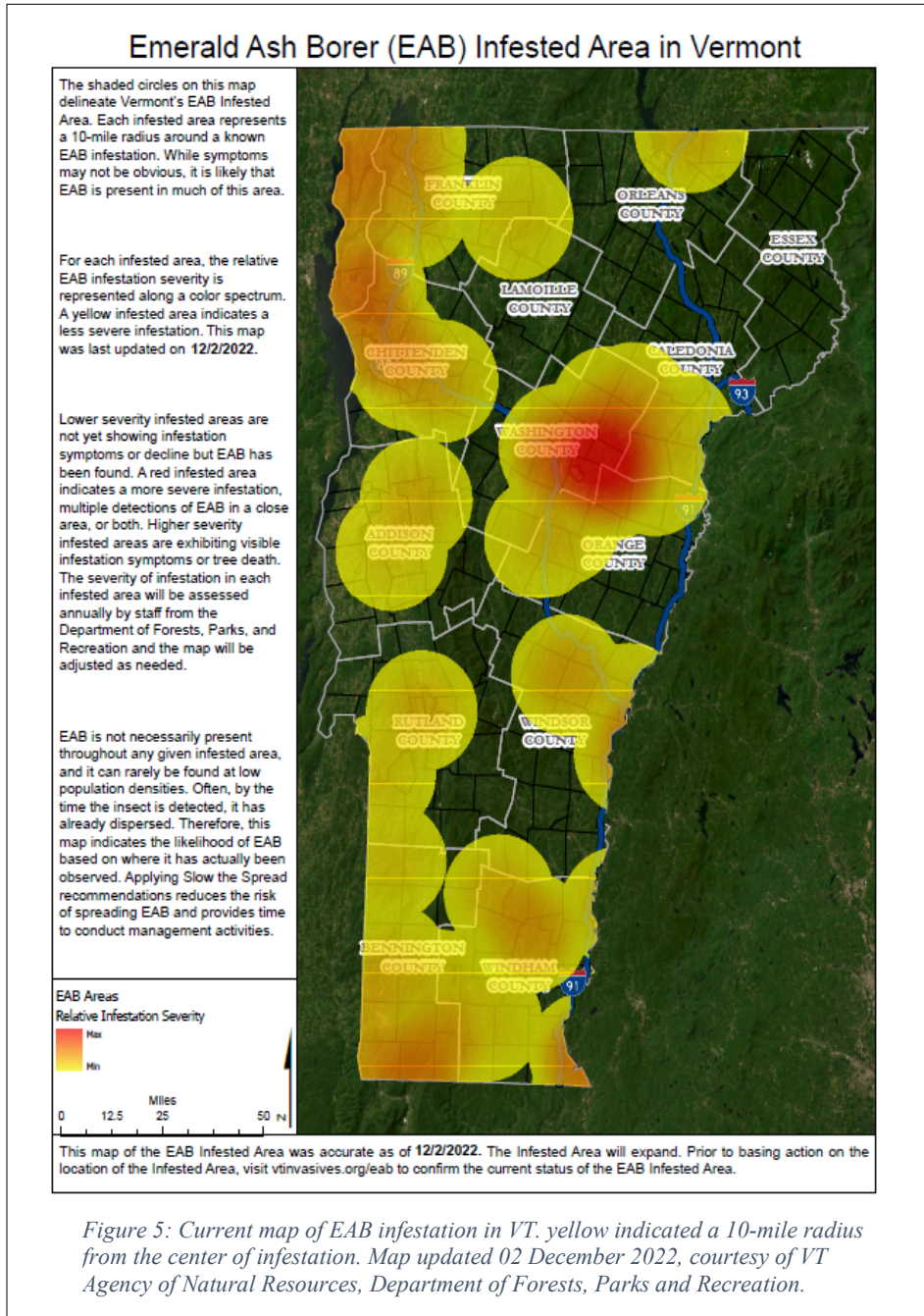
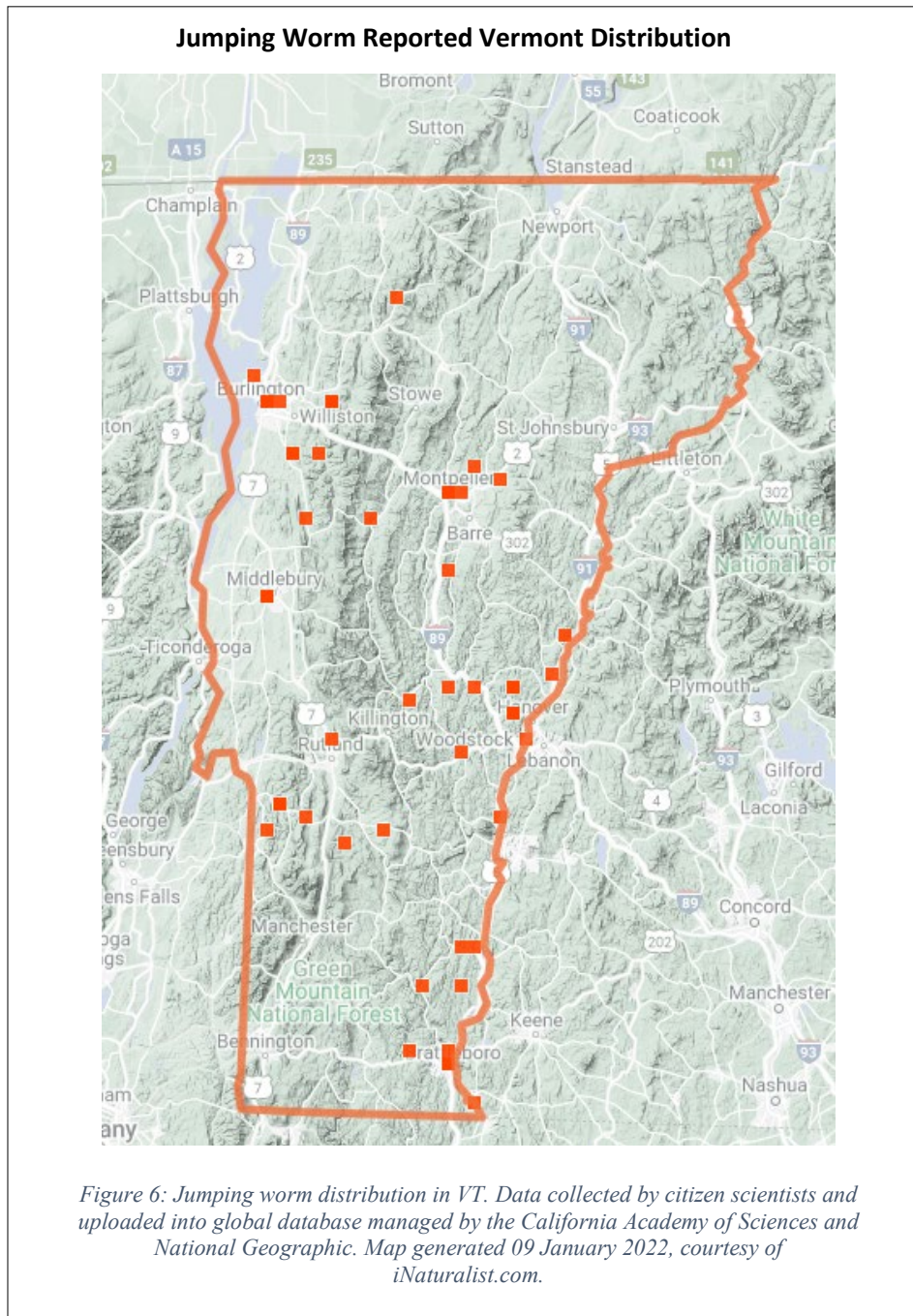


Figure 5: Current map of EAB infestation in VT. yellow indicated a 10-mile radius from the center of infestation. Map updated 02 December 2022, courtesy of VT Agency of Natural Resources, Department of Forests, Parks and Recreation.



Jumping worms have been reported in 12 out of 14 counties in Vermont and Plant Health is concerned about the worms' impact on the landscape and horticulture industry. Jumping worms rapidly consume organic matter, changing soil composition, and can be spread easily in the nursery trade. The Plant Health Team is focusing on education/outreach to stop the spread of this pest because a strict regulatory approach would be difficult to enforce, and these worms are already widely distributed.

Plant Health participated in several webinars, created brochures/wallet cards, and drafted best management practices (BMPs) for the VT Nursery & Landscape Association. VAAFM has also provided grant funding for Dr. Gorres at UVM to conduct research on jumping worm control strategies via the Agriculture Development division.



### **EXPORT CERTIFICATION AND COMPLIANCE AGREEMENTS**

Six compliance agreements (CAs) were issued in 2022, including 2 kiln and 4 Christmas tree farm CAs. 15 phytosanitary certificates were issued through the PCIT system for international trade, including dahlias, epimediums and begonias to Canada and seeds for planting to Germany.

One state phytosanitary certificate was issued for daylilies.

### **GINSENG CERTIFICATION**

4 ginseng certificates were issued in 2022, including one for a 93-year-old root which drew both local and national attention. A total of 13553.7 gm (29.88 pounds) of green ginseng root and 8775 gm (19.34 lbs) of dry ginseng root were certified. Staff from PH met with the re-formed VT Ginseng Association for a productive conversation. VAAFM continues to discuss rule enforcement.

### **SEED POTATO CERTIFICATION**

This program has been successfully transitioned out of Plant Health. Thanks to Morgan and Clark for their assistance with this program.