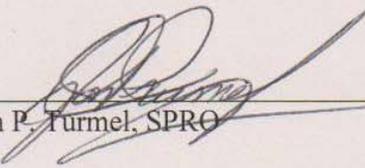


# 2010 Vermont Cooperative Agricultural Pest Survey Program Final Report



  
Jon P. Turmel, SPRG

3/28/11

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## Acknowledgments

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# CAPS - Accomplishment Report

State: Vermont

Year: 2010

Agency: Agriculture, Food and Markets

## I. Vermont Cooperative Agricultural Pest Survey Infrastructure

- A. State Survey Coordinator: Name: Emilie Inoue  
Agency: Vermont Agency of Agriculture, Food and Markets  
Address: 103 South Main Street  
Waterbury, VT 05671  
Phone: (802)241-3544  
Fax: (802)241-3008  
Email: emilie.inoue@state.vt.us
- B. Member name , if applicable, of National CAPS Committee: N/A
- C. Funding for the infrastructure of the VT CAPS program allowed for the position of State Survey Coordinator to be maintained throughout the year. Due to the maintenance of the CAPS infrastructure, goals achieved during 2010 include:
- (i) Preparation of activity reports per the regional guidelines and upon request by State or Federal officials.
  - (ii) Coordination of actions of agencies involved in surveys through oversight of survey work-plans.
  - (iii) Successful implementation of survey activity as outlined in workplans.
  - (iv) Facilitation of the distribution of funds to other cooperating parties conducting surveys.
  - (v) Public outreach on CAPS related pests and survey activities.
  - (vi) Maintenance and further development of the VT CAPS webpage.
  - (vii) Publication of pest alerts and educational posters regarding CAPS related pests (brochure/card publications included)
  - (viii) Complete data collection from CAPS surveys and entry into required systems
  - (ix) Continued improving relations and awareness with stakeholders all around the state regarding CAPS program
  - (x) Successful planning for 2011 CAPS surveys
- D. *If appropriate, explain why objectives were not met:* All objectives were met.
- E. *Where appropriate, explain any cost overruns:* No cost overruns.
- F. *State CAPS Committee narrative* – The Vermont CAPS Committee met on March 3rd, 2010 at the Vermont Agency of Agriculture, Food and Markets lab building in Waterbury, VT. Agenda items included a synopsis of 2010 survey activities and workplan overviews for 2011. Attendees included the following: Mark Michaelis, Andrea Rosin, Judy Rosovsky, Mary Burnham, Trish Hanson, Barbara Burns, Timothy Schmalz, Ben Machin, Daniel Ruddell, Emilie Inoue, Jon Turmel.

## Laminated Forest Pest Outreach Card



### Emerald Ash Borer

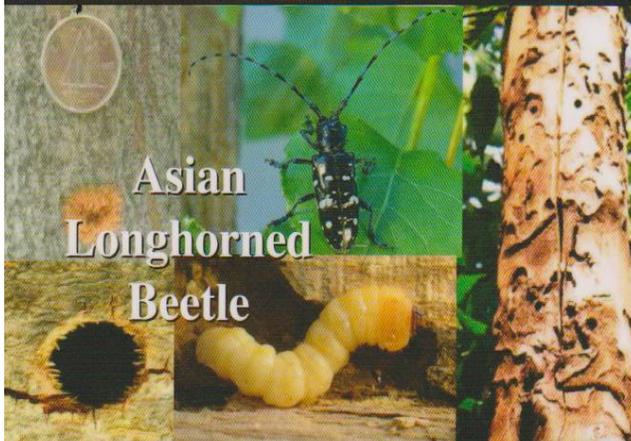
**Trees Affected:**

- Attacks only ash trees

**What To Look For:**

- Dieback begins in top one-third of canopy; progresses until tree is bare
- Sprouts grow from roots and trunk
- Galleries weave back and forth across the wood grain
- Adults form D-shaped holes upon emergence in spring

Photo Sources: Art Wagner, USDA APHIS PPO, Bugwood.org, David Cappaert, Michigan State University, Troy Kimoto, CFIA, Howard Russell, Missouri Department of Conservation



### Asian Longhorned Beetle

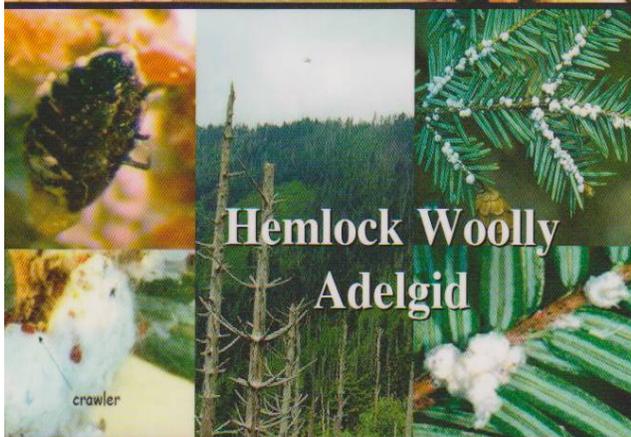
**Trees Affected:**

- Attacks living, dead, cut or fallen maple and other hardwoods

**What To Look For:**

- Parts of tree turning brown and dying
- Adult beetle active between June and October
- Adults 1 to 1 ½ inches in length
- Adults have a shiny, jet black body with distinctive white spots
- Dime-sized (1/4" or greater), perfectly round exit holes

Photo Sources: Dennis Haugen, USFS, Steven Katovich, F. Herard, Canadian Food Inspection Agency, Bugwood.org



### Hemlock Woolly Adelgid

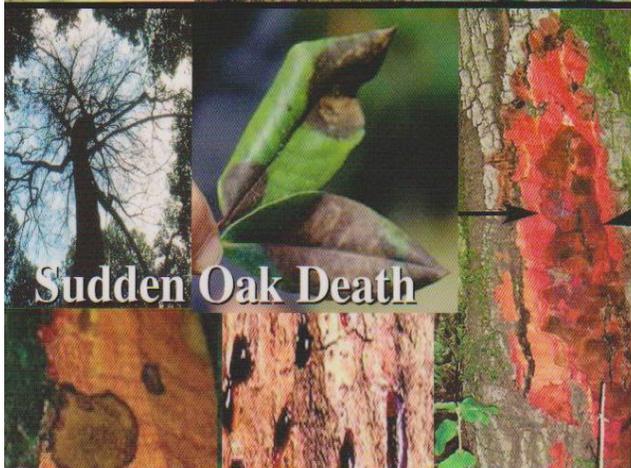
**Trees Affected:**

- Hemlock trees

**What To Look For:**

- Twig dieback and/or premature needle drop
- White woolly masses at the base of needles of young twigs
- Unhealthy grayish-green needles that normally are dark green

Photo Sources: Michael Montgomery, USFS, Bugwood.org, CT Ag. Experiment Station, PA Dept. of Conservation and Natural Resources, National Park Service



### Sudden Oak Death

**Plants Affected:**

- Over 45 different tree species including oak, lilac, rhododendron and viburnum (for complete list go to: [www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/pram/](http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/))

**What To Look For:**

- Droplets of dark, reddish brown liquid on the bark of host trees
- Infection on foliar hosts is indicated by dark grey-to-brown lesions with indistinct edges

Photo Sources: Joseph O'Brien, Bugwood.org, USFS, Associated Press, mdinvasivesp.org

VERMONT AGENCY OF AGRICULTURE, FOOD and MARKETS  
Plant Industry Section  
Cooperative Agricultural Pest Survey Program



For more information: [www.vermontagriculture.com](http://www.vermontagriculture.com)  
Design and information: [www.treecareindustry.org](http://www.treecareindustry.org)

## II. SURVEYS

### 1) Vermont Nurseries-Bundled Survey

#### A. Survey/Inspection Methodology:

In 2010, there were 670 licensed nurseries, greenhouses and garden centers in the State of Vermont. The bundled nursery survey focused on the presence/absence, biology, distribution and education of priority pests identified as having National, regional and state level significance. Nursery inspections included visual surveys for signs and symptoms associated with the following core survey pests (traps were set at 5 high volume nurseries targeting light brown apple moth):

Commodity	Survey Name	Scientific Name	Common Name	AHP
Exotic Woodborer / Bark Beetle	Nursery survey	<i>Anoplophora glabripennis</i>	Asian Longhorned Beetle	N/A
Exotic Woodborer / Bark Beetle	Nursery survey	<i>Anoplophora chinensis</i>	Citrus longhorned beetle	N/A
Exotic Woodborer / Bark Beetle	Nursery survey	<i>Agrilus planipennis</i>	Emerald ash borer	N/A
Oak	Nursery survey	<i>Agrilus biguttatus</i>	Oak splendour beetle	1
Oak	Nursery survey	<i>Epiphyas postvittana</i>	Light brown apple moth	N/A
Oak	Nursery survey	<i>Platypus quercivorus</i>	Oak ambrosia beetle	1
Oak	Nursery survey	<i>Scolytus intricatus</i>	European oak bark beetle	N/A
Hemlock	Nursery Survey	<i>Adelges tusgae</i>	Hemlock Woolly Adelgid	N/A

A total of 510 nurseries, greenhouses and garden centers were inspected in 2010 (76% of the total number of licensed nurseries in Vermont). These sites were selected based on data collected as part of the Vermont Agency of Agriculture, Food and Markets (VAAFMM) annual nursery licensing program. Nurseries known to deal with large volumes of plant material each year were identified and listed as ‘top priority’ sites to inspect while nurseries dealing with much lower volumes of plant stock were included into the inspection schedule at random.

#### B. Rationale underlying survey methodology:

Nurseries have been identified as a significant pathway for the introduction of invasive species and can facilitate the artificial spread of many invasive species of concern. It is, therefore, critical to establish regular inspections and focus outreach activities within these environments.

#### C. Survey dates:

The State plant pathologist and one seasonal technician inspected nurseries, greenhouses and garden centers from May through September 2010.

**D. Taxonomic services:**

Suspect samples collected in the field during nursery inspections were initially screened by Agency of Agriculture staff (state entomologist, state plant pathologist, SSC), state Forest Protection staff (entomologist, plant pathologist) and/or by the pest and plant diagnostic labs at the University of Vermont. Additional identification and taxonomic services were provided by USDA APHIS PPQ identifiers.

**E. Benefits and results of survey:**

Two inspectors were able to visit five hundred and ten (510) nurseries, greenhouses and garden centers distributed throughout 13 of Vermont's counties (Table 1).

Inspectors visiting nurseries, greenhouses and garden centers identified host species of target pests at each of the 510 nurseries inspected. Data specific to each nursery were collected in the field and were later inputted into the state nursery database. Inspectors were able to conduct outreach regarding pests of significance by distributing pest alerts and brochures. One-on-one discussions with nursery owners, nursery managers and staff enabled inspectors to accurately disseminate information regarding pests of concern.

Results from the 2010 nursery inspection indicated that none of the 8 target pests surveyed for were detected on any nursery stock at nurseries visited. To date, Hemlock Woolly Adelgid (a State pest of concern) is the only pest known to occur in Vermont. Maps 1 through 8 depict survey activities at the county level in relation to detection surveys for target pests at the national scale.

**F. Compare actual accomplishments to objectives established for the period.**

The number of actual nurseries inspected during the 2010 field season exceeded the required number of inspected nurseries outlined in the CAPS work plan.

**G. If appropriate, explain why objectives were not met\*:** All objectives were met.

**H. Where appropriate, explain any cost overruns\*:** N/A

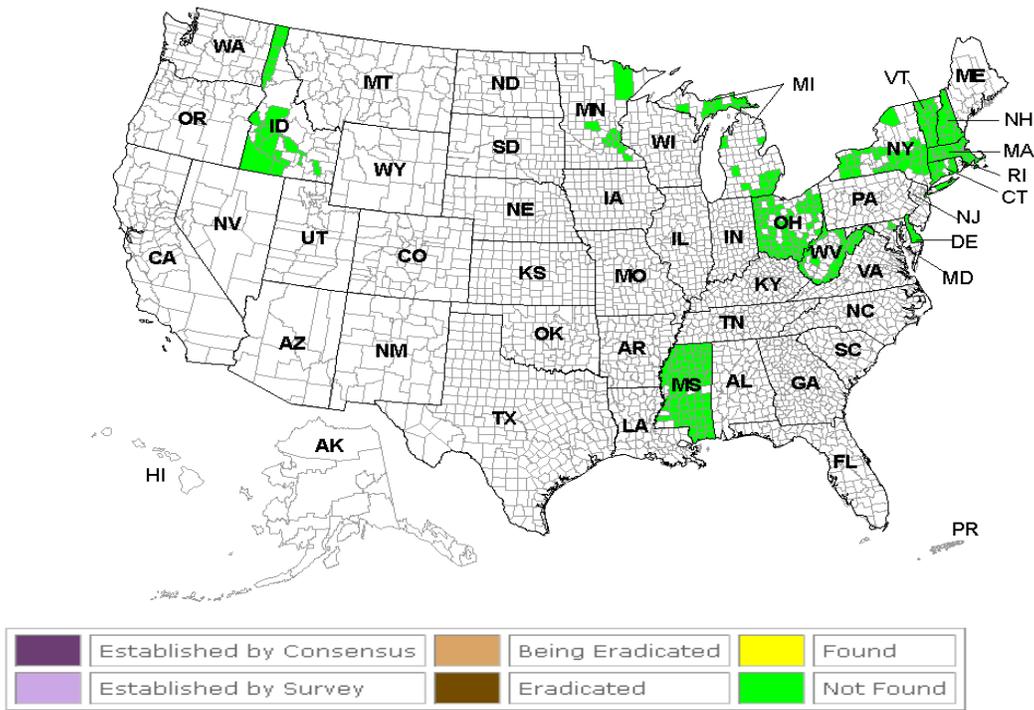
**I. NAPIS database submissions:** All NAPIS data entries have been entered.

\*indicates information required per 7 CFR 3016.40 and 7 CFR 3019.51

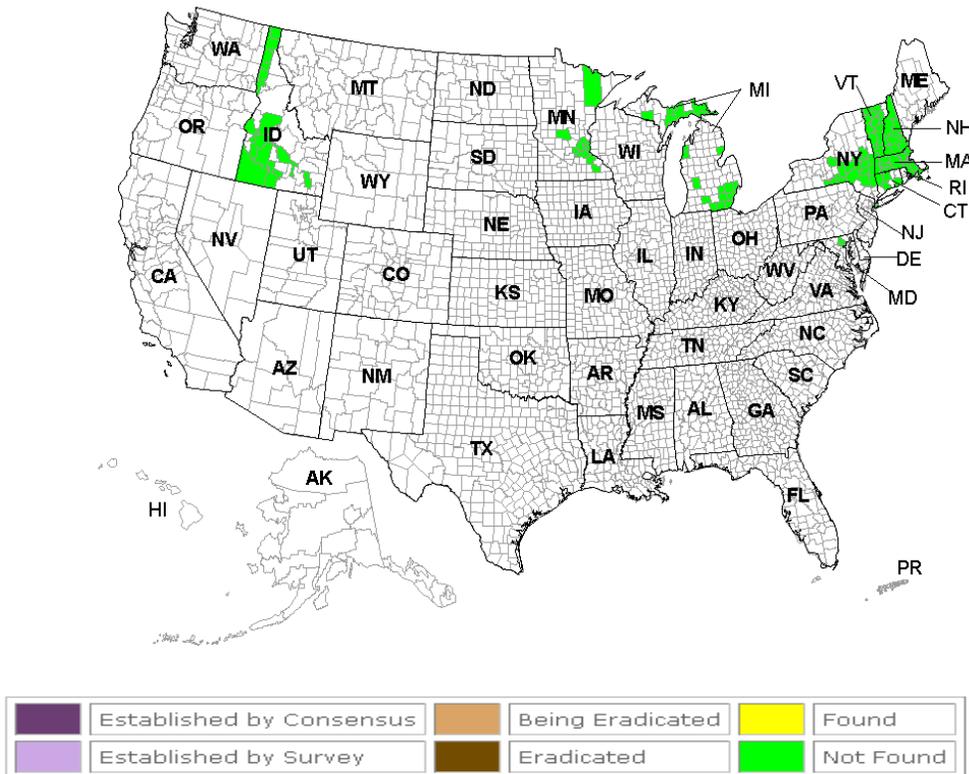
**Table 1-**The total number of nurseries inspected in each Vermont County, 2010

County Name	Number of Nurseries Inspected
Addison	38
Bennington	26
Caledonia	35
Chittenden	90
Franklin	34
Grand Isle	5
Lamoille	34
Orange	31
Orleans	35
Rutland	53
Washington	47
Windham	38
Windsor	44
<b>Total</b>	<b>510</b>

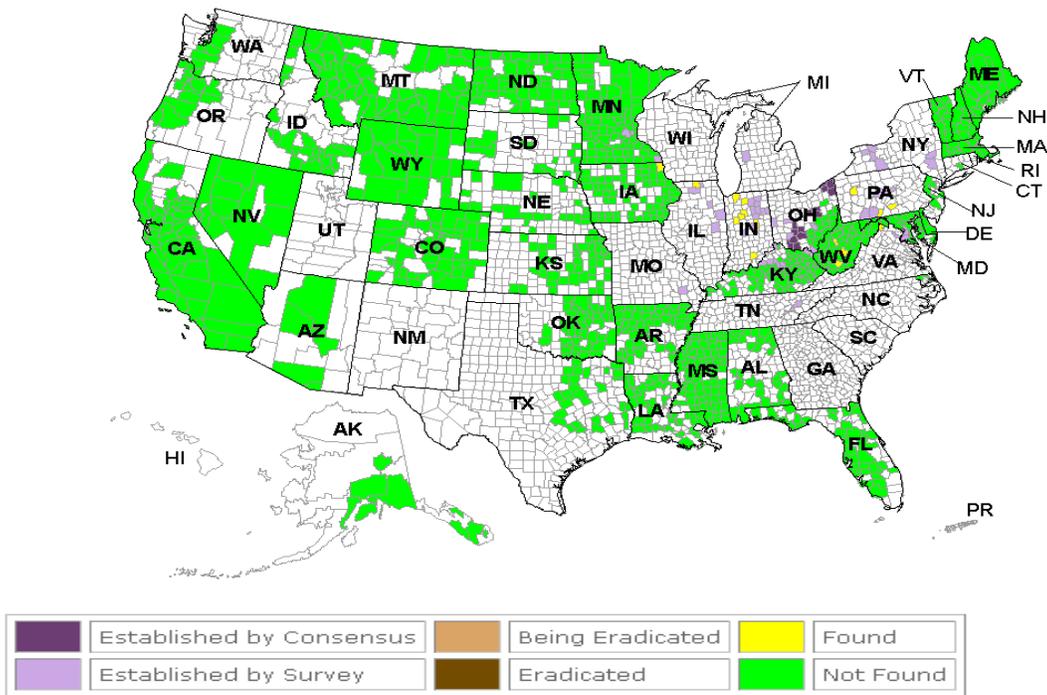
**Map 1-** Map of all surveyed counties in 2010 for *Anoplophora glabripennis* (Asian Longhorned Beetle) in the United States (Current as of 3/28/11)



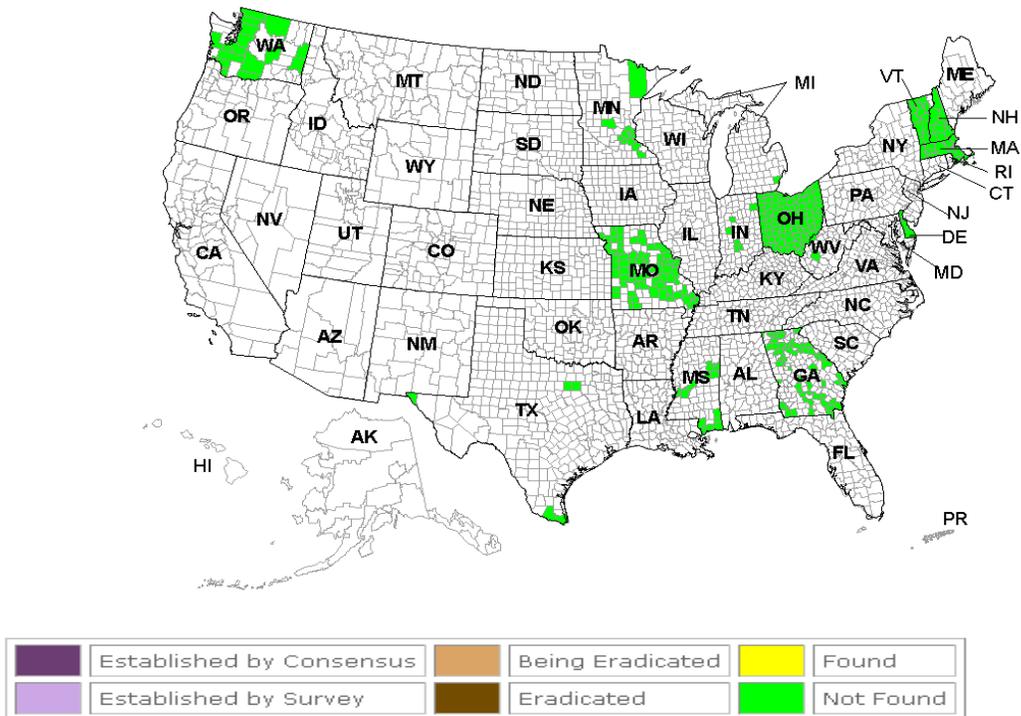
**Map 2-** Map of all surveyed counties in 2010 for *Anoplophora chinensis* (Citrus Longhorned Beetle) in the United States (Current as of 3/28/11)



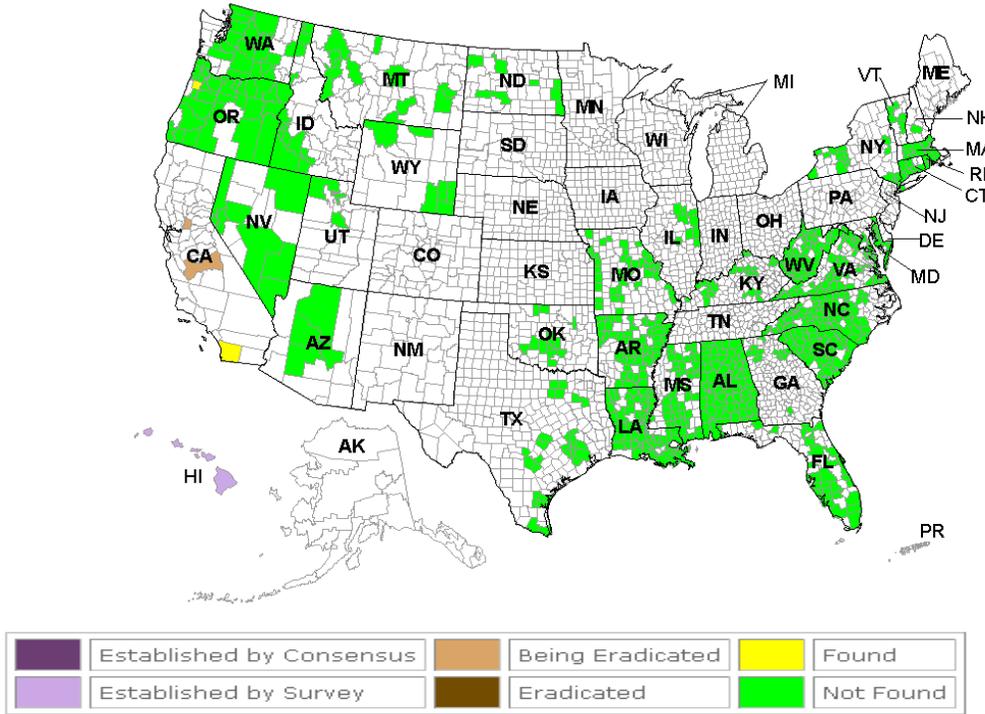
**Map 3-** Map of all surveyed counties in 2010 for *Agrilus planipennis* (Emerald ash borer) in the United States (Current as of 3/28/11)



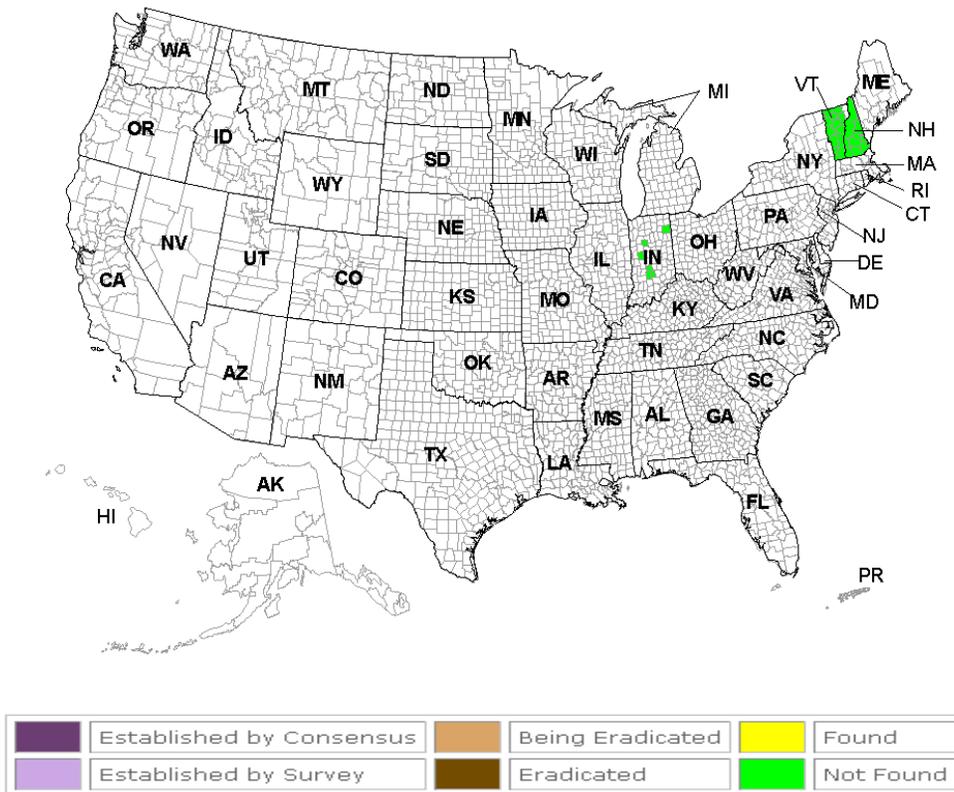
**Map 4-** Map of all surveyed counties in 2010 for *Agrilus biguttatus* (Oak splendour beetle) in the United States (Current as of 3/28/11)



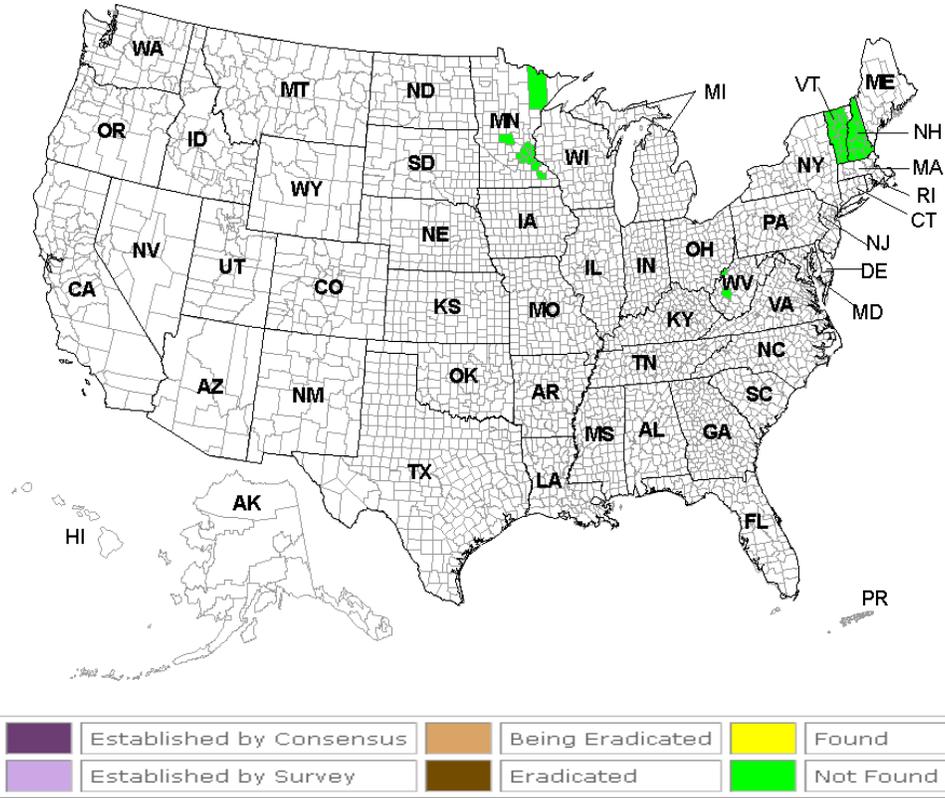
**Map 5-** Map of all surveyed counties in 2010 for *Epiphyas postvittana* (Light Brown Apple Moth) in the United States (Current as of 3/28/11)



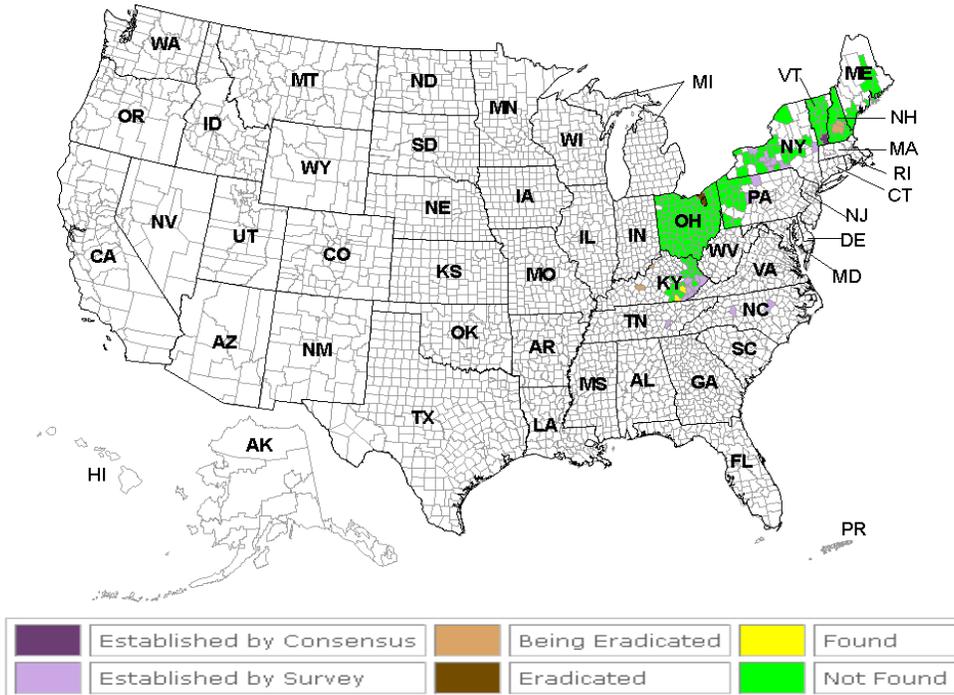
**Map 6-** Map of all surveyed counties in 2010 for *Platypus quercivorus* (Oak ambrosia beetle) in the United States (Current as of 3/28/11)



**Map 7-** Map of all surveyed counties in 2010 for *Scolytus intricatus* (European oak bark beetle) in the United States (Current as of 3/28/11)



**Map 8-** Map of all surveyed counties in 2010 for *Adelges tsugae* (European oak bark beetle) in the United States (Current as of 3/28/11)



## 2) Exotic Woodborer and Exotic Bark Beetle Survey

### Target Pests:

Survey Name	Scientific Name	Common Name	AHP	
Exotic Woodborer / Bark Beetle	<i>Hylurgops palliates</i>	Lesser Spruce Shoot Beetle	N/A	
Exotic Woodborer / Bark Beetle	<i>Hylurgus ligniperda</i>	Red-haired pine bark beetle	N/A	
Exotic Woodborer / Bark Beetle	<i>Ips sexdentatus</i>	Six-toothed bark beetle	N/A	
Exotic Woodborer / Bark Beetle	<i>Ips typographus</i>	European Spruce Bark beetle	1	
Exotic Woodborer / Bark Beetle	<i>Orthotomicus erosus</i>	Mediterranean pine engraver	N/A	
Exotic Woodborer / Bark Beetle	<i>Tetropium castaneum</i>	Black spruce beetle		
Exotic Woodborer / Bark Beetle	<i>Tomicus minor</i>	Lesser pine shoot beetle		
Exotic Woodborer / Bark Beetle	<i>Tomicus piniperda</i>	Pine shoot beetle		
Exotic Woodborer / Bark Beetle	<i>Trypodendron domesticum</i>	European hardwood ambrosia beetle	1	
Exotic Woodborer / Bark Beetle	<i>Xyleborus glabratus</i>	Redbay ambrosia beetle	N/A	
Exotic Woodborer / Bark Beetle	<i>Xylorborus spp.</i>			
Exotic Woodborer / Bark Beetle	<i>Xylotrechus spp.</i>		N/A	

## **A. Survey/Inspection Methodology:**

The 2010 exotic woodborer and exotic bark beetle survey was the 6th consecutive year that the project has taken place in Vermont. 16 'high risk' pathways were included in the 2010 EBB/EWBB survey. State and federal agents set traps at selected sites in May, 2010 (Table 1).

Lindgren funnel traps were used at all locations and several different lures were used as 'bait' for target insects. The lures utilized in this survey included Ultra High Release ethanol, Alpha-Pinene and a triple lure specifically targeting exotic bark beetles. Traps were placed in close proximity to target businesses and trap contents were serviced and screened once every two weeks. Host trees in the immediate area of the traps were visually surveyed for signs and/or symptoms indicating that a target species may be present.

## **B. Rationale underlying survey:**

The exotic Woodborer and exotic bark beetle survey (referred to in previous reports as the 'Hotzone' survey) was developed by USDA APHIS PPQ, to provide a national focus on early detection and eradication of exotic pests through targeting of the introduction pathways and potential pest establishment zones. This concept draws from a number of recommendations in the Safeguarding Review and combines them into a risk-based program that crosses the entire safeguarding continuum. Using this concept allows state and federal agencies to integrate risk information from various databases and other sources (e.g., emergency action notifications, Global Pest and Disease Database) to target areas that might be susceptible to pest introductions. This can help us evaluate domestic program activities and implement sound pest detection strategies. It can also help focus our efforts for rapid response by identifying locations where risk material might be entering the state.

This was the CAPS program's sixth year incorporating these concepts into our pest detection and pathway analysis efforts. The mission was to enhance the ability of state CAPS programs to identify and set up survey traps at target high risk areas and sentinel sites within the U.S. that have the highest potential for exotic pest introduction and to develop appropriate pest detection protocols. These efforts were done in collaboration with USDA APHIS PPQ- State Plant Health Director, Domestic Program Coordinator and Plant Health Safeguarding Specialist.

This survey was conducted (1) to determine the presence and distribution of select target species (2) to monitor the advent of new exotic species over time, (3) to track patterns of infestation throughout the U.S. and possible pathways for introduction, (4) to identify the characteristics of high risk habitats or sites, and (5) to identify the presence of other potential forest pests in survey areas.

**C. Survey dates:**

Traps were set in May, 2010. The survey period extended through mid-September, 2010.

**D. Taxonomic services:**

Trap contents were pre-screened by Agency of Agriculture and USDA APHIS PPQ staff. Screened material is currently being further processed and identified by technicians at the USDA APHIS PPQ office in Berlin, Vermont.

**E. Benefits and results of survey:**

The VAAFMM and USDA APHIS PPQ set traps at 16 locations throughout Vermont (total trap count of 26, see table 1). All target areas were in close proximity to businesses that are known to import foreign products or are considered 'high risk' sites due to a high rate of traffic from 'out-of-state' travelers. Foreign commodities at the businesses participating in the survey originated from the following countries: China, Canada, Germany, Italy, India, Japan, Taiwan, Mexico, the European Union, Australia, Peru, Spain and Brazil. The frequency of imports ranged from once or twice a year to weekly shipments.

The exotic woodborer and exotic bark beetle survey continues to help us to forge relationships with businesses in Vermont that deal with importing foreign commodities. Business owners and staff continued to be supportive and intrigued with the survey as in the last six years. We have enhanced our outreach efforts by educating these businesses about exotic species that are of great concern to Vermont and increased our 'eyes' on the ground. 11 of the 12 target insects surveyed for in 2010 currently are not known to occur in Vermont and therefore we have baseline data that may be built upon in future years (*Tomicus piniperda* is considered to be established in the state). The results of this project will help protect the export markets and safeguard agricultural production on the greater national scale.

As of the date this report was written, there have been no positive specimens for insects on the 2010 EBB/EWBB target list.

**F. Compare actual accomplishments to objectives established for the period. When the output of the project can be quantified, a computation of cost per unit of output is required when useful: N/A**

**G. If appropriate, explain why objectives were not met\*:** All objectives were met.

**H. Where appropriate, explain any cost overruns\*:** There were no cost overruns

**I. NAPIS database submissions:** NAPIS data entry related to this survey is pending further notice from identifiers at APHIS PPQ.

\*indicates information required per 7 CFR 3016.40 and 7 CFR 3019.51

**Table 1:** Individual Hotzone Trap Information

Trap #	Location	Lure Type	Lat.	Long.	Town	County
VTWAT1001	McNeil Plant Chip Yard	Ethanol/AP	44.4943	73.2092	Burlington	Chittenden
VTWAT1002	McNeil Plant Chip Yard	Triple	44.4943	73.2092	Burlington	Chittenden
VTWAT1003	McNeil Plant Wood Recycling	Ethanol/AP	44.494	73.2067	Burlington	Chittenden
VTWAT1004	McNeil Plant Wood Recycling	Triple	44.494	73.2067	Burlington	Chittenden
VTWAT106	Colchester Weigh Station I-89 Northbound	Ethanol/AP	44.5565	-73.183	Colchester	Chittenden
VTWAT1005	Colchester Weigh Station I-89 Northbound	Triple	44.5565	-73.183	Colchester	Chittenden
VTWAT1008	Highgate Visitor Center Southbound	Ethanol/AP	45.0107	-73.087	Highgate	Franklin
VTWAT1009	Highgate Visitor Center Southbound	Triple	45.0107	-73.087	Highgate	Franklin
VTWAT1014	Williston Transfer Station	Ethanol/AP	44.4786	73.0751	Williston	Chittenden
VTWAT1015	Williston Transfer Station	Triple	44.4786	73.0749	Williston	Chittenden
VTWAT1016	Williston Rest Area, Northbound	Ethanol/AP	44.4365	-73.079	Williston	Chittenden
VTWAT1017	Williston Rest Area, Northbound	Triple	44.4365	-73.079	Williston	Chittenden
VTBER1001	VT Granite Industry	Triple	44.2074	72.5152	Barre	Washington
VTBER1002	VT Granite Industry	Ethanol/AP	44.2074	72.5152	Barre	Washington
VTBER1003	Goddard College	Ethanol/AP	44.462	72.7299	Plainfield	Washington
VTBER1004	Northstar Nursery	Ethanol/AP	44.7351	72.1841	Barton	Orleans
VTBER1005	Northstar Nursery	Triple	44.7351	72.1841	Barton	Orleans
VTBER1006	Newport Country Club	Ethanol/AP	44.9331	72.1926	Newport	Orleans
VTBER1007	Derby Line Welcome Center	Ethanol/AP	44.9957	72.1029	Derby Line	Orleans
VTBER1008	Derby Line Welcome Center	Triple	44.9957	72.1029	Derby Line	Orleans
VTWRJH210001	Tradewinds	Ethanol/AP	43.1514	72.5683	Grafton	Windham

VTWRJH210002	Tradewinds	Triple	43.1514	72.5683	Grafton	Windham
VTWRJH210003	Riverside Reloading	Ethanol/AP	43.1634	72.4523	Bellows Falls	Windham
VTWRJH10005	Bennington House of Carpet	Ethanol/AP	42.916	-73.211	Bennington	Bennington
VTWRJH210006	Vermont Marble Museum	Ethanol/AP	43.66	-73.03	Proctor	Rutland
VTWRJH210008	Global Timber	Ethanol/AP	43.5308	72.3883	Hartland	Windsor

### 3) Grape Commodity Survey, 2010

#### Target Pests:

Survey Name	Scientific Name	Common Name	AHP	
Grape Commodity Survey	<i>Adoxophyes orana</i>	Summer Fruit Tortrix Moth	39	
Grape Commodity Survey	<i>Autographa gamma</i>	Silver Y Moth	N/A	
Grape Commodity Survey	<i>Epiphyas postvittana</i>	Light Brown Apple Moth	N/A	
Grape Commodity Survey	<i>Lobesia botrana</i>	European Grape Vine Moth	N/A	
Grape Commodity Survey	<i>Thaumatotibia leucotreta</i>	False Coddling Moth	33	

#### A. Survey/Inspection Methodology:

The 2010 grape commodity survey was the 1st year that the project has taken place in Vermont. 5 vineyards in Vermont were selected for 2010 trapping efforts. State and federal agents set traps at selected sites in May, 2010.

Pheromone traps were used to trap for all target moths. Traps were baited with appropriate lures for the target pests at a concentration of one trap per pest per site (5 sites for a total of 25 traps-table 1). Traps were serviced every two weeks following initial placement of the traps in May and continued through the month of September. Lures were changed according to the specific lure change guidelines set forth in the Grape Commodity Survey Guidelines. Trap catches were initially screened for target pests on site and when warranted, traps were brought back to the laboratory for individual specimen identification.

#### B. Rationale underlying survey:

The Wine Industry is a new and rapidly expanding agricultural community in New England. There are approximately 100 vineyards and associated artisan wineries located all around New England with more in the planning stages. In 2008, Vermont wineries produced more than 107,000 gallons of wine. There are now more than 20 wineries around the state and the wine industry in Vermont is a more than a \$5 million a year industry according to the Vermont Agency of Agriculture.

The Vermont CAPS program started surveying for specific priority pests at select vineyards in an effort to support a growing agricultural industry in the state as well as

to gather pest data that compliments grape commodity surveys conducted in other nearby states so that an accurate pest distribution map may be created for the region.

This survey was conducted (1) to determine the presence and distribution of the target species (2) to monitor the advent of new exotic species over time, (3) to track patterns of infestation throughout the U.S.

**C. Survey dates:**

Traps were set in May, 2010. The survey period extended through mid-September, 2010.

**D. Taxonomic services:**

Trap contents were pre-screened by Agency of Agriculture staff in the field and any suspect specimens were brought to the Agency of Agriculture Laboratory in Waterbury, Vermont where the state entomologist/SPRO determined whether the specimen should be forwarded to PPQ identification services.

**E. Benefits and results of survey:**

The VAAFMS set a total of 25 traps at 5 locations in Vermont. All trap locations were within the boundaries of active vineyards.

**Table 1: Grape Commodity Survey Locations and Lure Change Schedule**

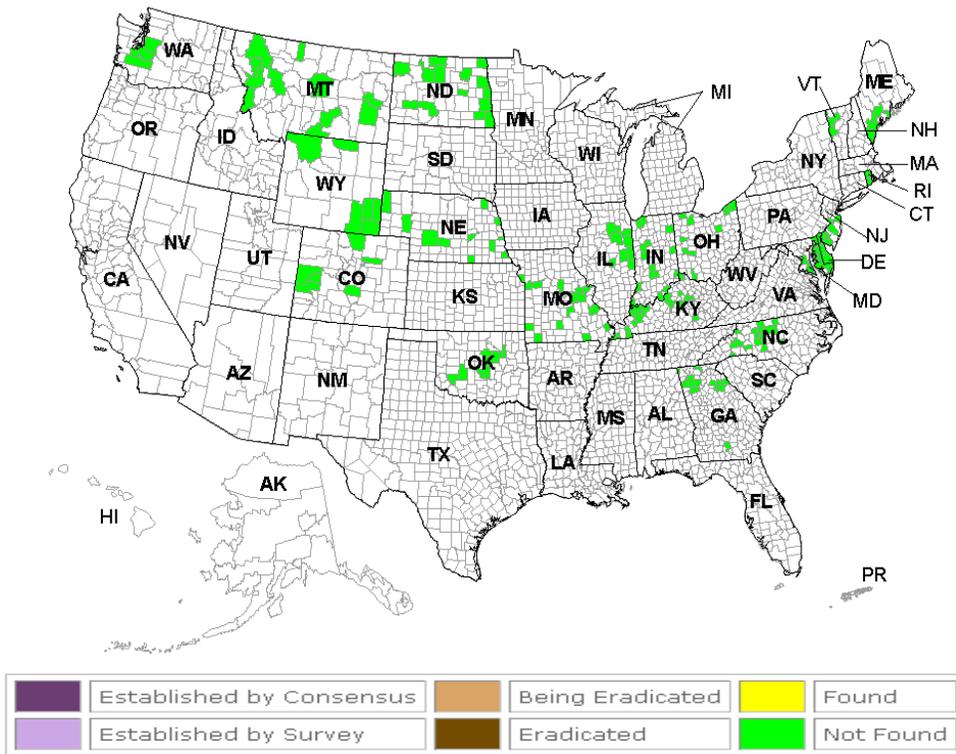
<b>Grape Commodity Survey</b>	<b>(Target Pests: Summer Fruit Tortrix Moth, Silver Y Moth, Light Brown Apple Moth, European grape vine moth, False coddling moth)</b>		
<b>List of Vineyards</b>	<b>County</b>	<b>Vineyard GPS Location</b>	<b>Lure Change Frequency</b>
GCS-VT1	Washington	44.23832 -72.62651	<i>Adoxophyes orana</i> (Summer Fruit Tortrix )Every 12 weeks
GCS-VT2	Chittenden	44.25962 -72.96010	<i>Autographa gamma</i> (Silver Y Moth)-Every 4 weeks
GCS-VT3	Lamoille	44.64709 -72.88941	<i>Epiphyas postvittana</i> -(LBAM)-Every 4 weeks
GCS-VT4	Grand Isle	44.62760 -73.33084	<i>Lobesia botrana</i> (European grapevine moth)-Every 4 weeks
GCS-VT5	Chittenden	44.36746 -73.23481	<i>Thaumatotibia leucotreta</i> (False Coddling Moth)-Every 4 weeks

No summer fruit tortrix (*Adoxophyes orana*), light brown apple moth (*Epiphyas postvittana*), Silver Y Moth (*Autographa gamma*), European grape vine moth (*Lobesia botrana*) or False codling moth (*Thaumatotibia leucotreta*) were collected in traps at any site. Trapping for these target pests in Vermont contributes on a wider scale by providing valuable distribution data at the national level (Maps 1-5).

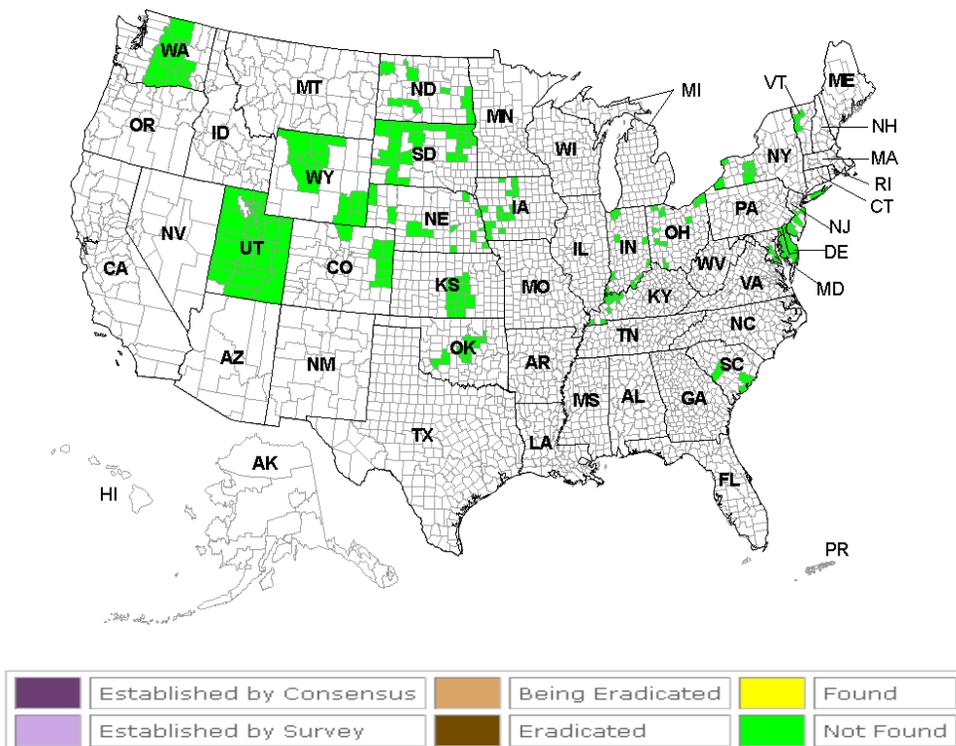
- F. **Compare actual accomplishments to objectives established for the period. When the output of the project can be quantified, a computation of cost per unit of output is required when useful:** N/A
- G. **If appropriate, explain why objectives were not met\*:** All objectives were met.
- H. **Where appropriate, explain any cost overruns\*:** There were no cost overruns
- I. **NAPIS database submissions:** NAPIS data entry for this survey has been entered.

\*indicates information required per 7 CFR 3016.40 and 7 CFR 3019.51

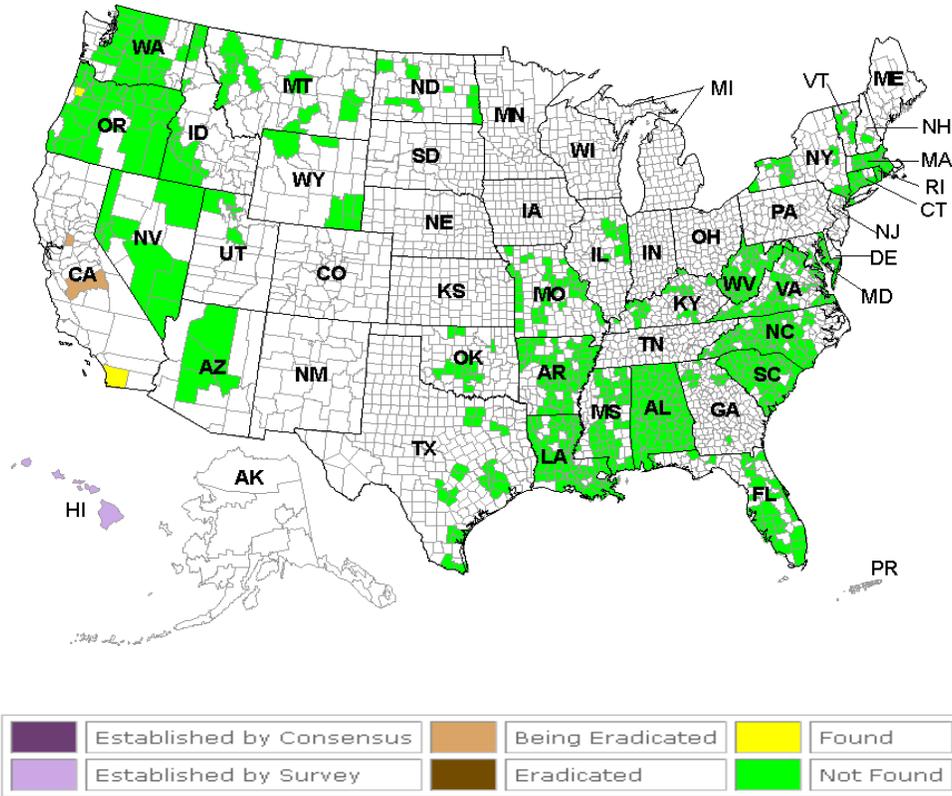
**Map 1-** Map of all surveyed counties in 2010 for *Adoxophyes orana* (Summer Fruit Tortrix Moth) in the United States (Current as of 3/28/11)



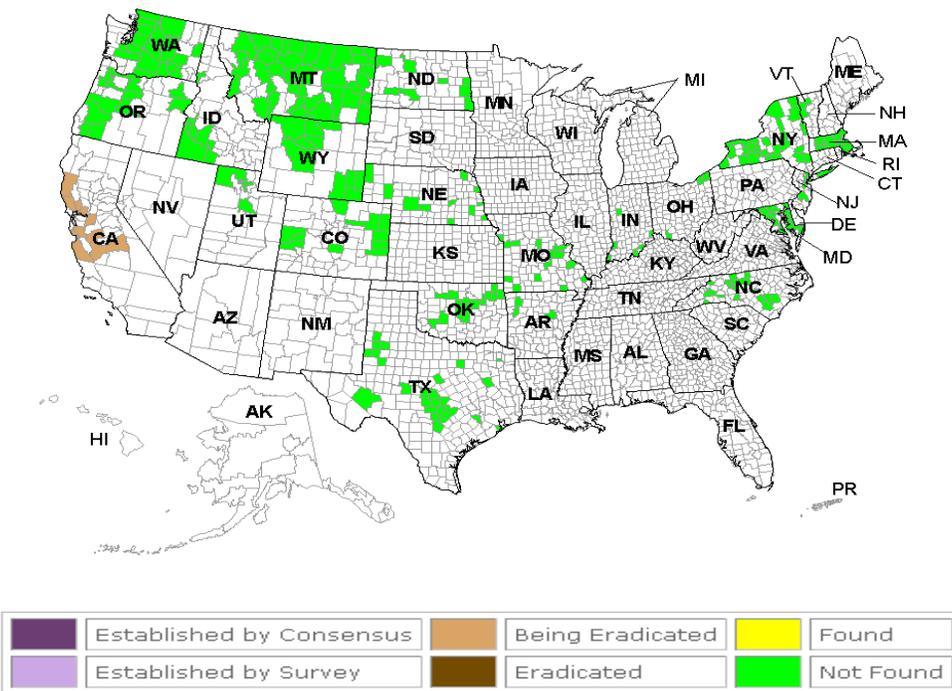
**Map 2-** Map of all surveyed counties in 2010 for *Autographa gamma* (Silver Y Moth) in the United States (Current as of 3/28/11)



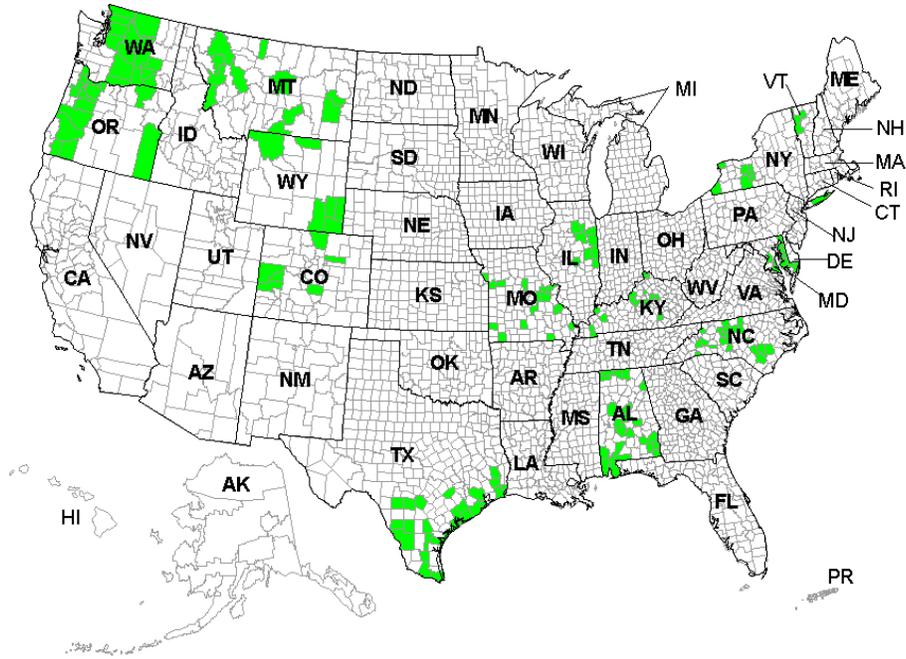
**Map 3-** Map of all surveyed counties in 2010 for *Epiphyas postvittana* (Light Brown Apple Moth) in the United States (Current as of 3/28/11)



**Map 4-** Map of all surveyed counties in 2010 for *Lobesia botrana* (European Grapevine Moth) in the United States (Current as of 3/28/11)



**Map 5-** Map of all surveyed counties in 2010 for *Thaumatotibia leucotreta* (False Coddling Moth) in the United States (Current as of 3/28/11)



	Established by Consensus		Being Eradicated		Found
	Established by Survey		Eradicated		Not Found

4) **Oak Commodity Survey, 2010 (Vermont Department of Forests, Parks and Recreation, Forestry Division, Forest Protection Section)**

**Target Pests:**

Survey Name	Scientific Name	Common Name
Oak Commodity Survey	<i>Adoxophyes orana</i>	Summer Fruit Tortrix Moth
Oak Commodity Survey	<i>Archips xylosteanus</i>	Variegated Golden Tortrix
Oak Commodity Survey	<i>Epiphyas postvittana</i>	Light Brown Apple Moth
Oak Commodity Survey	<i>Scolytus intricatus</i>	European oak bark beetle
Oak Commodity Survey	<i>Phytophthora ramorum</i>	Sudden Oak Death

**A. Survey Methodology:**

In the study, we used a combination of visual surveys, trap trees and baited traps. In May 2010, bolts were recovered from oak trees that were felled and left as trap trees, in 2009, at each of three oak survey sites (Bolton, Jamaica, and Arlington). These were placed in rearing tubes for collection of the European oak bark beetle (*Scolytus intricatus*) and other emerging insects.

Pheromone traps were deployed at four new sites that contained declining oak (Sharon, Middlesex, Leicester, and West Haven) to survey for three defoliators: summer fruit tortrix (*Adoxophyes orana*), variegated golden tortrix (*Archips xylosteanus*), and light brown apple moth (*Epiphyas postvittana*) (table 1). Visual surveys were made at all sites for symptoms of oak decline caused by *Phytophthora ramorum*.

**B. Rationale underlying survey methodology:**

Currently *Phytophthora ramorum* is not known to be present in Vermont. Similarly, we have no records of summer fruit tortrix (*Adoxophyes orana*), light brown apple moth (*Epiphyas postvittana*) or variegated golden tortrix (*Archips xylosteanus*) in our state. The variegated golden tortrix is of special concern because it was found to be infesting various ornamental trees and shrubs in St. John's, Newfoundland in 2005. The European oak bark beetle, *Scolytus intricatus* also has not been found in Vermont.

With increasing tree dieback in the state following recent droughts, this was a good opportunity to investigate declining oaks, trap insects that were attracted to girdled trees and traps with host volatiles, and to rear wood borers from tree boles to determine if any of these worrisome pests is present. This survey was conducted (1) to determine the presence and distribution of the target species, (2) to monitor the advent of new exotic species over time, (3) to aide in tracking patterns of infestation throughout the U.S. and possible pathways for introduction, and (4) to identify the characteristics of high risk habitats or sites.

### **C. Results:**

None of the target defoliating insects was found at any site during the trapping survey, and no symptoms of oak decline caused by *Phytophthora ramorum* were observed. A native species known as the oak leaf-tier (*Croesia semipurpurana*) was attracted to traps that contained the lure for summer fruit tortrix, *A. orana*. *C. semipurpurana* is a member of a group of Tortricid moths that feeds in the early spring on oak foliage throughout the Northeastern United States and Canada. Feeding by the larvae can result in foliage that appears ragged, distorted, rolled up and sparse.

### **D. Taxonomic services:**

Insects collected in traps were screened and sorted by personnel at the Vermont Department of Forests, Parks and Recreation Forest Biology Laboratory in Waterbury. No suspect insects were collected and none required follow-up taxonomic services outside the Vermont Department of Forests, Parks and Recreation.

### **E. Benefits and results of survey:**

No summer fruit tortrix (*Adoxophyes orana*), light brown apple moth (*Epiphyas postvittana*) or variegated golden tortrix (*Archips xylosteanus*) were collected in traps at any site, and no symptoms of oak decline caused by *Phytophthora ramorum* were observed. European oak bark beetle (*Scolytus intricatus*) did not emerge from the log bolts collected last year. Trapping for these target pests in Vermont contributes on a wider scale by providing valuable distribution data at the national level.

**F. Compare actual accomplishments to objectives established for the period. When the output of the project can be quantified, a computation of cost per unit of output is required when useful.\*:** We accomplished our survey objectives for the period.

### **G. If appropriate, explain why objectives were not met:**

We met the objectives of this study.

### **H. NAPIS database submissions:**

Data for *Adoxophyes orana*, *Epiphyas postvittana* and *Archips xylosteanus* have been entered into NAPIS. Negative data for *Scolytus intricatus* and *Phytophthora ramorum* has not been entered due to the fact that the survey methodologies used for those two pests in the 2010 were not accepted by NAPIS.

**I. Where appropriate, explain any cost overruns.** There was no cost overrun.

**Table 1.** Summary of site and collection data for 2010 Vermont survey for summer fruit tortrix (*Adoxophyes orana*), the light brown apple moth (*Epiphyas postvittana*), the variegated golden tortrix (*Archips xylosteanus*), and oak decline caused by *Phytophthora ramorum*. Data include counties, towns, GPS coordinates, dates of trapping survey, and numbers of target species found.

County	Town	Trap Location (NAD83)			Dates of trapping survey	# of site visits	# of target species found
		<i>Adoxophyes orana</i> (Summer Fruit Tortrix)	<i>Epiphyas postvittana</i> (Light Brown Apple Moth)	<i>Archips xylosteanus</i> (Variegated Golden Tortrix)			
Addison	Leicester	43.84874 -73.04766	43.84833 -73.04624	43.84775 -73.04581	5/1/10 – 8/26/10	4	0
Washington	Middlesex	44.32255 -72.68999	44.32210 -72.69032	44.32247 -72.69007	5/5/10 – 8/27/10	4	0
Windsor	Sharon	43.76557 -72.45281	43.76582 -72.45262	43.76601 -72.45295	5/10/10 – 9/15/10	4	0
Rutland	West Haven	43.58663 -73.41201	43.58629 -73.41203	43.58641 -73.41242	5/7/10 – 8/26/10	4	0