CAPS Survey Work Plan Fiscal Year 2018

Cooperator:	**The Connecticut Agricultural Experiment Station**			
State:	Connecticut			
Project:	Combined Surveys			
Project funding source:	CAPS- Pest Detection Survey			
Project Coordinator:	Katherine Dugas			
Agreement Number				
Contact Information:	**Address:**	123 Huntington Street		
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This Work Plan reflects a cooperative relationship between the Connecticut Agricultural Experiment Station (the Cooperator) and the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ). It outlines the mission-related goals, objectives, and anticipated accomplishments as well as the approach for conducting a Nursery Survey and a Christmas Tree Survey and the related roles and responsibilities of the parties [e.g., APHIS role(s) and Cooperator role(s)] as negotiated.

I) OBJECTIVES AND NEED FOR ASSISTANCE

The greenhouse and nursery industry in Connecticut is the largest agricultural production sector in the state, accounting for 49% of agricultural product sales (Economic Impact of Connecticut's Agricultural Industry, UConn, 2010). According to the CT Nursery and Landscape Association, the industry grosses more than $800 million annually. Christmas trees represented around $6 million dollars in sales in 2012(National Ag Statistic Service NASS).

Two exotic moths and two scolytid beetles threaten Connecticut's nursery industry. The green oak tortrix moth (GOTM), *Tortrix viridana*, is a polyphagous pest whose larvae feed primarily on oak but can also feed on a wide range of other hardwood hosts including maple, beech, poplar, ash, willow, and rhododendron, as well as on crop producers such as blueberry, apple, pear, cherry and raspberry. Caterpillar infestations can result in defoliation of a host tree. The oak processionary moth (OPM), *Thaumetopoea processionea*, is a major defoliator of oaks, and is native to central to southern Europe, though populations are beginning to expand northwards in response to climate shift. The moth also poses a public health risk, as late instar caterpillars have stinging hairs that cause irritation to the skin and can cause respiratory distress if inhaled.

Trypodendron domesticum, the European hardwood ambrosia beetle, is a cambial borer in maple, birch, *Prunus*, oak and other hardwoods and is present in Prince Edward Island,

Canada. *Platypus quercivorus*, the oak ambrosia beetle, vectors an oak wilt fungus and attacks oaks in the white oak group.

Four cerymbicids three exotic moths, and one weevil threaten Connecticut's Christmas tree industry. *Tetropium fuscum,* the brown spruce longhorn beetle (BSLB) larvae bore into tips of fir, spruce and larch. Feeding damage leads to heavy resin flow, dieback of branches, and possibly tree death. It is native to Europe and Siberia, but has been introduced to North America in Nova Scotia and New Brunswick. *Tetropium castaneum,* the black spruce beetle (BSB) attacks the lower trunk of fir, spruce, larch and pine. *Monochamus urussovii*, the black fir sawyer (BFS), attacks fir, spruce, larch, and pine. Adult maturation feeding can destroy stems and reduce foliage area, and larvae can cause significant wood damage leading to loss of commercial quality. *Monochamus alternatus*, the Japanese pine sawyer (JPS) primarily attacks pines, but can also attack fir, spruce, and even some deciduous trees. Furthermore, cerymbicids can be vectors for fungal pathogens such as blue stain.

Thaumetopoea pini, the pine processionary moth is a destructive pine defoliator in Asia, northern Africa, and southern Europe. It poses a similar threat of northward expansion as its relative the oak processionary moth, including the possession of harmful stinging hairs.

Hylobius abietis, the large pine weevil, is a significant pest of conifer plantations in Europe and Asia. Young plants are especially vulnerable to damage, and attacked trees may also be infected with secondary fungal pathogens. Although it will also attack deciduous trees, its preferred hosts are *Pinus* and *Picea*.

The purpose of these surveys is to determine if any of these invasive pests have been introduced or spread from known populations and will determine whether or not Connecticut is free of these pests. Demonstrating area freedom is an important phytosanitary measure that will allow the US to continue to export at-risk stock from regions of the country that are determined to be pest free.

II) RESULTS OR BENEFITS EXPECTED

The Cooperator seeks to conduct a program which is expected to result in:

A. Determining whether the GOTM, OPM, EHAB, or OAB are present in Connecticut nurseries, sawmills, or forests.

B. Determining whether the BFS, JPS, BSB, BSLB, LPW, or PPM are present in Connecticut Christmas tree farms.

C. Increased outreach and awareness to Connecticut stakeholders and industries about the pests of concern.

D. Knowledge regarding the presence or absence of these pests that will assist decision making regarding management of these pests.

III) APPROACH

What is the plan of action or approach to the work?

Scientific Name	Common Name	Survey Method	Trap	Lure
Nursery Survey				
Platypus quercivorus	oak ambrosia beetle	Trap	Multi-funnel Trap, 8 Funnel, Wet	*Platypus quercivorus* Lure
Trypodendron domesticum	European hardwood ambrosia beetle	Trap	Multi-funnel Trap, 8 Funnel, Wet	Lineatin Lure
Scolytidae	ambrosia/bark beetle	Trap	Multi-funnel Trap, 8 Funnel, Wet	Ethanol Lure
Tortrix viridana	green oak tortrix moth	Trap	Wing Trap Kit, Paper	*Tortrix viridana* Lure
Thaumetopoea processionea	oak processionary moth	Trap	Wing Trap Kit, Paper	*Thaumetopoea processionea* Lure
Christmas Tree Survey				
Monochamus urussovii	black fir sawyer	Trap	Cross Vane Panel Trap, Black	Monochamol Lure Alpha Pinene UHR Lure Ethanol Lure
Monochamus alternatus	Japanese pine sawyer	Trap	Cross Vane Panel Trap, Black	Monochamol Lure Alpha Pinene UHR Lure Ethanol Lure
Hylobius abietis	large pine weevil	Trap	Cross Vane Panel Trap, Black	Monochamol Lure Alpha Pinene UHR Lure Ethanol Lure
Tetropium castaneum	black spruce beetle	Trap	Cross Vane Panel Trap, Black	Spruce Blend Lure Geranyl Acetol Lure Ethanol Lure
Tetropium fuscum	brown spruce longhorned beetle	Trap	Cross Vane Panel Trap, Black	Spruce Blend Lure Geranyl Acetol Lure Ethanol Lure
Thaumetopoea pityocampa	pine processionary moth	Trap	Large Plastic Delta Trap Kits, Red	*Thaumetopoea pityocampa* Lure

A **Nursery Survey** will consist of seasonal trap/lure monitoring at twenty five high-risk sites for priority insects. High-risk sites include nurseries (wholesale, retail, and growing yards), sawmills, and forest landowner properties that sell, grow, cut, or contain pest host hardwoods, especially oak (*Quercus*) and maple (*Acer*).

Three Lindgren 8-funnel traps following national protocols developed by APHIS for European hardwood ambrosia beetle (*Trypodendron domesticum*) and oak ambrosia beetle (*Platypus quercivorus*) will be installed each in twenty-five high-risk sites; from April-June for EHAB and July-September for OAB. The third trap will be a generalist Scolytid trap and will remain up from April through September. Traps will be serviced every two weeks and lures replaced as needed, according to National Exotic Wood Boring and Bark Beetle Survey guidelines.

Paper wing traps following national protocols developed by APHIS for oak processionary moth (OPM) and green oak tortrix moth (GOTM) will also be installed at the same twenty-

five high risk sites beginning the first week of June through September. The traps will be serviced every two weeks, and lures replaced as needed according to National Oak Commodity survey guidelines.
The CAPS SSC and assistants will screen moths and scolytids and PPQ identifiers will verify suspect insects if identified. Results will be uploaded to NAPIS.

A <u>Christmas Tree Survey</u> will consist of seasonal trap/lure monitoring at thirty high risk sites for priority insects. High-risk sites include Christmas tree farms and growing yards specifically growing common Christmas tree species: pine, fir, and spruce.
Two cross-vane panel traps will be installed each in thirty high risk sites, following national protocols developed by APHIS. One trap will be a combined trap for black spruce beetle and brown spruce longhorned beetle (*Tetropium castaneum and T. fuscum*). The second trap will be a combined trap for Japanese pine sawyer, black fir sawyer, and large pine weevil (*Monochamus alternatus, M. urussovi, and Hylobius abietus*). The traps will be up from May through September. Traps will be serviced every two weeks and lures replaced as needed, according to National Pine Commodity survey guidelines.
One paper wing trap following national protocols developed by APHIS for pine processionary moth (*Thaumetopoea pityocampa*) will also be installed at the same thirty high risk sites beginning the first week of May through September. The traps will be serviced every two weeks, and lures replaced as needed according to National Pine Commodity survey guidelines.
The CAPS SSC and assistants will screen and PPQ identifiers will verify suspect cerambycids and moths if identified. Results will be uploaded to NAPIS.

A. **The Cooperator Will:**

1. **By function, what work is to be accomplished?**
    a. Nursery survey: cooperator will conduct trap surveys for *Trypodendron domesticum* (EHAB), *Platypus quercivorus* (OAB) and scolytid generalists using lindgren funnel traps in each of 25 high risk sites from April through September. Traps will be checked every two weeks according to the National Survey Guidelines. Cooperator will also conduct surveys for *Tortrix viridana* (GOTM), and *Thaumetopoea processionea* (OPM) using wing traps (and plastic bucket traps for CM) for each insect in each of 25 high risk sites from May through September. High risk sites include areas adjacent to or at nurseries, sawmills, and state forests. Traps will be checked every two weeks according to the National Exotic Wood Borer/Bark Beetle and Oak Commodity Survey Guidelines.
    b. Christmas tree survey: cooperator will conduct surveys for *Monochamus urussovii* (BFS), *Monochamus alternatus* (JPS), *Hylobius abietis*, (LPW), *Tetropium castaneum* (BSB), and *Tetropium fuscum* (BSLB) using cross-vane panel traps for each insect in each of 30 high risk sites from May through September. High risk sites are Christmas tree farms and growing yards, specifically those that grow *Abies*, *Picea*, and *Pinus*. Traps will be checked every two weeks according to the National Survey Guidelines. Cooperator will also conduct surveys for *Thaumetopoea pityocampa* using a wing trap for each insect in each of the 30 high risk sites from May through September.

Traps will be checked every two weeks according to the National Pine Commodity survey guidelines.

c. Cooperator will also conduct outreach to the nursery growers, arborists, and stakeholders at their annual meetings and as survey sites are arranged with them. Nursery and sawmill employees will be educated about pest management so as to minimize any possible negative impact on their business.

2. What is the quantitative projection of accomplishments to be achieved?

a. *By activity or function, what are the anticipated accomplishments by month, quarter, or other specified intervals?*

- Data management and reporting will occur throughout the survey season into an approved APHIS database from May through December, after taxonomic evaluations.
- Pest risk and pathway analysis will be used to select survey sites in nurseries, state forests, sawmills, Christmas tree farms, and other high-risk areas containing prominent oak/maple or fir, spruce, and pine populations during January through April.
- Surveys will be undertaken when pest symptoms are expressed and/or adult stages are flying: EHAB April-June; OAB June-August; GOTM May-July; OPM June-September; PPM, BFS, JPB, BSB, LPW and BSLB May-September. Cross-vane panel traps, lindgren funnel traps, and moth wing traps will be checked every two weeks as per survey guidelines.
- Identifications will be conducted throughout the survey period from April through September and completed as needed in the fall.
- Cooperator outreach and risk communication will occur throughout the season at survey locations and at grower meetings.
- Work plans, survey results and pest information will be submitted to the CAES webmaster on an ongoing basis throughout the year. A semi-annual report will be submitted in July, and an annual report will be submitted in January.

b. *What criteria will be used to evaluate the project? What are the anticipated results and successes?*

- Pest detection surveys and outreach are completed in the manner and time frame outlined in Section III.A.1 above.
- All data collected from the pest detection surveys will be entered into an APHIS PPQ approved database (NAPIS) as outlined in Section V below.
- Data will be supplied to PPQ for map making purposes upon request; CAES does not have the resources needed to produce maps.
- PPQ site visits conducted at least once a year of planned survey activities.

3. What numbers and types of personnel will be needed and what will they be doing?

- Two seasonal workers will be trained to run trap surveys, conduct screening of trap collections, and to recognize symptoms of infestation of exotic moths and beetles. The worker will be supervised by the State Survey Coordinator (SSC) and will assist with trap surveys. The summer workers will need to be hired. All positions are paid positions.

- Katherine Dugas, the SSC, will coordinate the surveys, ensuring all necessary supplies are obtained and the objectives are met. She will also assist in survey, screening and outreach activities.
- Donna Ellis of UConn will collaborate with the SSC to conduct moth and beetle surveys at 30 sites in northeastern CT, including Hartford, Tolland, New London, and Windham counties.

4. What equipment will be needed to perform the work?

a. *What equipment will be provided by the cooperator?*
Cooperator will provide large format printer and state vehicle.

b. *What equipment will be requested from APHIS on loan?*
None.

c. *What equipment will be purchased in whole or in part with APHIS funds?*
None.

d. *How will the equipment be used?*
Large format printer will be used for producing outreach materials; state vehicle will be used to conduct survey and for travel to meetings and outreach events.

e. *What is the proposed method of disposition of the equipment upon termination of the agreement/project?*
N/A

5. Identify information technology equipment, e.g., computers, and their ancillary components.

IT equipment currently used by SSC:

- Laptop – purchased with APHIS funds from previous agreement
- LCD Projector– purchased with APHIS funds from previous agreement
- GPS Unit – purchased with APHIS funds from previous agreement

IT equipment currently used by all personnel:

- Access to CAES computers, access to Internet through CAES and CAES computer network.

6. What supplies will be needed to perform the work?

a. *What supplies will be provided by the Cooperator?*
Office Supplies

b. *What supplies will be requested from APHIS (list supplies)?*
Traps and lures for moth and beetle surveys prior to start of survey as requested by the SSC through the PPQ Survey and Supply database.

c. *What supplies will be purchased in whole or in part with APHIS funds?*
Site selection and outreach: Printing supplies/postage for printing and sending grower information packets, updated GPS unit for site navigation
Moth and beetle surveys: Vials, ethanol, specimen containers, ID books, antifreeze, trap hanging hardware, mailers and postage

d. *How will the supplies be used?*
Supplies will be used to conduct surveys, conduct initial screenings, ship any suspect specimens for confirmation.

e. *What is the proposed method of disposition of the supplies with a cumulative value over $5,000 upon termination of the agreement/project?* N/A

7. What procurements will be made in support of the funded project and what is the method of procurement (e.g., lease, purchase)?

Materials are purchased through the approved system of state contract vendors. Purchases are made with a credit card billed directly to the appropriate account at CAES.

8. What are the travel needs for the project?

a. *Is there any local travel to daily work sites?*
Local travel to survey sites for moth and beetle trapping will occur biweekly from April through September. Cooperator will provide a vehicle for local travel as state allows.

b. *What extended or overnight travel will be performed (number of trips, their purpose, and approximate dates)?*
No extended or overnight travel is anticipated for this project. Dr. Theodore Andreadis and Mr. Michael Last approve all travel.

9. Reports:
Submit all reports to the APHIS Authorized Department Officer's Designated Representative (ADODR). Reports include:

a. Narrative accomplishment reports in the frequency and time frame specified in the Notice of Award, Article 4.

b. Federal Financial Reports, SF-425 in the frequency and time frame specified in the Notice of Award, Article 4.

10. Are there any <u>other</u> contributing parties who will be working on the project?

a. *If so, list other participating institutions/agencies who will work on the project.*
Donna Ellis, UConn

b. *Describe the nature of their effort.* Donna Ellis will coordinate and run moth and beetle surveys in northeastern CT, handling all traps at 30 high risk sites.

B. APHIS Will:

1. Outline the Agency's (USDA APHIS PPQ) substantial involvement.

a. *Include any significant Agency collaboration and participation*

- Providing any new information that becomes available on survey pests, provide appropriate forms and review data.
- Providing the following resources: funds to the Cooperator to cover costs outlined in the financial plan. In addition, specific appropriated funding, in the level authorized by APHIS Field Operations, will be dedicated to the delivery of CAPS objectives listed above.

- Making arrangements for confirming identification of suspect GOTM, OPM, EHAB, OAB, BFS, JPS, BSB, LPW, PPM, or BSLB samples.
- Producing maps of the survey activities with the location data (latitude and longitude) provided by the Cooperator.

b. *Project oversight and performance management*
- The State Plant Health Director, USDA APHIS, will provide informational support, review performance and federal guidance.
- The Pest Survey Specialist, USDA APHIS will assist in developing CAPS pest survey protocols, pest risk analysis, IPHIS training, work plan and budget development and other related activities.

c. *Provide the equipment requested by the cooperator in 4.b. & c.*

d. *Provide the supplies requested by the cooperator in 6.b. & c.*

IV) GEOGRAPHIC LOCATION OF PROJECT

A. *Is the project statewide or in specific counties?*
All Connecticut counties where high risk sites are identified, including Fairfield, Litchfield, New Haven, Hartford, Middlesex, Tolland, New London, and Windham counties.

B. *What type of terrain will be involved in the project?*
Nurseries, Christmas tree farms, sawmills, land conservancy and conservation commission lands, state parks, and woodlands.

C. *Are there any unusual geographic features which may have an impact on the project?*
None.

V) DATA COLLECTION AND MAINTENANCE

The National Agricultural Pest Information System (NAPIS) is the final repository for all Pest Detection and Cooperative Agricultural Pest Survey (CAPS) survey results. As such, all data generated from all CAPS (and Farm Bill Goal 1 National Priority) surveys will be entered into NAPIS. Note that not all Farm Bill Goal 1 Surveys are designated as National Priority. Each State is responsible for entering complete, accurate, and timely pest survey data using the approved protocol and methodology.

- First record for the State and/or County will be entered within **48 hours** of confirmation of identification by a qualified identifier.
- All other required records, both positive and negative survey data, must be entered **within two weeks** of confirmation.
- All records are to be entered into the NAPIS database no later than the date that the final Accomplishment Report is due.

VI) TAXONOMIC SUPPORT

- *If you do not need additional assistance taxonomic assistance, list the person(s) or institution who will perform the identification/diagnostics, and do not check B.*
- *If you need assistance, check B.*

Person(s) or Institution that will screen targets (Name & Contact Information) and level of screening/identification.

Level II *Tortrix viridana, Thaumetopoea processionea, Tetropium castaneum, Tetropium fuscum, Monochamus urussovii, Monochamus alternatus, Hylobius abietis, Thaumetopoea pityocampa, Platypus quercivorus, Trypodendron domesticum*
Dr. Gale. E. Ridge, The Connecticut Agricultural Experiment Station
123 Huntington Street
New Haven, CT 06504
gale.ridge@ct.gov

OR

B. ☒ Request for taxonomic support.

VII) SURVEY SUMMARY FORM

A Survey Summary Form must be completed to summarize all CAPS surveys **funded by the Pest Detection line item.**

VIII) SIGNATURES

Victoria Lynn Smith 12 July 18

ROAR **Date** **ADODR** **Date**

CAPS Survey Financial Plan - Survey

COOPERATOR NAME: The Connecticut Agricultural Experiment Station

TIME PERIOD: January 1, 2018 – December 31, 2018

ITEM	APHIS FUNDS	COOPERATOR FUNDS (Show even if zero)
PERSONNEL:		
SSC @ $22.85/hour for 670 hours	$15,310	$0
1 Summer Worker @ 575 hours @$11/hour	$6,325	$0
1 Summer Worker @ 575 hours @$11/hour	$6,325	$0
Subtotal	$27,960	$0
FRINGE BENEFITS:		
85% of salary for permanent employees	$13,013	$0
48% of salary for durational employees	$6,072	$0
Subtotal	$19,085	$0
TRAVEL:		
State car rental for 6 mos @ $400/mo.	$2,400	$0
Subtotal	$2,400	$0
EQUIPMENT	$0	$0
Subtotal	$0	$0
SUPPLIES		
Printing supplies and postage for sending grower information packets	$2,000	$0
Insect ID Books	$650	
Insect Pins and Mounting Equipment	$175	$0
Garmin GPS Unit	$200	$0
Mailers	$100	$0
Postage	$76	$0
Propolene Glycol Antifreeze, 36 gallons @ $150/6 gallons	$900	$0
Rope and Hardware for Hanging Beetle Traps	$200	$0
Ethanol, 4 gallons @ 150/4 gallons	$300	$0
3 Cases of Polypropylene Histology Containers @ $50/case	$150	$0
5 Cases of 1.5ml Storage Vials @ $51/case	$255	
Paint strainers for scolytid trap collection, 500 @ $5/100	$25	$0
Subtotal	$5,031	$0
CONTRACTUAL		
Donna Ellis, UConn	$15,000	$0
Subtotal	$15,000	$0
OTHER	$0	$0
Subtotal	$0	$0
TOTAL	$69,476	$0
Cost Share Information	100%	0%

CAPS Infrastructure Financial Plan

COOPERATOR NAME: The Connecticut Agricultural Experiment Station
TIME PERIOD: January 1, 2018 – December 31, 2018

ITEM	APHIS FUNDS	COOPERATOR FUNDS (Show even if zero)
PERSONNEL:		
SSC @ $22.85/hour for 730 hours	$16,681	$0
SPRO @ 5 hrs @ $78.78/hr	$0	$394
Deputy SPRO @ 70 hrs @ $57.40/hr	$0	$4,018
Subtotal	$16,681	$4,412
FRINGE BENEFITS:		
85% of salary for permanent employees	$14,178	$3,750
Subtotal	$14,178	$3,750
TRAVEL:		
Travel by SSC to CAPS meeting	$1,315	$0
Subtotal	$1,315	$0
EQUIPMENT		
Subtotal	$0	$0
SUPPLIES		
Subtotal	$0	$0
CONTRACTUAL		
Subtotal	$0	$0
OTHER	$0	$0
Subtotal	$0	$0
TOTAL DIRECT COSTS	$32,174	$8,162
TOTAL	$32,174	$10,147
Cost Share Information	76%	24%