

SEMI-ANNUAL NARRATIVE PROGRESS REPORT FOR FISCAL YEAR 2004
USDA APHIS EASTERN REGION CAPS
HOMELAND SECURITY/PEST DETECTION: CONNECTICUT
Cooperative Agreement Number 04-8209-0327-CA

Progress made toward accomplishment of calendar year 2004 work plan objectives during the period July 1, 2004 through December 31, 2004.

I. STATUS OF ACTIVITIES

PEST DETECTION SURVEYS

A. Warehouse/Wood Boring Beetle Survey

This survey was completed prior to July 1, 2004.

B. Survey for Emerald Ash Borer (report submitted by Chris Maier)

BACKGROUND AND RATIONALE: The emerald ash borer, *Agrilus planipennis*, is an eastern Asian beetle that is established in Michigan, Ohio, Indiana, and Ontario. In the central United States, it has killed green, white, and black ashes in forested and landscaped settings and is spreading to new areas. This species poses a significant threat to ash trees, which are an important component of many Connecticut forests (a recent study estimated that Connecticut forests have nearly 25 million ash trees). Ash trees in Connecticut may be predisposed to attack because many already are stressed by infections of one or more plant pathogens. Ashes are valued highly for shade trees, furniture, and firewood. With interstate movement of wood and nursery stock and with international shipment of solid-wood packing material, an intensive survey of for the emerald ash borer is critical for protecting forests and ornamental shade trees in Connecticut.

OBJECTIVES: The main objective was to survey ash trees in urban areas, forests, nurseries, and yards of Connecticut for infestations of the emerald ash borer. Critical targets were ash trees near the Connecticut coastline, especially near import businesses, warehouses with eastern Asian imports, and garden centers. In particular, ash trees with sparse foliage and/or dead limbs were targeted for inspection. A secondary objective was to raise public awareness of the emerald ash borer by distributing educational materials and by speaking at meetings.

SURVEY METHODOLOGY: With the cooperation of the regulatory staff of Connecticut Agricultural Experiment Station (CAES), the Connecticut Tree Protective Association (CTPA), town tree wardens, foresters, and others, mainly high-risk ash trees were inspected for infestations of the emerald ash borer between May and November 2004. Surveyors (Shalyn Zappulla, Morgan Lowry, and Chris Maier) used two methods of survey: (1) Ash trees were inspected visually with binoculars to detect D-shaped emergence holes and other signs of the emerald ash borer. In suspect trees, (if possible) bark was peeled to search for evidence of larval galleries. (2) Red sticky traps were stapled at a height of 2 meters on five live ash trees at 17 locations (three sites in Fairfield Co. and two each in the other seven counties of Connecticut) and checked for adult beetles every 10-14 days between late May and September. Based on a recent scientific report, the yellow traps originally proposed were changed to red traps, the more attractive of the two colors.

RESULTS OF SURVEY: Survey personnel did not detect any larvae or adults of the emerald ash borer. A total of 2,320 ash trees at 382 sites were inspected for the emerald ash borer. These sites were located in 161 of the 169 Connecticut towns (municipalities). In all, the survey team examined 1,499 white ash (64.6% of total), 806 green ash (34.7%), 9 black ash (0.4%), and 6 unidentified ash trees (0.3%). The green ash trees were almost exclusively planted trees in urban areas or nurseries. Table 1 gives the survey statistics in more detail. The sampling sites are illustrated in Fig. 1.

Table 2 shows the diversity of sites inspected for infestations of the emerald ash borer. Sites situated along urban streets or along highways comprised the largest portion of the total sample (45.5%). Ash trees near the major ports of Connecticut were very scarce. Only three nurseries (five fields inspected) grew ash trees.

Finally, inspectors recorded the latitude and the longitude of every site with a GPS unit. The permanent record of the coordinates will be useful for finding new sites or for relocating old sites that merit another inspection.

DATA SUBMISSION: The State Survey Coordinator, Donna Ellis, submitted the survey results to the NAPIS database in early January 2005 (Please see Attachments 1 and 2).

EDUCATIONAL/EXTENSION ACTIVITIES IN THE STATE:

January 15, 2004: Spoke, distributed fact sheets, and presented a display on the emerald ash borer at the Annual Meeting of CTPA in Southington.

February 23, 2004: Spoke on the emerald ash borer at a meeting of the Cooperative Agricultural Pest Survey Committee at CAES, New Haven.

March 17, 2004: Distributed fact sheets on the emerald ash borer to a CTPA class for aspiring arborists at CAES, New Haven.

March 25, 2004: Made an oral presentation, accompanied by displays, on the emerald ash borer at a meeting of the Station Associates of CAES in New Haven.

March 31, 2004: Spoke about the emerald ash borer at the Forest Health Monitoring Workshop at CAES, New Haven.

April 23, 2004: Demonstrated damage of the emerald ash borer and passed out fact sheets at the Annual Meeting of the Connecticut Entomological Society at CAES, New Haven.

Mid-summer—wrote an article titled “Beware of the Emerald Ash Borer” for Newsletter of the Sleeping Giant Park Association, Hamden.

August 4, 2004: Distributed fact sheets and spoke about the emerald ash borer to citizens of Connecticut during the Annual Plant Science Day of CAES at Lockwood Farm, Hamden.

April-December 2004: Distributed over 500 fact sheets on the emerald ash borer to interested parties, such as foresters, pest control operators, water company personnel, tree wardens, and students.

students.

CONCLUSION: Although the emerald ash borer was not detected in Connecticut during 2004, it should remain a target for intensive surveys in the future. Only a small fraction of the many unhealthy ash trees in the landscape were examined; thus, an infestation could exist in one of the many areas that were not inspected in Connecticut during 2004. The principal investigator strongly recommends that future surveys incorporate the use of trap-trees (girdled ash trees with sticky bands). Unlike most of the red sticky traps attached to live ash trees in 2004, girdled trees (in a pilot project) attracted adults of most species of wood-boring insects known to use ashes for larval hosts. Also, a series of permanent sampling sites, particularly in western Connecticut, might be advisable.

Table 1. Statistics for the emerald ash borer survey in Connecticut in 2004. No larvae or adults were detected.

County	Total sites	First survey date	Last survey date	# white ash trees	# green ash trees	# black ash trees	# unid. ash trees	Total trees inspected
Fairfield	63	10 May	26 October	217	116	0	0	333
Hartford	57	11 May	1 November	108	253	0	6	367
Litchfield	45	2 June	4 November	242	18	0	0	260
Middlesex	26	25 May	13 October	97	28	0	0	125
New Haven	91	12 May	22 October	240	328	8	0	576
New London	42	18 May	1 November	248	26	0	0	274
Tolland	25	18 May	28 October	116	25	0	0	141
Windham	33	19 May	1 November	231	12	1	0	244
All sites	382	10 May	4 November	1,499	806	9	6	2,320

Table 2. Number of sites of different types inspected in each Connecticut county during 2004.

County	Total sites	Forest/arboretum ^a	Park/recreation area ^b	Street/highway area ^c	Cemetery ^d	Nature/wildlife management area ^e	Nursery ^f	Yard ^g
Fairfield	63	12	15	28	5	2	0	1
Hartford	57	3	13	32	2	0	3	3
Litchfield	45	16	9	11	6	1	1	0
Middlesex	26	13	3	7	2	0	1	0
New Haven	91	13	9	63	3	1	0	2
New London	42	18	3	15	1	0	0	5
Tolland	25	11	2	9	3	0	0	0
Windham	33	12	3	9	3	0	0	5
Total	382	98	57	174	25	4	5	16

^a Forest/arboretum = truly forested area with little disturbance; ^b park/recreation area = open area, generally with scattered trees that were relatively large; ^c street/highway area = site with group of

trees within 5 meters of a street, highway, or interstate; some sites near warehouses and wood-processing companies; ^d cemetery = site with large trees scattered across the mown landscape of a cemetery (in many ways similar to a park/recreation area); ^e nature/wildlife management area = generally undisturbed area that was partially forested; ^f nursery = location with planted ash trees, less than 15 centimeters in diameter; ^g yard = site with trees away from the road and around a house; and ^h landfill = site with trees growing within 200 m of a landfill or recycling facility.

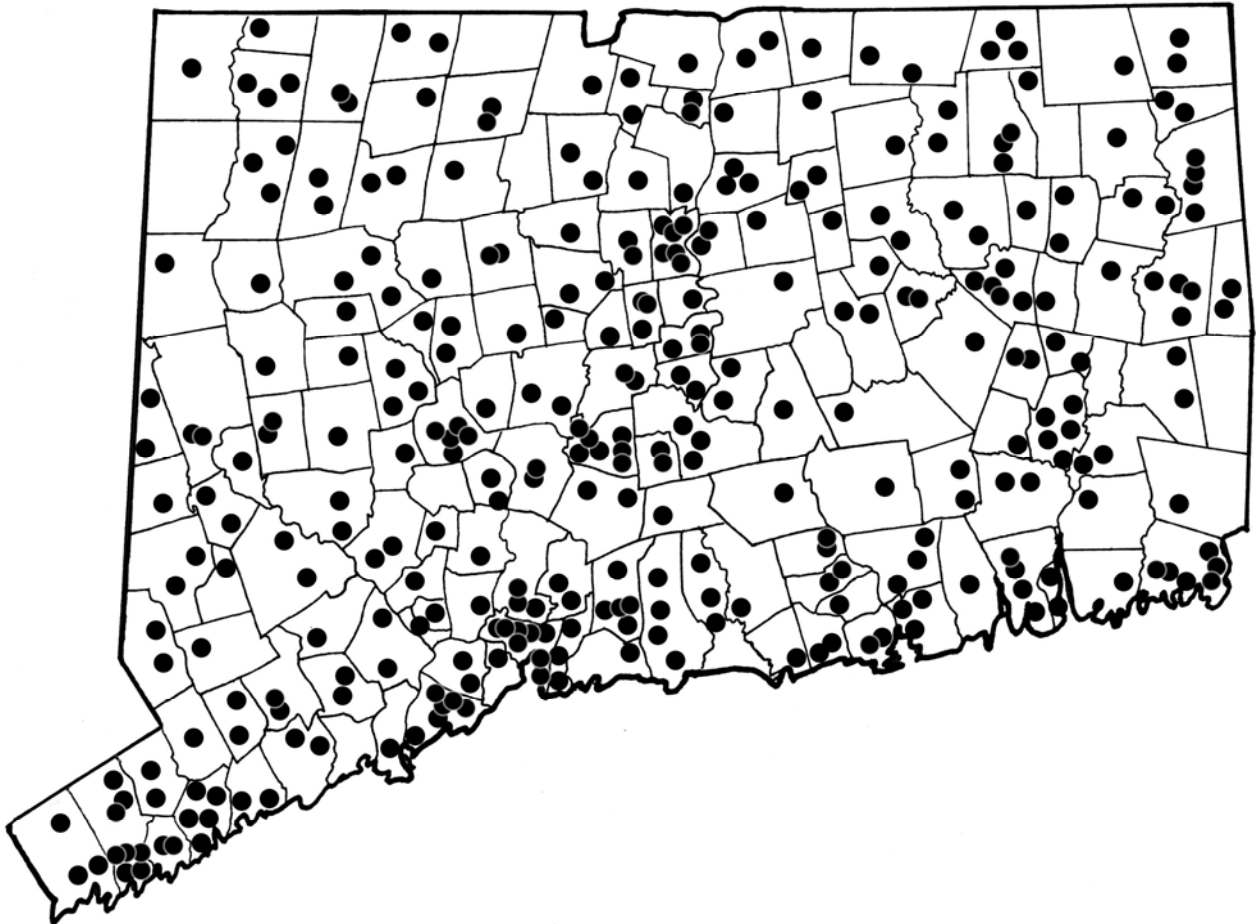


Fig. 1. Sites where ash trees were surveyed for the emerald ash borer in 2004. Sites within 1 kilometer of each other are represented with a single solid circle. The lines within the state boundary delimit the towns of Connecticut.

C. Exotic Wireworm Survey (reported submitted by Donna Ellis)

Introduction and Background

The objectives of the project were to continue a statewide survey in 2004 that began the previous year in Connecticut to conduct visual surveys and an educational outreach program for several species of exotic wireworms. These insects are listed as a primary target for the Eastern Region based on the economic damage they may cause to a wide range of agricultural crops. The

The survey and outreach activities were conducted in the remaining four Connecticut counties. Educational outreach provided to growers increased their knowledge of exotic wireworms and management options if these exotic pests are identified from Connecticut.

Pheromone and visual surveys were conducted in Connecticut during 2004 for exotic wireworms, including *Agriotes lineatus* and *A. obscurus*, potential new exotic pests of numerous vegetable crops (potatoes, corn, onions, garlic, leeks, beans, lettuce, and beets), legumes, and grains. Wireworm larvae tunnel into and feed on seeds, tubers, young seedlings, and plant crowns. Extensive feeding damage to plants may result in economic losses for growers.

Methodology

These materials were distributed to Host crops include potatoes, corn, peppers, tomatoes, lettuce, carrots, onions, leeks and legumes.

The 2004 survey was a continuation of a survey program that began in 2003, with activities occurring in the four western Connecticut counties (Fairfield, Hartford, Litchfield, and New Haven Counties). The four eastern counties were surveyed during 2003. Educational materials on exotic wireworms compiled from Internet research and literary references during the spring were used to create informative handouts that were distributed to participating vegetable growers or other producers of the host crops, with emphasis on organic and low-spray growers, and to Integrated Pest Management (IPM) personnel during the survey period.. Caroline Robinson, an undergraduate student, was hired as a Research Technician to conduct the survey, with assistance by Donna Ellis.

The exotic wireworm survey was conducted between May and September 2004. The survey occurred at 24 farms and other agricultural production areas where the host crops were grown. Many of the survey sites were organic farms or other fields where little or no insecticides were applied. Where pesticide usage is minimal or does not occur, there is an increased likelihood that adult wireworms may be trapped if they are present at the site. Visual surveys included inspection of plants for the presence of exotic wireworms and feeding damage to host crops by these insects. If damaged plants were observed at a particular site, soil around damaged plants was checked for the presence of larvae. A pheromone was used in ground level Vernon traps for two *Agriotes* wireworm species, *Agriotes lineatus* and *A. obscurus*. Two traps were placed at each farm in May and June. The traps were inspected approximately every three weeks through September. Click beetles captured in the traps were collected and returned to the University of Connecticut for further examination. During the visual survey part of the project, host plants were inspected for the presence of exotic wireworms and feeding damage by these insects. Wireworm feeding damage is characteristic, as larvae gnaw on plant stems just above ground level. Damaged stems often break off the plant and die. Soil around any damaged plants was checked for larvae during the survey period. Suspect wireworms were collected and screened by Donna Ellis.

Survey Results

Approximately 10 suspect click beetles were brought to the University of Connecticut invertebrate collection and were examined by Jane O'Donnell, Scientific Collections Manager.

One of the suspect beetles was then forwarded to Richard Hoebeke at Cornell University for identification confirmation and was found not to be the target species. Survey data were submitted to the NAPIS database during the required reporting period. Please see Attachments 1 and 2, NAPIS Occurrence Data from 2004 CAPS Surveys in Connecticut.

D. Exotic Pest Survey for *Inula* spp. (reported by Donna Ellis)

Introduction and Background

Inula spp., including *Inula britannica* (common names are British Yellowhead, British Elecampane, or Yellow Starwort) are exotic plants in the Asteraceae family that have the potential to become invasive in Connecticut via accidental introduction. Hostas imported from the Netherlands or plants moved from hosta nurseries in Michigan into Connecticut may contain *Inula* seeds or seedlings. *Inula* is listed as a primary target for the Eastern Region that may be entering the U.S. via Hosta shipments from the Netherlands, Michigan and other origins. The exotic pest survey was conducted to best protect Connecticut's biosecurity and natural resources. The survey targeted an exotic pest of national concern that may be a potential new invasive plant. Invasive plants threaten our natural areas, outcompete native plants, reduce biological diversity, and may be economically prohibitive to control.

Methodology

The *Inula* survey was the second year of a two-year project. During 2004, the four western Connecticut counties (Fairfield, Hartford, Litchfield, and New Haven Counties) were surveyed by Research Technician Caroline Robinson, with assistance by Donna Ellis. The eastern four Connecticut counties had been surveyed during 2003. Educational materials on *Inula* identification, biology, invasive potential, and management options were compiled during the spring and handouts were prepared. The handouts were distributed to survey participants, which included nursery producers or garden center owners who grow or sell hostas during the site visits.

Site visits to 27 nurseries and garden centers occurred between June and August 2004. Hostas were inspected for the presence of *Inula* in and around the containers. Wet meadows and wet woodlands, suitable habitats for *Inula* in the vicinity of the nurseries were also visually inspected. Suspect plant specimens were collected and pressed.

Survey Results

A total of 6,715 containers of hostas were inspected for the presence of *Inula* spp. at the 27 sites surveyed. All suspect plants were inspected by Donna Ellis and were found to be negative. *Inula* was not found during the survey period. Survey data were submitted to the NAPIS database during the required reporting period. Please see Attachments 1 and 2, NAPIS Occurrence Data from 2004 CAPS Surveys in Connecticut.

E. Small Hive Beetle (report submitted by Victoria Lynn Smith)

Introduction:

The Small Hive Beetle (SHB), *Aethina tumida*, is an imported pest of honeybee colonies and has been found in 7 states, including Florida, Georgia, North and South Carolina, Pennsylvania, Ohio, and Minnesota. To date, SHB has not been found infesting honeybee colonies in Connecticut. The proposed survey would be conducted in conjunction with yearly inspections of honeybee colonies for detection of other pests and diseases, including foulbrood and varroa mites. In addition, an educational outreach component of the program will disseminate pertinent information to commercial and hobbyist beekeepers through presentations at meetings and workshops.

The SHB can be a destructive pest of honeybee colonies, causing damage to comb, stored honey, and pollen. If a beetle infestation is sufficiently heavy, it may cause bees to abandon the hive. The beetles may also be a pest of stored combs and honey (still in the comb) before extraction. Beetle larvae may tunnel through combs of honey, feeding and defecating, causing discoloration, contamination, fermentation, and eventual loss of the honey.

Methodology:

The Connecticut Agricultural Experiment Station (CAES) has completed the following:

- A total of 759 hives were opened and examined for SHB in apiaries throughout the state of Connecticut. Hives were examined by an experienced apiary inspector. Suspect insect or mite pests were brought to the Insect Information Office at the CAES for further examination.

Survey results:

- No hives were found to be infested with SHB.

Major Accomplishments:

- Negative occurrence data will be compiled and sent to the CAPS State Survey Coordinator, Donna Ellis, for entry into the NAPIS database.
- Educational outreach was accomplished by distribution of educational material at apiarist and hobbyist meetings, such as the Back Yard Beekeepers Association, and the Bee School conducted by the CT Beekeepers Association.

F. Chrysanthemum White Rust (report submitted by Victoria Lynn Smith)

Introduction:

Chrysanthemum White Rust (CWR), caused by the fungus *Puccinia horiana*, is a potentially damaging disease of several species of Chrysanthemum. There have been outbreaks of this disease in Canada and the US, but it has been eradicated when found. The proposed survey would be conducted in conjunction with yearly inspections of commercial production nurseries for detection of other pests and diseases, and by examination of plants submitted by home gardeners to the Plant Disease and Information Office (PDIO) at the Connecticut Agricultural Experiment

Experiment Station. In addition, an educational outreach component of the project will disseminate pertinent information to commercial nursery growers and hobbyist gardeners through presentations at meetings and workshops.

CWR is a significant quarantine pest in the US. Importation of Chrysanthemum is prohibited from several countries, territories, and possessions due to the potential of this organism to be transported with prohibited articles of Chrysanthemum. When CWR is found in the US, the States and APHIS cooperate to eradicate it. Management of CWR will help to protect the economic value of the nursery and greenhouse industry of Connecticut.

Methodology:

The Connecticut Agricultural Experiment Station (CAES) has completed the following:

- A total of 452 surveys were completed for CWR in nurseries and greenhouses. Plants were examined by trained inspectors and any suspect plants were delivered to the Plant Disease and Information Office at the CAES for confirmation.

Survey results:

- No plants were found to be infested with CWR.

Major Accomplishments:

- Negative occurrence data will be compiled and sent to the CAPS State Survey Coordinator, Donna Ellis, for entry into the NAPIS database.
- Educational outreach was accomplished by distribution of educational material at grower meetings, such as the CT Nursery and Landscape Winter meeting, the CT Green House Growers meeting, and other informational presentations to garden clubs and interested groups.

G. Asian Longhorned Beetle Delimiting Survey (report submitted by Victoria Lynn Smith)

Introduction:

The discovery of the Asian Longhorned beetle in Brooklyn New York and on Long Island in 1996, and in Chicago in 1998 required costly and extensive eradication programs. The Asian longhorned beetle (ALB), a non-native pest with a wide range of tree hosts, is considered a dangerous threat to urban trees as well as forests. This insect can also affect ornamental plantings and fruit trees and have an economic impact on the maple sugar and forest products industries. The latter is valued at \$500 million and included 350 firms, which employ 3600 loggers, mill workers, and other employees. The nursery industry is valued at \$400 million in annual sales in Connecticut. Early detection of the ALB will lead to more efficient and less expensive eradication efforts.

Methodology:

The Connecticut Agricultural Experiment Station (CAES) has completed the following:

1. With the cooperation of USDA-APHIS-PPQ, all one-square mile blocks in southwestern CT that fall within a 25-mile radius of the current ALB infestation in the borough of Queens, Brooklyn, NY were slated for survey over a three-year period. A total of about 1300 trees will be examined.
2. Trees were chosen based on the USDA-APHIS accepted host preference list, with 1 being the highest and 6 the lowest risk. Location of trees was recorded using GPS.
3. In the autumn, after leaf fall, trees were examined visually, using binoculars for the higher branches, for evidence of ALB infestation.
4. Approximately 200 trees were examined in Spring 2004 (March through April). About 470 more were examined in late September-early October 2004. The remaining trees will be examined in 2005 and 2006.

Survey Results:

1. No infestations of ALB were found on the surveyed trees.

Major Accomplishments:

1. Negative occurrence data were compiled and sent to the CAPS State Survey Coordinator, Donna Ellis, for entry into the NAPIS database.
2. Educational outreach was accomplished by distribution of written information, such as bookmarks, postcards, and memo cards. Specifically, each public library in CT towns was given a packet for distribution of bookmarks. Other material was distributed at grower meetings, during classroom visits, and Experiment Station Open Houses.

H. Ramorum Blight Survey

Introduction:

Ramorum blight, caused by the fungus-like organism *Phytophthora ramorum* (Pr), is a potentially damaging disease of many plant species common in Connecticut, including native woodland plants and ornamental landscape species. The disease is present in many areas of the west coast of the US, and has been reported from several countries of the European Union, but has not been found in nature in the US east of the Mississippi. The approach used was outlined in the APHIS National Survey manual. Twenty production nurseries having host plants on the Host and Association Host Plant List were selected for survey. Plants at these nurseries were examined during the growing season (26 March through 3 September 2004) for signs and symptoms of infection by Pr. Samples of potentially-infested material were tested using ELISA, were cultured on media, and, when appropriate, DNA was sent to Beltsville for testing.

Methodology:

The Connecticut Agricultural Experiment Station (CAES) has completed the following:

- Twenty nurseries were included in the national survey for Pr. Over 35,500 plants were inspected and 185 leaf samples from symptomatic plants were submitted for lab analysis.

Survey Results:

- Nine samples were ELISA-positive for Pr; all samples were confirmed negative for Pr by DNA analysis.

Major accomplishments:

- Negative occurrence data were compiled and sent to the CAPS State Survey Coordinator, Donna Ellis, for entry into the NAPIS database. The occurrence data were submitted to NAPIS on 17 December 2004.
- Educational outreach was accomplished by distribution of educational material, including USDA Pest Alerts, the list of Hosts and Associated Hosts from the USDA web site, and the fact sheet from the US Forest Service, at grower meetings, such as the CT Nursery and Landscape Association Summer meeting, the summer meeting of the CT Tree Protective Association, and other informational presentations to garden clubs and interested groups. Details on these presentations are listed below:

15 July 2004: participated in the CT Tree Protection Association meeting, with a table display on invasive insects and Ramorum Blight; approximately 1000 attendees.

20 July 2004: participated in the Nursery and Landscape Research Tour, held at the CAES Valley Lab, with a display on non-native threats to trees, such as Ramorum Blight; approximately 65 attendees.

4 August 2004: presented a talk on Ramorum Blight at Plant Science Day, held at the CAES Lockwood Farm; approximately 900 attendees. Also hosted an informational table at this event.

13 August 2004: was interviewed by Bob Miller, of the Danbury News-Times (newspaper) about Ramorum Blight in the Northeast.

I. Other Survey Activities

Cooperators in Connecticut were also on the lookout during the 2004 growing season for the following Homeland Security pest pathogens and Eastern Region primary target exotics:

- **Downy Mildew (*Peronosclerospora maydis*) in corn**
- **Late Blight (*Phytophthora infestans*) in potato and tomato**
- **Pierce's Disease (*Xylella fastidiosa*) in grape**

The targets of these national pests are all crops that are grown in Connecticut or goods that are imported into Connecticut and they are vital to our state's economy. The following cooperators contacted by the State Survey Coordinator provided a summary of survey activities for the pest pathogens:

The University of Connecticut

- Jude Boucher (reported on downy mildew in corn; five counties and late blight in tomato; four counties)
- Robert Durgy (all pathogens; six counties)
- Richard Kiyomoto (Pierce's disease in grape; two counties)

The Connecticut Agricultural Experiment Station

- Sharon Douglas (reported on all pathogens; all counties)
- William Nail (Pierce's disease in grape; all counties)
- Kimberly Stoner (late blight in potato and tomato; two counties)

All data were negative for the target pathogens, and these data have been submitted to the NAPIS database.

OUTREACH EDUCATION FOR INVASIVE INSECTS AND DISEASES

Chris Donnelly (Connecticut Department of Environmental Protection) researched and developed a publication containing educational materials on invasive insects and diseases of trees. Approximately 1,200 copies of the publication were printed and distributed to field professionals, including arborists, tree wardens, foresters, and forest harvesters. The publication was also disseminated to the CAPS State Survey Committee. The publication has been extremely well received and will be a very useful reference on exotic insects and diseases that affect Connecticut trees and forests.

II. NAPIS DATA ENTRY

A summary of CAPS target pests and other exotics that were included in 2004 surveys and other related projects is shown in Attachment 1. Attachment 2 provides a record count summary of all exotic pest and beneficial organisms submitted to the NAPIS database during 2004.

III. STATE SURVEY COORDINATOR AND OTHER CAPS-RELATED ACTIVITIES

- For Fiscal Year 2004 the Homeland Security/CAPS Cooperative Agreement, which includes the wood boring bark beetle and sudden oak death surveys that were conducted by CAES, extended from 10/01/03 through 9/30/04. Additional exotic pest surveys were funded through a second CAPS Cooperative Agreement for the period 1/01/04 through 12/31/04. The Connecticut Agricultural Experiment Station now submits Federal Forms SF-269 and SF-270 to Patricia Douglass, USDA APHIS State Plant Health Director (these forms had been submitted by the University of Connecticut prior to 2004).
- The semi-annual narrative progress report for Cooperative Agreement Number 04-8209-0327-CA (CAPS) for the period 1/1/04 through 6/30/04 was submitted to Patricia Douglass on 28

on 28 July 2004.

- The CAPS Eastern Regional Meeting was held in Charleston, South Carolina on November 16-17, 2004.
- The following educational outreach activities were conducted by Donna Ellis, State Survey Coordinator (Note: for additional educational outreach activities, please see the semi-annual narrative progress reports for Cooperative Agreement Number 04-8209-0195-CA, Noxious Weeds and Biological Control).

Presentations

- New England Pest Management Issues Conference, Portsmouth, NH, December 9, 2004. Invited speaker for regional conference. The presentation, entitled “Invasive Species, was given during the session “New England Stakeholder Concerns.”
- Connecticut Invasive Plant Working Group Invasive Plant Symposium, University of Connecticut, Storrs, CT, October 7, 2004. Two workshops presented with Elizabeth Corrigan at symposium. Workshops entitled, “Japanese Knotweed, Giant Hogweed & Mile-a-minute Vine.”
- Cornucopia-Fest 2004, Storrs, CT, October 3, 2004. Question-and-answer sessions on Integrated Pest Management and exotic pests.
- Master Gardener Summer Tour, Storrs, CT, July 15, 2004. Conducted three training sessions on invasive species.

Teaching (subjects taught included giant hogweed and other invasive plants)

- Guest Lecturer, PLSC 204, Integrated Pest Management, November 9, 2004
- Guest Lecturer, PLSC 257, Ecology and Control of Weeds, November 4, 2004
- Loomis Chaffee School, Windsor, CT, November 2, 2004. Guest Lecturer for an Advanced Placement Environmental Science class.
- Guest Lecturer, Eastern Connecticut State University, September 22, 2004. Taught a class on the Integrated Pest Management Curriculum for Grades 7 & 8 for students training to be science and social studies teachers. The curriculum included lessons on plant pests.
- Guest Lecturer, SAPL 041, Plant Pest Control, September 17, 2004

Curriculum Developed

- Integrated Pest Management (IPM) Connecticut Curriculum. 2004. A new science-based curriculum was developed for students in kindergarten and grade 1, and for 4-H youth. The curriculum, which includes 5 units and 22 lessons with supplemental materials, was developed by R. Ashley, D. Ellis, D. Schimmel, and C. Kusmer through a grant from the Bingham Trust. Curriculum workshops are ongoing to introduce the concepts of IPM, including pest identification and management, to teachers and students.

Conferences Planned and Presented

- “The Silent Invaders: Identification & Management of Invasive Plants,” University of Connecticut, Storrs, CT, October 7, 2004. Invasive plant symposium organized by the Connecticut Invasive Plant Working Group (D. Ellis, Co-Chair). 400 attendees

Newsletter Articles

- “New IPM School Curriculum Offers Hands-on Learning.” July/August/September 2004. University of Connecticut College of Agriculture and Natural Resources Journal, Vol. 11(3):pp. 1 and 4. Article written by Kim Markesich based on interviews with D. Ellis and others regarding a new Integrated Pest Management curriculum recently developed for schools and 4-H groups.

Commentaries

- Ellis, D.R. 2004. Invasive Plants - A Growing Concern. 2 pages. The commentary was written to present current issues on invasive plants and was disseminated to the news media via the University of Connecticut Communications Office.

Newspaper Articles

- “Sellers Dispute State Approach to Invasives.” Article written by Luke Foster for the Journal Inquirer on September 14, 2004. Based on interviews with D. Ellis and others regarding invasive plants and an October 2004 invasive plant symposium organized by the Connecticut Invasive Plant Working Group.
- Editorial written by Jim Kevlin for the Norwich Bulletin on August 4, 2004. Based on interviews with D. Ellis and others regarding invasive plants.

Websites

The Connecticut Invasive Plant Working Group (CIPWG) website, www.hort.uconn.edu/cipwg continues to provide timely information on non-native invasive plants, including a list of Connecticut invasive species, invasive plant legislation, management information, invasive plant alerts, fact sheets, photos, and a calendar of events. A symposium on invasive plant identification and management was held on October 7, 2004 at the University of Connecticut and was attended by approximately 400 people from ten northeastern states. Invasive plant updates written by D. Ellis were posted several times per year. The website has received more than 35,000 hits since it was launched in 2000.

Additional information was added to the CAPS website, launched in 2003, which provides exotic pest survey information, educational outreach materials, and updates on the USDA Animal Plant Health Inspection Service (APHIS) Cooperative Agricultural Pest Survey (CAPS) program. Access to the site is via the following Connecticut Agricultural Experiment Station web address:

<http://www.caes.state.ct.us/CAPS/CAPS.htm>

Respectfully submitted,

Donna Ellis
State Survey Coordinator

30 March 2005

**Plant Board Annual Report
Cooperative Agricultural Pest Survey – CAPS**

YEAR: 2004 **STATE:** Connecticut

Target Pest (Common Name if Available)	Number of			Survey Method (Trap type/ Visual)	Findings (+ or -)	NAPIS Entry (+ or -)
	Counties	Sites	Traps			
Exotic wireworm	4	24	48	Vernon beetle trap	-	+
British yellowhead (<i>Inula</i>)	4	26	0	Visual	-	+
Exotic bark beetles: <i>Anoplophora glabripennis</i> , <i>Monochamus alternatus</i> <i>Ips typographus</i> <i>Tetropium fuscum</i> <i>T. castaneum</i> <i>Xylotrechus spp.</i> <i>Hesperophanes campestris</i> <i>Chlorophorus annularis</i>	3	25	25	Lindgren funnel traps	-	-
Emerald ash borer	8	80	0	Visual	-	+
Sudden oak death	7	280*	0	Visual	-	+
Pine shoot beetle	8	40	40	Lindgren funnel traps	-	+
Giant hogweed	8	100	0	Visual	+	+
Soybean aphid	2	2	0	Visual	+ NSR	+
Plectosporium blight	6	21	0	Visual	+ NSR	+
Cucurbit yellow vine disease	1	2	0	Visual	+ NSR	+
Fusarium foetens	1	1	0	Visual	+ NSR	+
Viburnum leaf beetle	2	2	0	Visual	+ NSR	+
Lily leaf beetle	2	2	0	Visual	+ NCR	+
Small Japanese cedar longhorned beetle	4	4	0	Visual	+ NCR	+

*site/host combinations

BRIEF COMMENTS (any significant activities or issues):

* NSR = New State Record

* NCR = New County Record

NAPIS OCCURRENCE DATA FROM 2004 CAPS SURVEYS IN CONNECTICUT

Records Selected: 415 (a record may reflect multiple observations)

Summary Options: Pest / Crop / State / County

Pest / Crop / State / County	Positive	Negative	Total
MICRODOCHIUM BLIGHT; A			
MICRODOCHIUM TABACINUM; MONOGRAPHELLA CUC			
PUMPKIN			
CUCURBITA SPP.			
CONNECTICUT			
HARTFORD	1	0	1
LITCHFIELD	1	0	1
NEW HAVEN	1	0	1
NEW LONDON	1	0	1
WINDHAM	1	0	1
State Total	5	0	5
Crop Total	5	0	5
Pest Total	5	0	5
CUCURBIT YELLOW VINE DISEASE			
SERRATIA MARCESCENS			
PUMPKIN			
CUCURBITA SPP.			
CONNECTICUT			
TOLLAND	1	0	1
State Total	1	0	1
Crop Total	1	0	1
Pest Total	1	0	1
BEGONIA WILT; A			
FUSARIUM FOETENS			
BEGONIA			
BEGONIA SPP.			
CONNECTICUT			
NEW HAVEN	1	0	1
State Total	1	0	1
Crop Total	1	0	1
Pest Total	1	0	1
SUDDEN OAK DEATH MATING TYPE 2			

PHYTOPHTHORA RAMORUM			
AZALEA			
RHODODENDRON SPP. (AZALEA)			
CONNECTICUT			
HARTFORD	0	7	7
State Total	0	7	7
Crop Total	0	7	7
CAMELLIA			
CAMELLIA SPP.			
CONNECTICUT			
MIDDLESEX	0	1	1
NEW HAVEN	0	1	1
State Total	0	2	2
Crop Total	0	2	2
ANDROMEDA; JAPANESE			
PIERIS JAPONICA			
CONNECTICUT			
FAIRFIELD	0	4	4
HARTFORD	0	12	12
LITCHFIELD	0	4	4
MIDDLESEX	0	1	1
NEW HAVEN	0	3	3
NEW LONDON	0	5	5
WINDHAM	0	2	2
State Total	0	31	31
Crop Total	0	31	31
LILAC; COMMON			
SYRINGA VULGARIS			
CONNECTICUT			
FAIRFIELD	0	3	3
HARTFORD	0	5	5
LITCHFIELD	0	3	3
MIDDLESEX	0	3	3
NEW HAVEN	0	2	2
NEW LONDON	0	1	1
WINDHAM	0	2	2
State Total	0	19	19
Crop Total	0	19	19
LAUREL; MOUNTAIN			

KALMIA LATIFOLIA			
CONNECTICUT			
FAIRFIELD	0	3	3
HARTFORD	0	4	4
LITCHFIELD	0	4	4
MIDDLESEX	0	3	3
NEW HAVEN	0	2	2
NEW LONDON	0	2	2
WINDHAM	0	2	2
State Total	0	20	20
Crop Total	0	20	20
RHODODENDRON			
RHODODENDRON SPP. (HYBRIDS;CULTIVARS)			
CONNECTICUT			
FAIRFIELD	0	4	4
HARTFORD	0	75	75
LITCHFIELD	0	4	4
MIDDLESEX	0	41	41
NEW HAVEN	0	3	3
NEW LONDON	0	30	30
WINDHAM	0	2	2
State Total	0	159	159
Crop Total	0	159	159
VIBURNUM			
VIBURNUM SPP.			
CONNECTICUT			
FAIRFIELD	0	4	4
HARTFORD	0	1	1
LITCHFIELD	0	4	4
MIDDLESEX	0	2	2
NEW HAVEN	0	3	3
NEW LONDON	0	5	5
WINDHAM	0	2	2
State Total	0	21	21
Crop Total	0	21	21
VACCINIUM (ORNAMENTAL)			
VACCINIUM SPP. (ORNAMENTAL)			
CONNECTICUT			
FAIRFIELD	0	2	2

HARTFORD	0	1	1
LITCHFIELD	0	1	1
MIDDLESEX	0	1	1
NEW HAVEN	0	1	1
WINDHAM	0	1	1
State Total	0	7	7
Crop Total	0	7	7
DOG'S-HOBBLE			
LEUCOTHOE FONTANESIANA			
CONNECTICUT			
FAIRFIELD	0	2	2
LITCHFIELD	0	4	4
MIDDLESEX	0	1	1
NEW HAVEN	0	2	2
NEW LONDON	0	3	3
WINDHAM	0	2	2
State Total	0	14	14
Crop Total	0	14	14
Pest Total	0	280	280
EMERALD ASH BORER			
AGRILUS PLANIPENNIS			
ASH			
FRAXINUS SPP.			
CONNECTICUT			
FAIRFIELD	0	7	7
HARTFORD	0	8	8
LITCHFIELD	0	8	8
MIDDLESEX	0	6	6
NEW HAVEN	0	7	7
NEW LONDON	0	6	6
TOLLAND	0	5	5
WINDHAM	0	7	7
State Total	0	54	54
Crop Total	0	54	54
Pest Total	0	54	54
JAPANESE CEDAR LONGHORN BEETLE			
CALLIDIELLUM (PALAEOCALLIDIUM) RUFIPENNE			
JUNIPER			
JUNIPERUS SPP.			

CONNECTICUT			
LITCHFIELD	0	1	1
TOLLAND	0	1	1
WINDHAM	0	1	1
State Total	0	3	3
Crop Total	0	3	3
UNKNOWN; NO SITE SPECIFIED			
NO SITE SPECIFIED			
CONNECTICUT			
FAIRFIELD	2	0	2
MIDDLESEX	2	0	2
NEW HAVEN	2	0	2
NEW LONDON	2	0	2
State Total	8	0	8
Crop Total	8	0	8
Pest Total	8	3	11
CEREAL LEAF BEETLE (CLB)			
OULEMA MELANOPUS			
UNKNOWN; NO SITE SPECIFIED			
NO SITE SPECIFIED			
CONNECTICUT			
LITCHFIELD	1	0	1
State Total	1	0	1
Crop Total	1	0	1
Pest Total	1	0	1
LILY LEAF BEETLE			
LILIOCERIS LILI			
LILY			
LILIUM SPP.			
CONNECTICUT			
NEW HAVEN	1	0	1
WINDHAM	1	0	1
State Total	2	0	2
Crop Total	2	0	2
Pest Total	2	0	2
VIBURNUM LEAF BEETLE			
PYRRHALTA VIBURNI			
WAYFARINGTREE VIBURNUM			
VIBURNUM LANTANA			

CONNECTICUT			
NEW HAVEN	1	0	1
State Total	1	0	1
Crop Total	1	0	1
CRANBERRYBUSH; EUROPEAN			
VIBURNUM OPULUS			
CONNECTICUT			
NEW HAVEN	1	0	1
State Total	1	0	1
Crop Total	1	0	1
AMERICAN CRANBERRY BUSH			
VIBURNUM TRILOBUM			
CONNECTICUT			
NEW HAVEN	1	0	1
State Total	1	0	1
Crop Total	1	0	1
ARROWWOOD			
VIBURNUM DENTATUM			
CONNECTICUT			
MIDDLESEX	1	0	1
State Total	1	0	1
Crop Total	1	0	1
Pest Total	4	0	4
WEED CONTROL CHRYSOMELID; A			
GALERUCELLA SP.			
LOOSESTRIFE (LYTHRUM)			
LYTHRUM SPP.			
CONNECTICUT			
FAIRFIELD	2	0	2
HARTFORD	2	0	2
LITCHFIELD	2	0	2
MIDDLESEX	1	0	1
NEW HAVEN	1	0	1
TOLLAND	2	0	2
WINDHAM	1	0	1
State Total	11	0	11
Crop Total	11	0	11
Pest Total	11	0	11
LINED CLICK BEETLE			

AGRIOTES LINEATUS

VEGETABLES

MIXED SPECIES

CONNECTICUT

FAIRFIELD	0	1	1
HARTFORD	0	1	1
LITCHFIELD	0	1	1
NEW HAVEN	0	1	1
State Total	0	4	4
Crop Total	0	4	4
Pest Total	0	4	4

WIREWORM; A

AGRIOTES OBSCURUS

VEGETABLES

MIXED SPECIES

CONNECTICUT

FAIRFIELD	0	1	1
HARTFORD	0	1	1
LITCHFIELD	0	1	1
NEW HAVEN	0	1	1
State Total	0	4	4
Crop Total	0	4	4
Pest Total	0	4	4

JAPANESE BEETLE (JB)

POPILLIA JAPONICA

UNKNOWN; NO SITE SPECIFIED

NO SITE SPECIFIED

CONNECTICUT

FAIRFIELD	1	0	1
HARTFORD	1	0	1
LITCHFIELD	1	0	1
MIDDLESEX	1	0	1
NEW HAVEN	1	0	1
NEW LONDON	1	0	1
TOLLAND	1	0	1
WINDHAM	1	0	1
State Total	8	0	8
Crop Total	8	0	8
Pest Total	8	0	8

PINE SHOOT BEETLE (PSB)

TOMICUS PINIPERDA

PINE

PINUS SPP.

CONNECTICUT

FAIRFIELD	0	1	1
HARTFORD	0	1	1
LITCHFIELD	0	1	1
MIDDLESEX	0	1	1
NEW HAVEN	0	1	1
NEW LONDON	0	1	1
TOLLAND	0	1	1
WINDHAM	0	1	1

State Total 0 8 8

Crop Total 0 8 8

Pest Total 0 8 8

GIANT WHITEFLY

ALEURODICUS DUGESII

HIBISCUS

HIBISCUS SPP.

CONNECTICUT

LITCHFIELD	1	0	1
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State Total 1 0 1

Crop Total 1 0 1

Pest Total 1 0 1

SOYBEAN (SOYA BEAN) APHID

APHIS GLYCINES

SOYBEAN

GLYCINE MAX

CONNECTICUT

MIDDLESEX	2	0	2
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NEW HAVEN	2	0	2
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State Total 4 0 4

Crop Total 4 0 4

Pest Total 4 0 4

GYPSY MOTH (EUROPEAN)(GM)

LYMANTRIA DISPAR

UNKNOWN; NO SITE SPECIFIED

NO SITE SPECIFIED

CONNECTICUT			
FAIRFIELD	1	0	1
HARTFORD	1	0	1
LITCHFIELD	1	0	1
MIDDLESEX	1	0	1
NEW HAVEN	1	0	1
NEW LONDON	1	0	1
TOLLAND	1	0	1
WINDHAM	1	0	1
State Total	8	0	8
Crop Total	8	0	8
Pest Total	8	0	8
MEADOW FLEABANE; BR. YELLOWHEA			
INULA BRITTANICA			
HOSTA			
HOSTA SPP.			
CONNECTICUT			
FAIRFIELD	0	1	1
HARTFORD	0	1	1
LITCHFIELD	0	1	1
NEW HAVEN	0	1	1
State Total	0	4	4
Crop Total	0	4	4
Pest Total	0	4	4
GIANT HOGWEED			
HERACLEUM MANTEGAZZIANUM			
UNKNOWN; NO SITE SPECIFIED			
NO SITE SPECIFIED			
CONNECTICUT			
FAIRFIELD	1	0	1
LITCHFIELD	2	0	2
MIDDLESEX	1	0	1
State Total	4	0	4
Crop Total	4	0	4
Pest Total	4	0	4
Report Total	58	357	415