

Pennsylvania Department of Agriculture

2013 Entomology Program Summary

The Pennsylvania Department of Agriculture (PDA) Entomology Program is responsible for the regulation of invasive insect plant pests, which includes survey, laboratory analysis, and control/mitigation when warranted. In 2013, the Entomology Program either conducted or actively participated in 14 invasive insect pest surveys across the Commonwealth. The laboratory received and processed 5,876 different insect samples and identified 124,674 specimens from these samples. Regardless of the survey, all samples were screened for Cerambycidae, Buprestidae, Scolytinae, Pentatomoidea, Siricidae, Symphyta, Apoidea (Referred to as PDA Pests), and other select species like *Drosophila suzukii* (Spotted Wing Drosophila), *Sirex noctilio*, *Larinus turbinatus*, *Adelges tsugae* (Hemlock Woolly Adelgid), and *Pyrhalta viburni* (Viburnum Leaf Beetle). In addition, several other non-targeted species were identified if they were unfamiliar to staff taxonomists. Entomology surveys are carried out by permanent and temporary PDA staff, as well as cooperating government and non-government collaborators. Insect samples are also submitted through cooperative extension, private industry, and the general public.

ASIAN LONGHORNED BEETLE (ALB):

This pest continues to be a top priority for Pennsylvania. ALB was declared eradicated from portions of New York, New Jersey, and Ontario in 2013. Unfortunately, new populations of ALB were discovered in New York and Ontario. Pennsylvania continues to screen all wood destroying insect samples for ALB, all of which were negative in 2013. In addition, ALB visual surveillance is performed as part of Pennsylvania's Cooperative Agricultural Pest Survey. PDA also responds to a number of public reports for ALB each year. No ALB was detected in PA in 2013. PDA intends to continue visual surveillance in 2014, and supplement with trapping in cooperation with Dr. Kelli Hoover of Penn State University.

WAREHOUSE LIGHT TRAP SURVEY:

In May of 2013, the USDA-APHIS PPQ office out of Carlisle PA, established 12 light trap sites at warehouses in five PA counties that receive shipments of products originating outside of the United States. Facilities targeted were known to have received shipments that contained pests from abroad in the past. The traps were serviced every two weeks until the end of September. A total of 108 samples were submitted to the PDA Entomology Laboratory for analysis. This survey targeted a combination of 22 different beetles and moths not known to occur in the United States. None of the USDA target pests were detected, but one non-native weevil, identified as *Oxyderces* sp., was identified from a site in Allegheny County. No additional specimens of this weevil were recovered in traps.

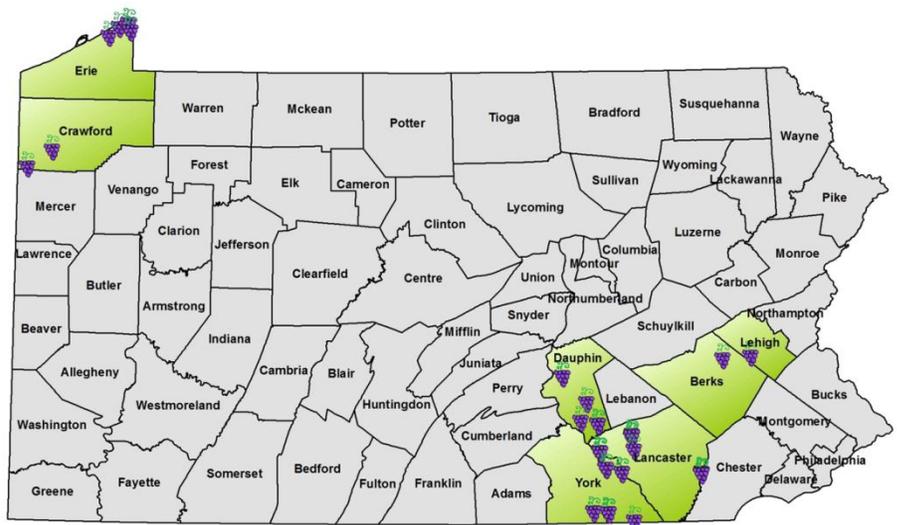


USDA-APHIS-PPQ, Pittsburgh, PA, August 22, 2013 (Size: 12 mm)

No additional specimens of this weevil were recovered in traps.

GRAPE COMMODITY PEST SURVEY:

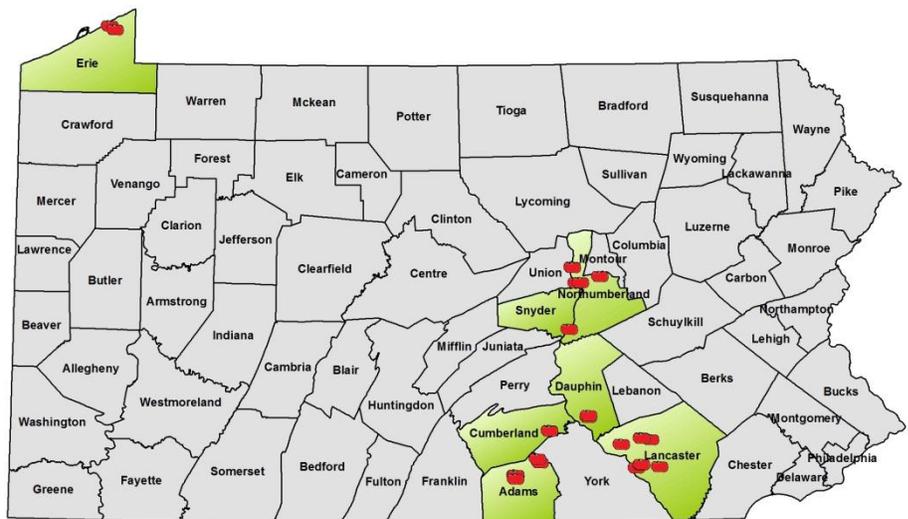
PDA first implemented a grape pest survey in 2010 using Farm Bill money from the USDA. In 2013, PDA once again received Farm Bill money to survey for pests of grape. The survey was run from July until the end September in 2013 and will resume in April of 2014 and continue until the end of June. Target pests include *Autographa gamma* (silver-Y moth), *Lobesia batrana* (European grape vine moth), *Spodoptera littoralis* (Egyptian cotton leafworm), and *Heteronychus arator* (African black beetle). The



moths are surveyed using pheromone baited traps and *Heteronychus arator* is visual survey only. Surveyors established 111 traps at 19 survey sites in seven counties and generated 1072 samples. In addition surveyors conducted visual surveys for African black beetle at each trap service. None of the four target pests were detected in 2013. The survey is scheduled to resume in the spring of 2014.

TOMATO COMMODITY PEST SURVEY:

Due to numerous new detections of the tomato pest, *Tuta absoluta* (Family Gellechiidae) in Europe, a small survey for this pest was conducted through the PDA IPM program in 2010. In 2011 and 2012, PDA received Farm Bill money to implement an official survey in PA and this was continued in 2013. In addition, PA was asked to deploy traps for *Chrysodeixis chalcites*, a moth pest recently detected in Ontario Canada, and these traps were added to sites in 2013. Two seasonal

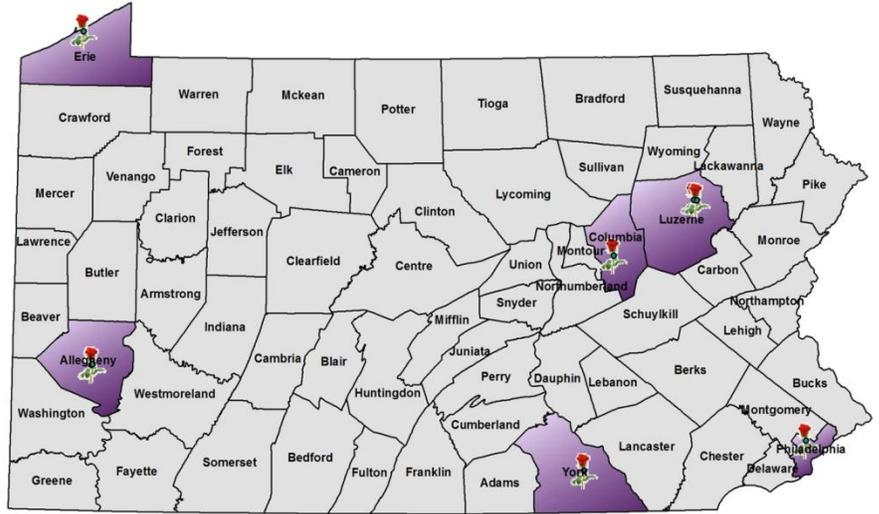


surveyors were hired and deployed 66 traps at 20 high risk sites in nine counties at tomato processing and retail food distribution centers as well as at some select tomato producers. Sites were established in July and most traps were monitored through the end of September with a few sites running later into November. This survey will resume in April of 2014 and continue through the end of June. Surveyors submitted 398 samples throughout the 2013 season that had moth specimens, all of which were negative for *Tuta absoluta* and *Chrysodeixis chalcites*. Traps did collect 40 specimens of other moths in the Family Gelechiidae, 10 of which were identified as *Kiefferia lycopesicella* (Tomato Pinworm).

CUT FLOWER SURVEY SURVEY:

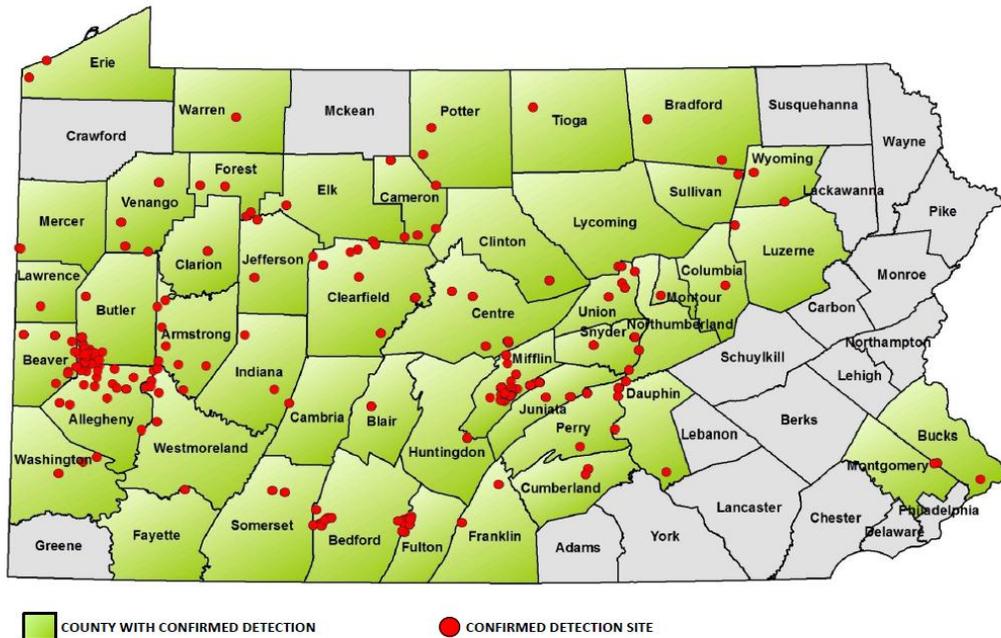
For many years PDA has worked closely with members of the US Custom and Border Patrol sharing information which leads to the detection of new invasive plant pests. Part of the effort sees PDA review port interception reports to help identify interception trends and pathways for plant pest introductions. In the past several years Thysanoptera, also known as thrips, had been routinely intercepted on shipments of cut flowers. As a pilot survey in 2013, PDA plant inspectors were asked to sample cut flower shipments the week of

February first, focusing on thrips. Inspectors visited nine cut flower distributors in six counties, where they generated 46 samples. The samples contained 80 insect specimens, including beetles, flies, aphids, and the target, thrips. Two of the thrips identified were not native to PA, including *Thrips palmi* and *Frankliniella panamensis*. Though these collections are considered to be interceptions requiring no regulatory action, they do demonstrate that a possible pathway for introduction exists. In 2014, the survey will be slightly modified to see if serious pests like thrips *palmi* can survive past the distributor, and remain viable to the flowers retail destination, where the likelihood of transfer to plants for planting is increased. Inspectors are scheduled to generate 50 samples per month from across PA.



EMERALD ASH BORER (EAB):

PENNSYLVANIA CONFIRMED EMERALD ASH BORER PROGRAM DETECTIONS 2007-2013



2013 marked the sixth year since the Buprestidae beetle *Agrilus planipennis* was discovered in Butler County and the third year since the removal of the in-state quarantine which had restricted the movement of materials from known infested areas to non-infested areas. It was also the third year of bio-control efforts by our cooperating agency (DCNR), and the third season of the tropical ash rearing project to support the production of bio-control agents. At the beginning of 2013 there were 31 counties with

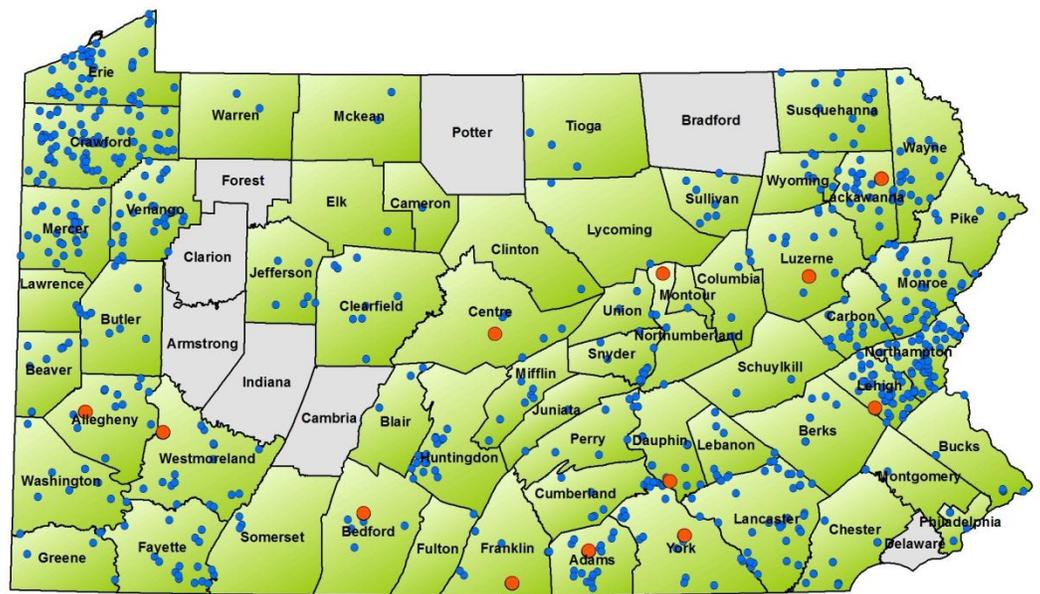
confirmed populations of EAB known in PA, and no official survey work was performed by PDA in 2013.

In 2013, largely due to efforts by the DCNR, 16 additional counties had EAB populations confirmed. These new detections bring the total number of infested PA counties to 47 of January 1, 2014. Most alarming were the detections in the northern counties of Bradford, Warren, Tioga, and Potter. Though not unexpected, these counties boast some of the highest percentages of ash forest in PA, are home to source materials for the baseball bat industry. Impacts of EAB are expected to be severe for communities and forests in these counties.

Over 350 *Fraxinus uhdei* (tropical ash) were started from seed in July of 2011 to support the rearing of EAB biological at the National Rearing Lab in Brighton, MI. Germination and initial growth of the seedlings continued through December of 2011. In 2012 the ash trees were cut back and an initial shipment of 400 leaves and a number of cut back trees were sent to Michigan in May. Starting in November of 2012, regular shipments of leaves were made (as need dictated by the rearing lab in Brighton). In 2013, a total of 17 shipments containing 3,377 leaves were made through May. All trees were then cut and boles were provided to the Brighton lab. Prior to replanting, efforts to ensure a more pest-free environment in the greenhouse were implemented. In December 2013, shipments resumed. Currently, 172 *Fraxinus uhdei* are being maintained in the PDA greenhouses and regular shipments of leaves are going out as directed by the Brighton rearing lab.

COOPERATIVE AGRICULTURAL PEST SURVEY (CAPS) Exotic Wood Boring Beetle Survey (EWBB):

This survey combined visual survey with trapping at sites across PA in 2013. The Cooperative Agricultural Pest Survey is a federally funded survey that targets pests of specific national concern to agriculture. Though the EWBB survey targets species of national concern it also adds species of state concern. Due the extreme economic impact caused when non-native wood destroying insects are introduced to PA, PDA runs some form of this survey each year. Surveys are carried out in accordance with national survey guidelines.



Pests of state concern can be surveyed in a more flexible manner. In 2013, insects affecting oak, sassafras, conifers, and other Northeastern hardwoods were selected as target species. This included pests like oak splendor beetle, Asian longhorned beetle, oak ambrosia beetle, spruce engraver, *Sirex noctilio*, bamboo borer, walnut twig beetle and many other pests not known to occur in PA or have a limited distribution. Information from the interception of pests at ports provided by the US Customs and Border Patrol, European pest alerts, and NAPIS is used to help refine the list of target pests for PA. Protocols for the surveillance of many of these pests require visual surveillance, while others call for pheromone or plant volatile baited traps. For pests that are trapped, 12 sites were established at sites deemed high-risk for exotic pest introduction with 98 variously baited traps. Risk is determined by pathway analysis and cooperation with USDA-APHIS. Traps are run from April through the end of September. Each trap is serviced every two weeks, which generated a total of 1,197 samples and 29,770 specimens. Fortunately no targets of national concern were detected in 2013. Detections of note included 23 *Anisandrus maiche*, a hardwood ambrosia beetle new to the country in 2006, 7 *Scolytus schevyrewi* (banded elm bark beetle), 1 *Oxoplatypus quadridentatus* and 1 *Euplatypus compositus*. The two *Patypodinae* we believed to be new to PA in 2012, were both captured for a second consecutive trapping season in 2013. This survey also recorded a record of *Cnestus mutilatus*, also known as the Camphor Shot Borer, which is a new pest to PA in 2013, and has been a target pest in the warehouse light trap survey for the past two seasons. Visual survey

points were taken at all sites and several additional locations, totaling 749 visual survey records for pests that are visual survey only. All visual surveys were negative for target pests. This survey will be implemented again 2014 targeting different pests and new high-risk locations.

WALNUT TWIG BEETLE (TCD):

In August of 2011, Penn State Cooperative Extension in Bucks County obtained a sample of dying black walnut. The cause of the dying walnut was confirmed as Thousand Cankers Disease, a disease complex caused by a twig beetle, *Pityophthorus juglandis*, and the fungus it vectors. Trees at the initial detection site were voluntarily removed and destroyed by the property owner in February of 2012 and PA started a state-wide trap survey for the beetle. PA received Farm Bill support to run a 100 trap survey for the beetles starting in July of 2012

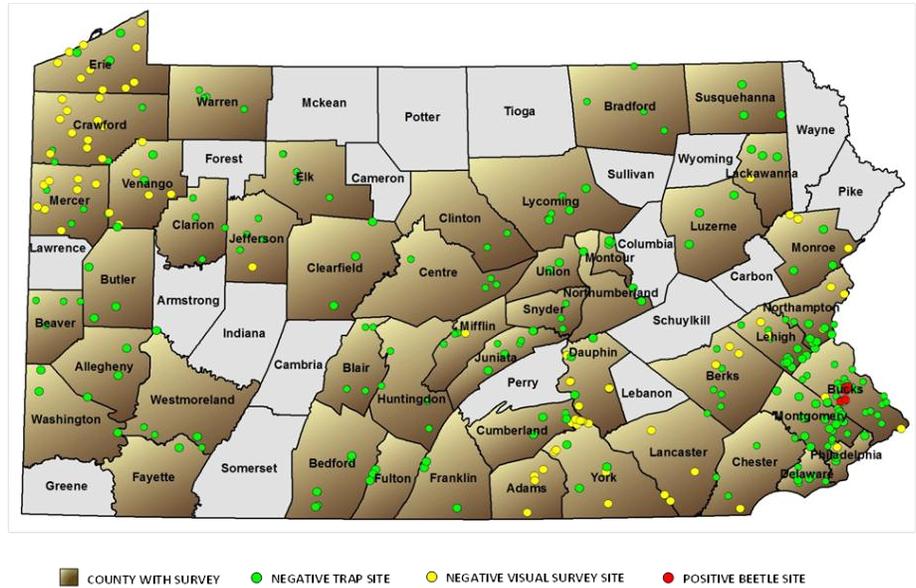
and again in 2013. Over the two split trapping seasons, PA deployed 200 traps in 46 counties. In addition, visual reports from the general public were investigated by seasonal survey crews. A total of 1,273 samples were generated from traps in 2013 which contained 32,612 specimens. A total of 22,030 were Scolytinae, of which 345 belonged to the Genus *Pityophthorus*. Fifty-four were identified as a similar species, *Pityophthorus lautus*, which also makes use of Black Walnut. No specimens of *Pityophthorus juglandis* were trapped in 2013 by this survey. Traps run by US Forest Service researchers inside Bucks County continue to trap *Pityophthorus juglandis*. Data from US Forest Service traps have demonstrated two adult peaks in PA, one in the mid-summer, and a second in the fall. No populations have been detected by traps or visual survey outside of Bucks County.

A number of notable detections were made as a result of WTB trapping. *Orchestes alni* (European Elm Flea Weevil) was detected for the first time in a trap from Philadelphia County. A trap in Fulton County captured a specimen of *Xyleborinus gracilis*, a bark beetle native to the Southern US, which is a new record for the state. A trap from Montgomery County detected *Cnestus mutilatus* (Camphor Shot Borer) for the first time in PA. Traps in Montgomery and Lehigh Counties also collected the bostrichid beetle, *Dinoderus japonicus*, which was discovered as new to the state earlier in 2013. Trapping is scheduled to continue in 2014.

APIARY INSPECTION PROGRAM:

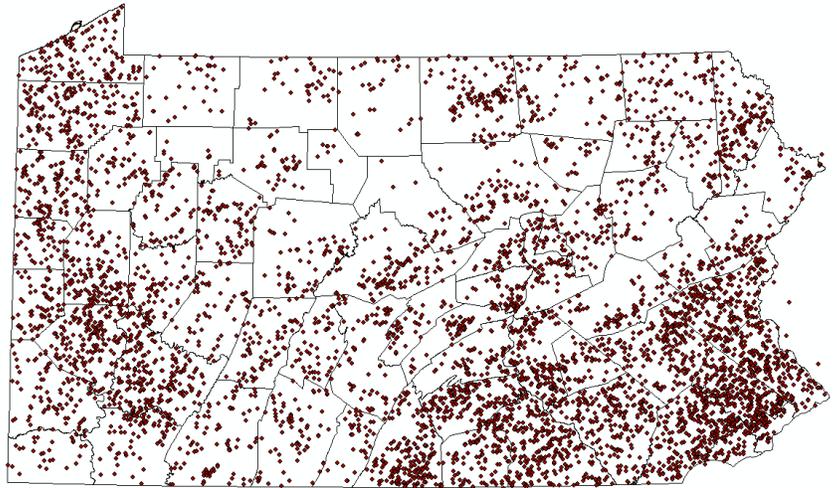
The value of the apiary industry in Pennsylvania in 2013 was estimated at over \$76 million. Much of this value is attributed to increased yield in crops partially or completely dependent on honey bees for pollination. In 2007, it was estimated that each honey bee colony provided \$1,659.21 to Pennsylvania's economy. Since the onset of Colony Collapse Disorder (CCD) in 2006, more people worldwide have become interested in becoming beekeepers and helping native pollinators. In Pennsylvania, over 2,500 new beekeepers have registered since 2007, including over 390 new beekeepers registering in 2013. Currently there are approximately 3,300

2012-2013 PENNSYLVANIA WALNUT TWIG BEETLE SURVEY SITES



registered beekeepers in PA. The majority of these beekeepers care for 1-10 hives. As seen on the map, managed honey bee colonies can be found almost everywhere in the Commonwealth from roof tops in urban areas to towns, suburbs, farms, and undeveloped land. From the end of April until the end of October, there were seven full time seasonal Apiary Inspectors working across Pennsylvania as well as the State Apiarist located in Harrisburg. Over 7,700 colonies located in more than 1,710 apiaries (bee yards) were inspected. Approximately 30% of (about 1,090) beekeepers registered in PA had their honey bee colonies inspected.

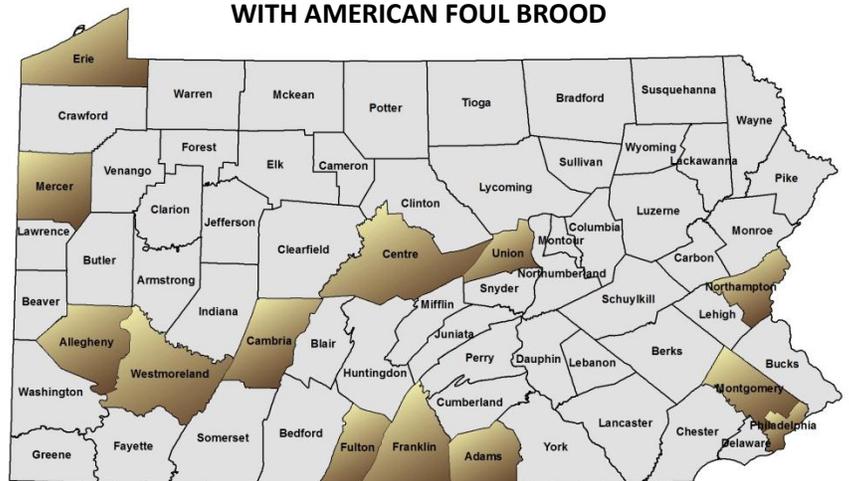
APIARIES REGISTERED IN PENNSYLVANIA



HONEY BEE DISEASES AND PESTS:

Fifteen cases of American Foulbrood (AFB), a highly contagious disease affecting honey bees, were detected in PA in 2013. The PA Department of Agriculture continues to focus on detection and treatment of AFB. All suspect cases of AFB were submitted to Harrisburg and then sent on to the USDA, Beltsville, Maryland for laboratory testing to confirm the diagnosis and to screen for Oxytetracycline HCL resistance. Ten of the AFB strains were susceptible, and therefore treatable with the antibiotic Oxytetracycline HCL, four were resistant to Oxytetracycline HCL, and one strain was inconclusive. Resistant strains of AFB may be treated with different antibiotics or irradiated. Varroa mites continue to be found throughout Pennsylvania. These insect pests of the honey bee are a serious concern to beekeepers because they vector viruses and can weaken a colony enough to cause the bees to abscond or die. Small hive beetles continue to spread throughout Pennsylvania.

2013 PENNSYLVANIA COUNTIES WITH AMERICAN FOUL BROOD



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PERMITS ISSUED:

The Pennsylvania Department of Agriculture (PDA) issued 43 Certificates of Inspection to process export permits for beekeepers requesting permission to allow honey bees and/or used equipment to leave PA (26 were issued in 2013). There were 12 Import Permits issued to allow honey bees and/or used equipment to enter PA from other states (24 were issued in 2012). Fifty three queen producer/nuc-selling beekeepers were issued permits to sell queens and nucleus colonies in Pennsylvania in 2013 (12 were issued in 2012).

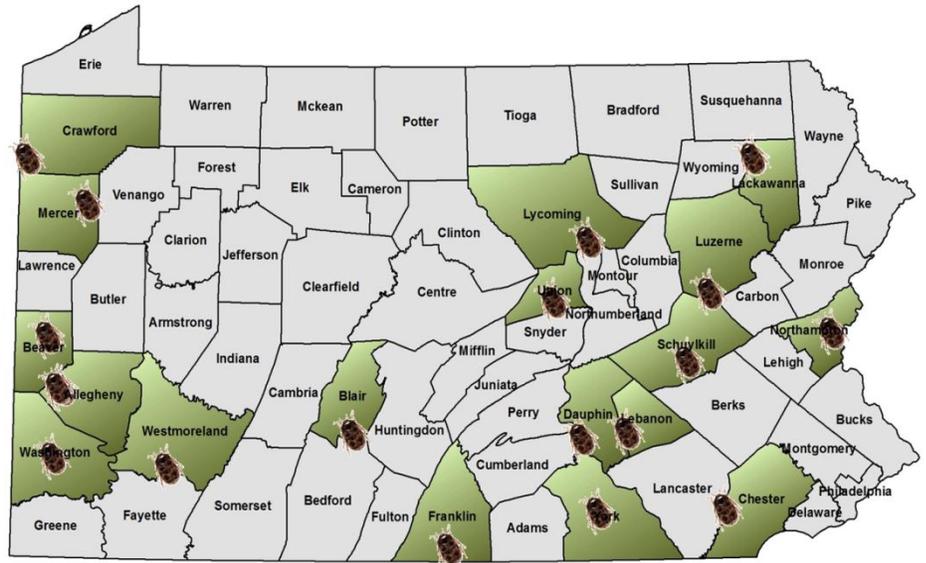
NATIONAL HONEY BEE SURVEY:

This was the fourth year that Pennsylvania was able to participate in the USDA/APHIS National Honey Bee Disease Survey (NHBS). The objective of this survey is to determine the diseases, pests, and parasites present,

or absent, in various operations throughout the United States, including a cross-section of operation types. The diseases, pests, and parasites include: American Foulbrood, European Foulbrood, Sacbrood, Chalkbrood, Parasitic Mite Syndrome, Deformed Wing Virus, Black Shiny Bees, Small Hive Beetles, Wax Moths, *Varroa* mites, *Nosema* spores, and *Tropilaelaps* mites. The survey also records the status of the queen. Live bee samples are sent for virus testing. In addition, 10 pollen samples will be collected for pesticide testing. As of December 2013, 19 of the 24 apiaries have been sampled. The remaining five will be completed in the spring of 2014.

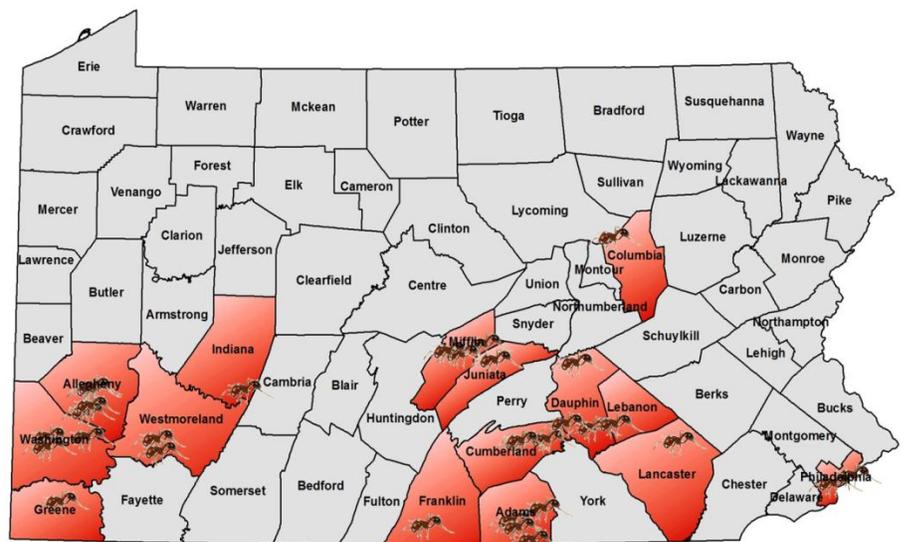
KHAPRA BEETLE SURVEY:

Khapra beetle (*Trogoderma granarium*) is one of the most destructive invasive pests of grain and is often intercepted in imported grain products. In the past several years multiple interceptions of the pest in products like rice have been made all over the United States including an airport interception in Pittsburgh in 2013. PDA was awarded Farm Bill money to survey for this pest starting in July of 2013. PDA established 18 sites in 18 counties at grain facilities where Agronomic Product Inspectors deployed three traps each. Traps were serviced every two week and generated 261 samples in 2013. All trap samples were negative for *Trogoderma granarium*. The survey is scheduled to resume in the spring of 2014.



IMPORTED FIRE ANT SURVEY:

The USDA-APHIS PPQ office in Carlisle conducted a survey for exotic fire ants, primarily *Solenopsis invicta*, and PDA processed the samples for this survey. The USDA established 33 sites in 15 counties at high-risk sites. The survey generated 30 samples, which contained no *Solenopsis invicta*. A native ant *Solenopsis molesta* was trapped at two separate sites. False reports of fire ant detections were reported by media in the Philadelphia area in 2013, which were diagnosed from human health symptoms. PDA worked with the City of Philadelphia Vector Control to investigate these reports and found the reports to be mis-identifications of native stinging ants and other symptoms not related to insects.



PLANT DIAGNOSTIC SAMPLE REPORTS (PDSR):

In support of the PDA Plant Merchant Program, the Entomology Lab processes plant inspector collected samples from routine plant merchant inspections where a pest of regulatory concern is suspected. A total of 184 samples were submitted in 2013. The most commonly submitted pest was *Nuculaspis pseudomeyeri*, (False Meyer Scale), all from Southeastern PA. One detection of note was the discovery of *Platynota stultana* (Omnivorous leafroller) which was found causing significant damage to *Cyclamen* in a commercial greenhouse. *Platynota stultana* is not known from PA, but is native to the Southwestern US. It is a known pest of many crops and plants, and has been recorded as



causing significant losses in yield in the grape industry. The detection was made in December of 2013, and PDA is working with PSU to develop outreach and to work with the greenhouse industry. At this time it is not known if the pest can overwinter in PA outside of a greenhouse setting, and controls implemented at the greenhouse seem to be controlling the outbreak. PDA will add traps for this pest to its grape pest survey in 2014, and target inspections in greenhouses for the destructive moth.

GENERAL SURVEY SAMPLES AND OTHER DETECTIONS OF NOTE:

In addition to mandated and funded surveys, the PDA Entomology program also receives samples from cooperative extension, private industry, and the general public. Entomology records these samples as GENERAL SURVEY samples. The majority of these types of samples result from Commercial Pest Control submissions and Cooperative Extension. In 2013, PDA recorded 279 samples totaling 3,276 specimens. Highlights include:

1. Detection of *Dinoderus japonicus*, a bostrichid new to PA sp. in drying bamboo, from Cumberland County.
2. A pair of African wooden figurines was submitted to PDA with exit holes, and complaints of emerging beetles. The beetle were identified as the non-native *Lyctus africanus*. The statues were frozen and disposed of.
3. In 2011 a sample of weevils thought to be *Larinus planus* was submitted to PDA for confirmation. In late July of 2012, a volunteer inquired about a recent post of a photo on Bugguide.net indicating that *Larinus turbinatus* had been photographed in Lancaster County, PA. The original samples submitted in 2011, and additional samples obtained in 2012 from Adams and Lebanon Counties proved to be *Larinus turbinatus*, (New to the Country) and not *Larinus planus*. The distinction is significant as both weevils feed on thistle and the new weevil, *L. turbinatus* was found damaging restoration plots for the federally endangered butterfly, regal fritillary. PDA was asked by the New Pest Advisory Group to see if the weevil had established and to determine the extent of its distribution in PA. In 2013, *Larinus turbinatus* was detected in roadside thistles in 17 counties.
4. A pest control worker reported finding ALB at an account in Lehigh County and submitted the sample to PDA. PDA determined the specimen to be *Psacotha hilaris*, or yellow spotted long horn beetle, and not ALB.

This was confirmed by the USDA and further investigation of the site revealed a number of infested pallets originating from China at the location which included live larvae of the genus *Monochamus*. Both pests are actionable, and with cooperation from the property owner, the USDA-APHIS-PPQ, and Philadelphia Customs and Border Patrol, the infested pallets were changed out and burned. A small delimiting survey was set up around the site and no additional detections resulted. The location was trapped again in 2013 as part of the CAPS survey and had additional traps baited with an experimental *Psacothoa* pheromone blend. No additional detections resulted.

5. The state entomologist purchased an artichoke originating in California from a major grocery store chain. The artichoke was not eaten for dinner as it contained a live specimen of *Platyptilia carduidactya* (Artichoke Plume Moth). The infestation was inadvertently controlled by boiling the artichoke.

6. Three non-native spiders belonging to the group known as “Widow Spiders” were found in PA this year. The first, was *Latrodectus haseltii* (An Australian red-backed spider) was submitted by an automotive company found live in engine parts. The spider and egg sac were killed, and the company took the precaution of fumigating the facility. A Schuylkill County man turned in several specimens of *Latrodectus geometricus* (Brown Widow Spider) which is known from the Southeastern US. The spiders were collected from multiple webs outside the man’s home. He linked the infestation to household material moved to an adjacent structure from Florida where the spider is known to infest items like lawn furniture. A well-publicized detection of *Latrodectus hesperus* (The Western Black Widow) made international news. Grapes from a major supermarket chain were found to have these spiders. The store has made efforts to work with its supplier to reduce these types of incidents.

7. Researchers at SUNY in New York identified two new county records (Clarion and Indiana) for the European Woodwasp, *Sirex noctilio*. *Sirex noctilio* is now known from 14 PA counties.

8. PSU extension submitted a state record for *Lilioceris lili* (Lily Leaf Beetle) from Asiatic lilies in Clinton County PA. The owner of the lilies treated the plants and no additional samples have been submitted. PDA inspectors will target inspections for this pest in 2014.

9. A man submitted a wooden basket which originates in Abu Dhabi, Afghanistan that showed signs of beetle infestation. Closer inspection revealed that the basket was completely hollowed out by the cosmopolitan species *Lyctus brunneus* (Powder Post Beetle). The owner consented to have the artifact destroyed.

10. Submissions from DCNR State Park and Forestry personnel contained official new county records of *Adelges tsugae* (Hemlock Woolly Adelgid) in four new counties in 2013. Detections were made in Clarion, Forest, Jefferson, Clarion, and McKean Counties.

INVASIVE SPECIES HOTLINE AND E-MAIL REPORT SYSTEM:

In 2013, the invasive species hotline and badbug e-mail account generated 140 contacts to report possible invasive insects. The majority of contacts called to report or ask about EAB. Of the 140 contacts, 122 were to the toll-free automated invasive species line and 18 were to the badbug e-mail. Incidents of Brown Marmorated Stink Bug contacts were minimal.