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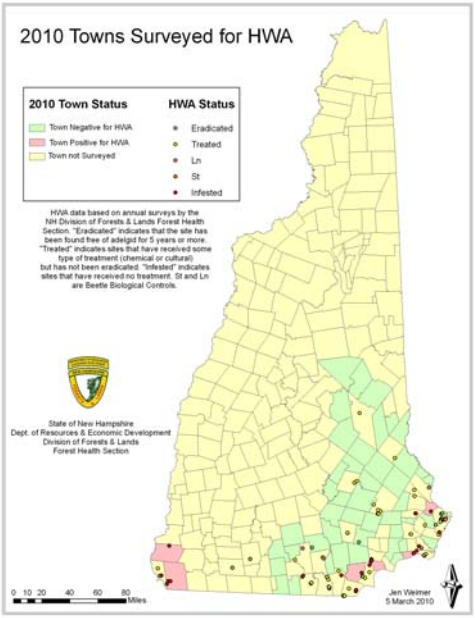
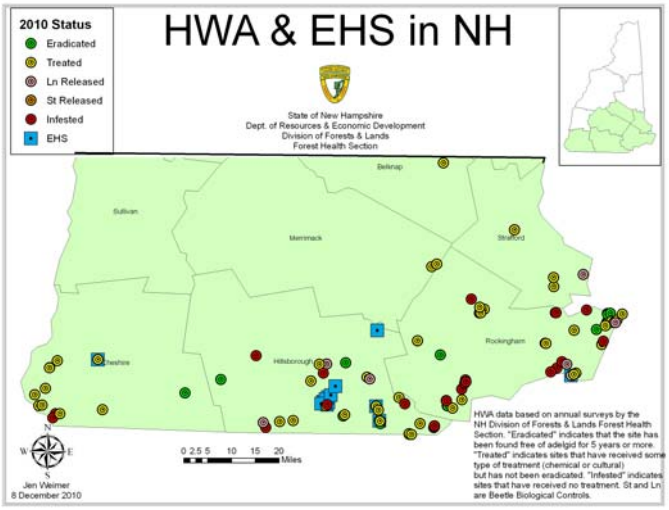
FIELD SURVEYS

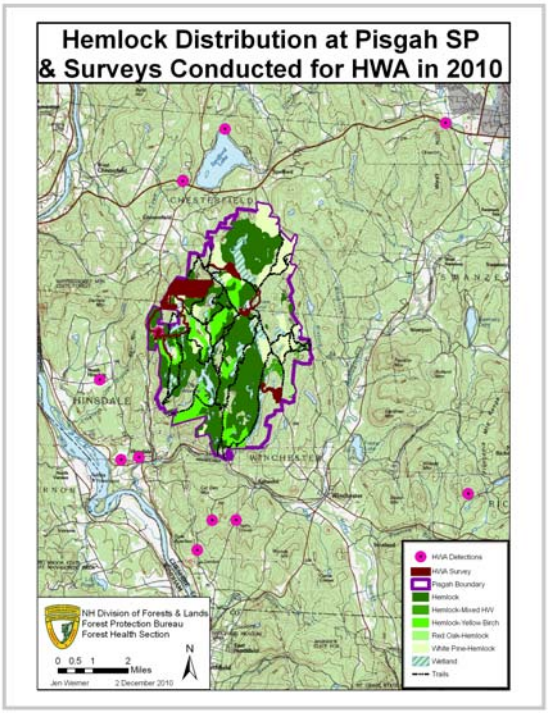
Hemlock Woolly Adelgid

Hemlock Woolly Adelgid (HWA) continues to spread slowly throughout southern NH. Surveys for 2010 included post suppression surveys and a town survey in cooperation with Vermont and Maine. Several new infestations of HWA were discovered during the border town surveys. All towns that bordered towns with known infestations of HWA were surveyed. A minimum of 200 branches per site at 5 high risk sites per town were surveyed in 51 towns. New infestations of HWA were found in 6 of those towns. These included the towns of South Hampton, Atkinson, Windham, Chesterfield, Winchester, and Newington. Infestations were also reported throughout the year by homeowners in Mason, Richmond, Greenfield, New Castle, Keene, Mont Vernon, and New Ipswich.



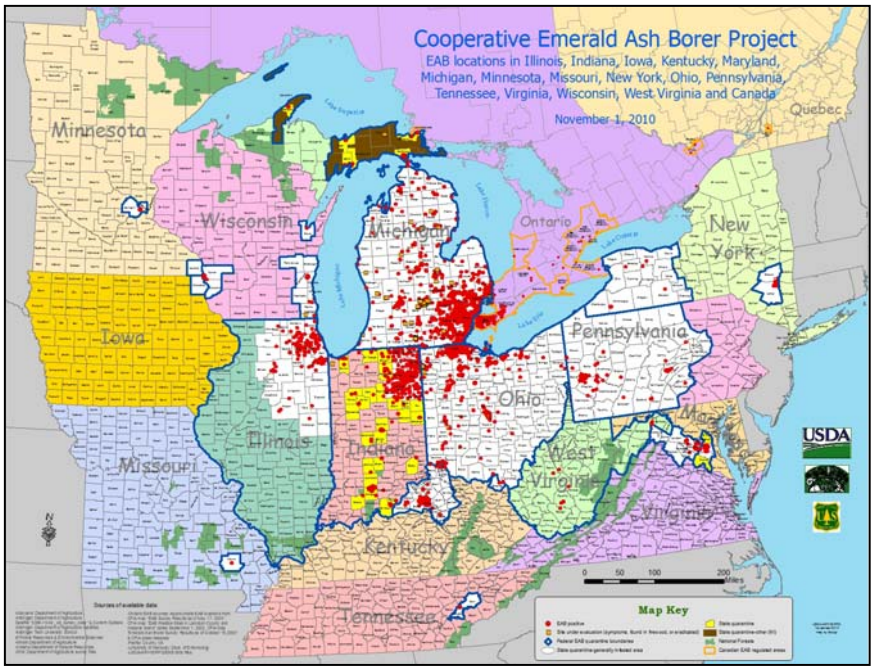


Most sites in the post suppression survey were clean of HWA either due to insecticide treatments and/or the presence of a fungus. Fungus growing on HWA was first noted in NH in 2008. Samples sent to the University of Vermont Entomology Research Laboratory were positive for *Myrangium* species, a known entomopathogenic fungus of scale insects. Research is ongoing to determine if this fungus can be utilized for biological controls for both HWA and Elongate Hemlock Scale (EHS). EHS also continues to spread in NH and was found in Nashua on a tree that had been previously treated for HWA. In addition EHS was found during a survey of a HWA predatory beetle release site in Seabrook. New infestations of EHS were also reported by homeowners in Amherst, Manchester, and Keene. The new infestations in Amherst were due to natural spread, the infestation in Manchester was most likely due to infested nursery stock, and the site in Keene was linked to infested non native hemlock nursery stock that had spread to native hemlock.



Suppression methods for HWA this year included chemical, cultural, and biological. Small infestations on 10 private properties were treated with basal stem applications of Safari. In addition, a combination of chemical and cultural controls was used on a small infestation in Pisgah State Park where the core of the infestation was cut and the trees on the edge of the cut were treated with basal stem applications of Safari. This was similar to last years control at Pawtuckaway State Park which appears to have been successful. The cut trees at Pisgah were left onsite and branches were covered with a tarp for 8 weeks while the adelgid desiccated.

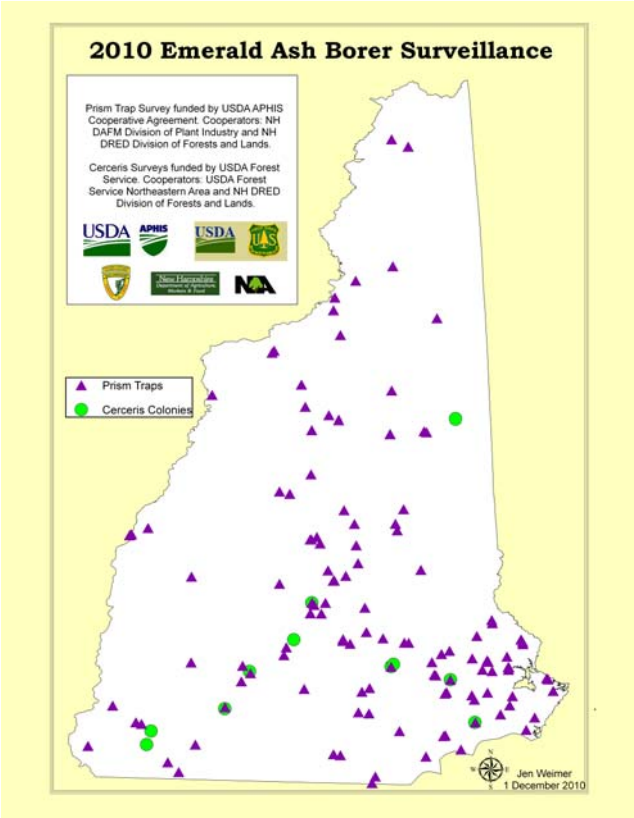
Biological control continues to be used at sites that are too large to be treated chemically. This year 1000 *Laricobius nigrinus* beetles were released on conservation properties in Merrimack and New Ipswich. No *Laricobius* beetles were recovered this year at prior release sites but one *Sasajiscymnus tsugae* beetle was recovered for the second year in a row at a release site in Seabrook.

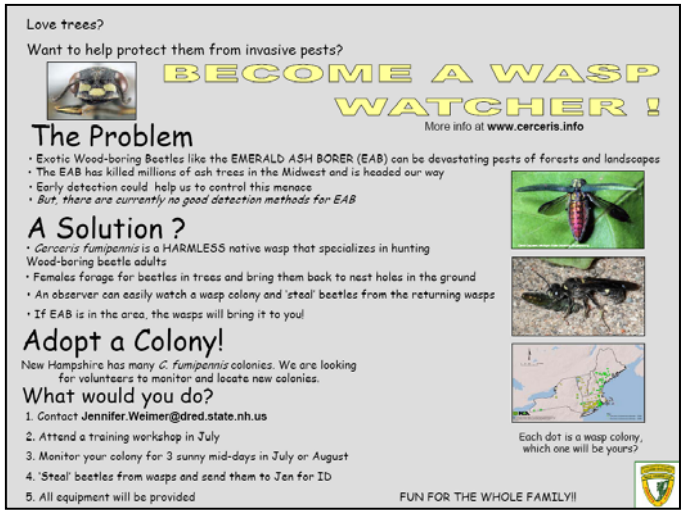


Emerald Ash Borer (EAB)

EAB continues to spread and threaten NH's ash resource. New detections in New York this summer brings it within 80 miles of the NH border. Surveys this year included prism traps and bio-monitoring. Purple prism traps were placed in private campgrounds around the state as part of a larger cooperative effort with the NH Department of Agriculture. Our traps caught 13 buprestid beetles. Colonies of *Cerceris fumipennis* were also monitored at 9 sites and over 200 native buprestids were collected. No signs of EAB were found in any of the surveys. The bio-monitoring project will continue next year and we will be looking for volunteers to adopt a colony. Please contact us if you would like to participate in this project or if you find a potential nesting site. Good nesting sites include heavy use areas with compacted sandy soils like ball fields and campsites.

Cerceris Colony in Hopkinton



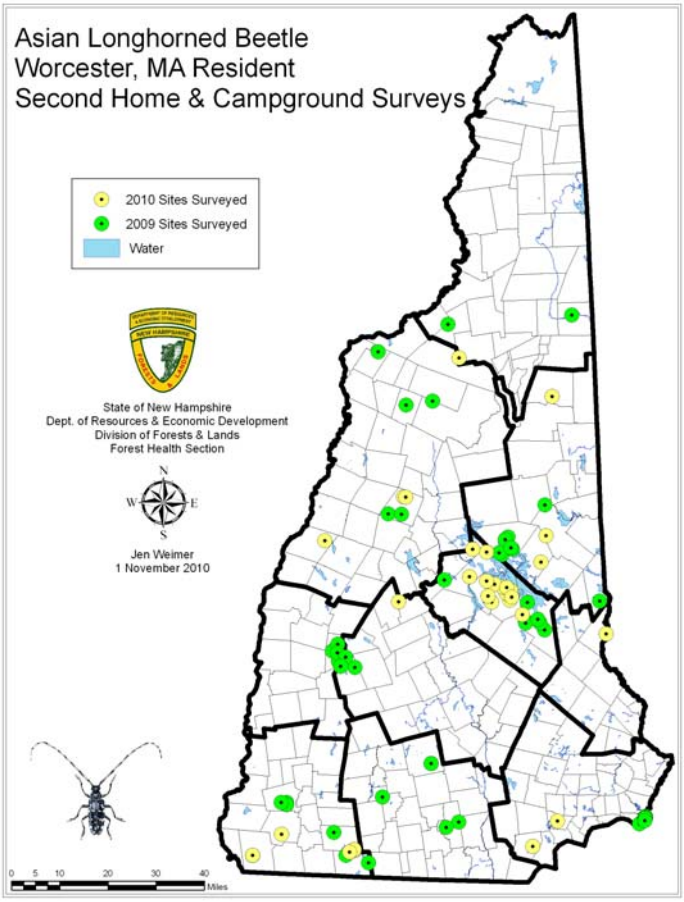


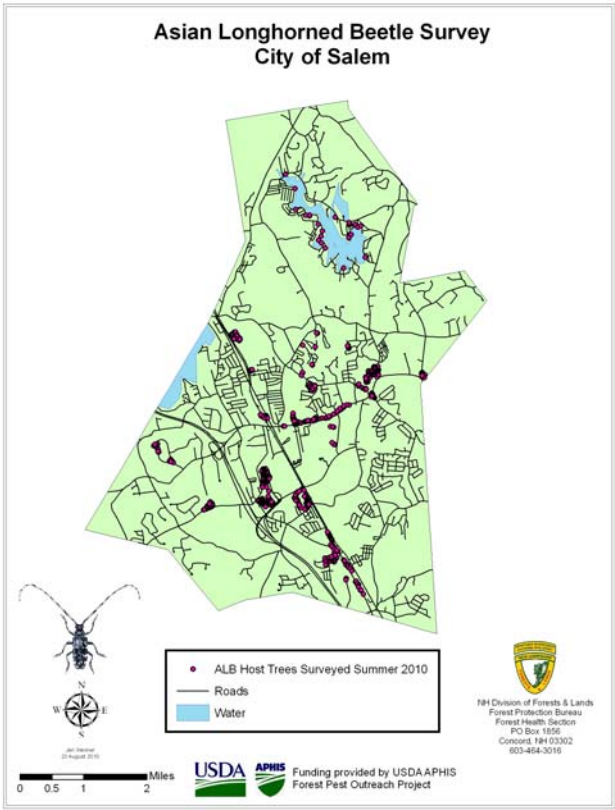
Asian Longhorned Beetle

ALB continues to be detected in the Worcester, Massachusetts area and the quarantine has expanded to 94 square miles. In addition ALB was detected in six trees in Boston this summer resulting in a 9 square mile quarantine. Fortunately this new infestation was detected early and no additional infested trees have been found to date in Boston.

Street tree surveys are ongoing in Worcester as well as the surrounding states. We surveyed just over 4000 host trees this summer in the cities of Concord, Claremont, Littleton, and Salem (See maps on following page). We also began a two year survey of swimming pool filters around the state in cooperation with UNH Cooperative Extension (see feature article for more info).

In addition, second homes in NH owned by Worcester residents continue to be surveyed (see map below). Several private campgrounds that had a high percentage of campers from the Worcester area were also surveyed. No signs of ALB were found in any of our surveys.




Asian Longhorned Beetle Survey
City of Salem
ALB Host Trees Surveyed Summer 2010
Roads
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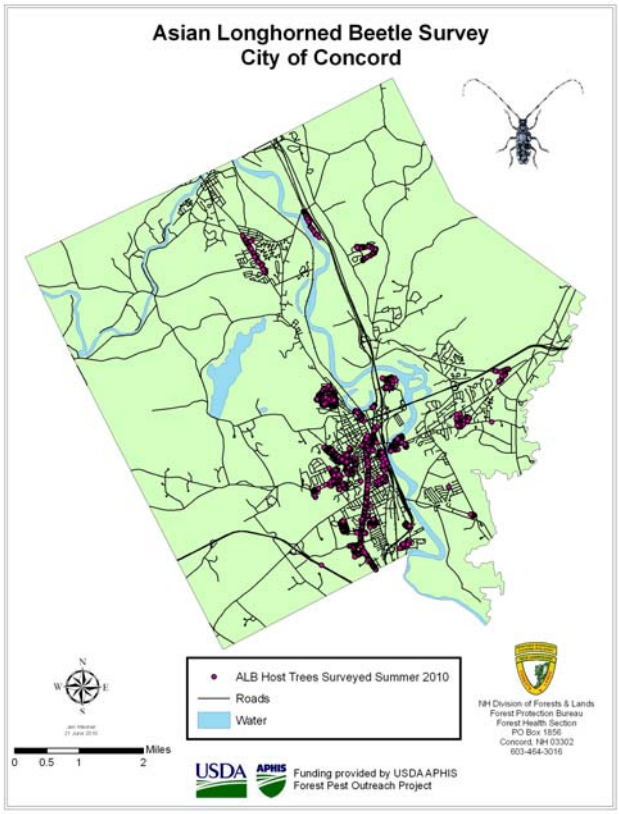
USDA
APHIS
Funding provided by USDA APHIS
Forest Pest Outreach Project
NH Division of Forests & Lands
Forest Protection Bureau
Forest Health Section
PO Box 1856
Concord, NH 03302
603-464-3016


Asian Longhorned Beetle Survey
City of Concord
ALB Host Trees Surveyed Summer 2010
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APHIS
Funding provided by USDA APHIS
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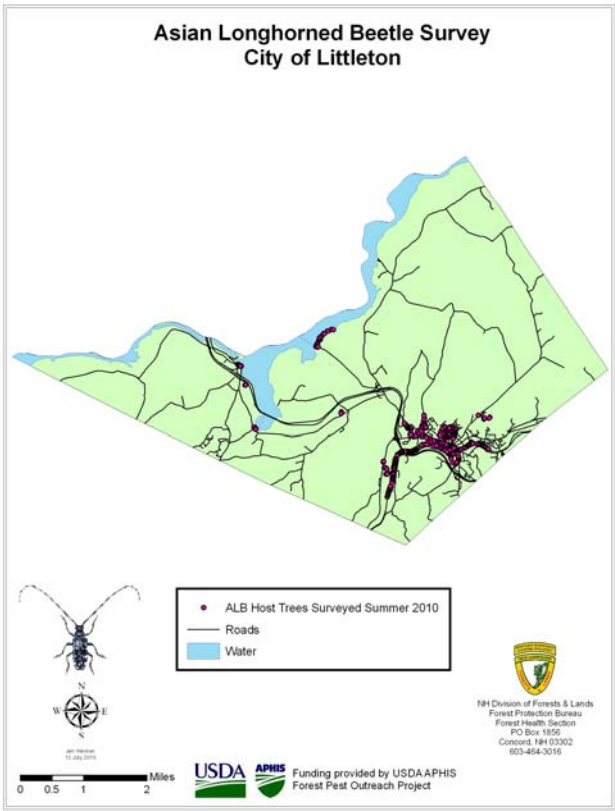
Asian Longhorned Beetle Survey
City of Littleton
ALB Host Trees Surveyed Summer 2010
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Funding provided by USDA APHIS
Forest Pest Outreach Project
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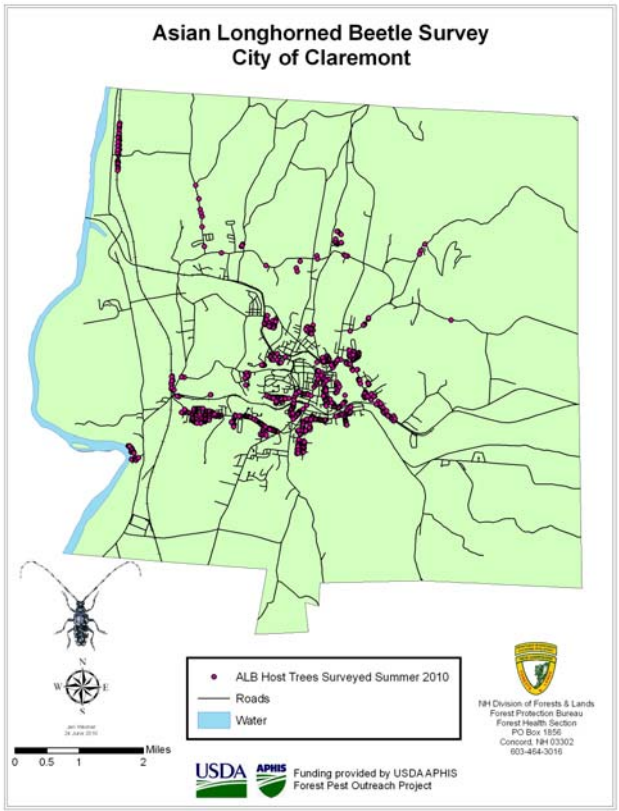
Asian Longhorned Beetle Survey
City of Claremont
ALB Host Trees Surveyed Summer 2010
Roads
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USDA
APHIS
Funding provided by USDA APHIS
Forest Pest Outreach Project
NH Division of Forests & Lands
Forest Protection Bureau
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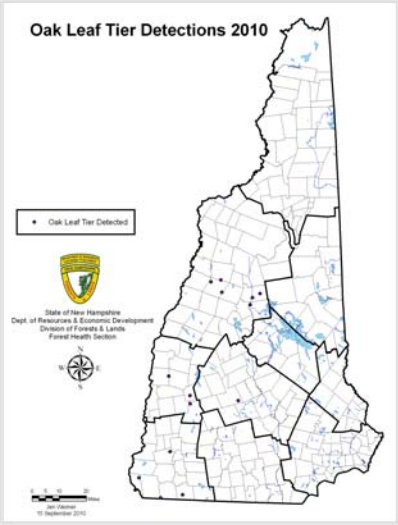
Pheromone Trapping of Forest Pests

Each summer pheromone bucket traps are placed around the state to monitor common forest pest populations. Epidemics can be predicted by analyzing trends over time. In 2010 pheromone traps were put out for Spruce Budworm, Forest Tent Caterpillar, and Oak Leaf Tier. Spruce Budworm and Forest Tent Caterpillar remain at endemic levels. Oak Leaf Tier was detected at numerous traps which is consistent with the defoliation detected in the aerial surveys. Heavy defoliation in isolated areas may be seen again next year.



NH Aerial Survey Highlights for 2010

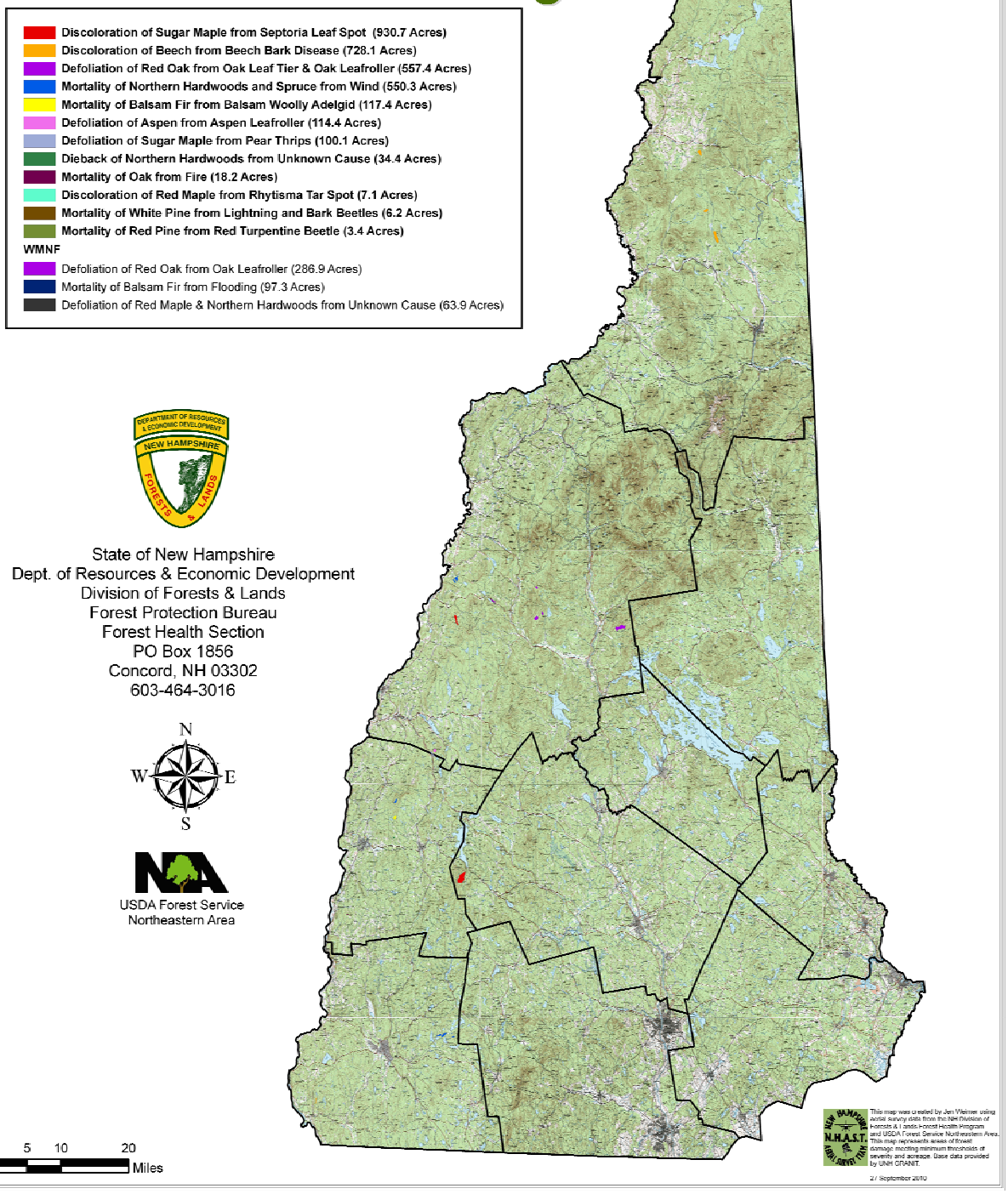
NH's annual aerial survey is a cooperative effort between the NH Division of Forests and Lands and the USDA Forest Service Northeastern Area State and Private Forestry. The 2010 NH state aerial survey team mapped 3,168 acres of serious damage or defoliation on state and private lands and the USDA Forest Service mapped an additional 448 acres of damage on the White Mountain National Forest.

Septoria Leaf Spot on sugar maple was the primary damaging causing agent this year. Early Fall-like discoloration was mapped on 930 acres. Defoliation from **Oak Leafroller** and **Oak Leaf Tier** was heavy with 844 acres mapped (including WMNF). Signs of **Beech Bark Disease** were prevalent this year with 728 acres discolored early in the season. Significant weather events early this summer caused 550 acres of hardwood mortality from **Wind** and thousands of acres of **Frost** damage throughout the state (not detectable during month of aerial survey).

Other significant forest damage mapped throughout NH this year include **Balsam Woolly Adelgid** mortality (117 acres), **Aspen Leafroller** defoliation (114 acres), **Pear Thrips** defoliation (100 acres), and oak mortality from **Fire** (18 acres). In addition browning of white pine was seen again throughout the state early in the summer caused by the fungus ***Canavirgella banfiedii*** (not detectable during month of aerial survey).

Map of 2010 major forest damage on the following page

2010 New Hampshire Forest Damage



FEATURE ARTICLE

By: Kyle Lombard

Monitoring Forest Pests by the Pool

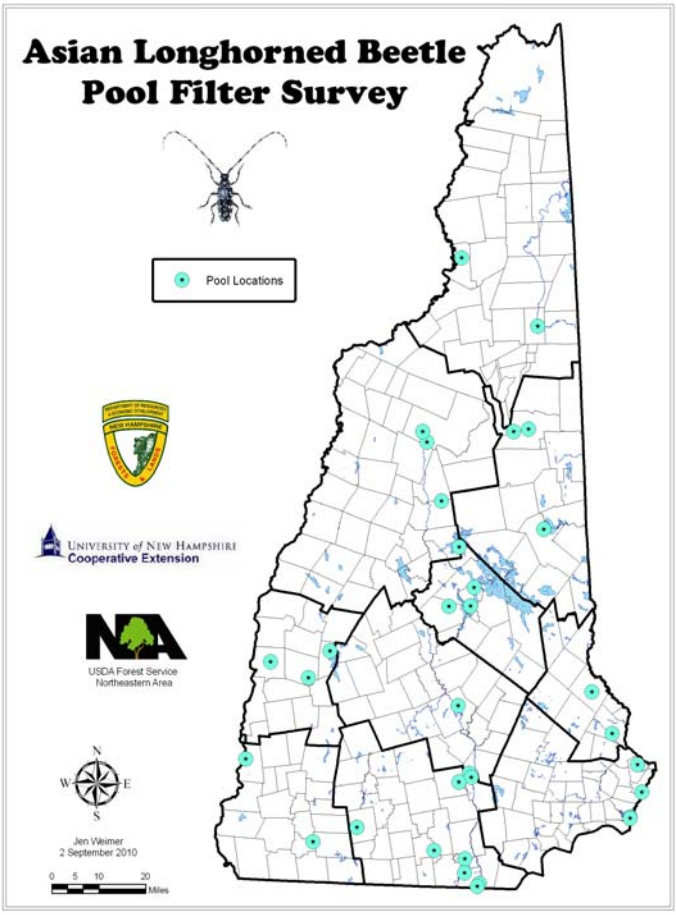
Protecting New Hampshire's forest from invasive pests is daunting. It takes political will, action plans, scientific knowledge, funding, staffing, planning, lots of hard work, and most importantly the help of the public. The ultimate in invasive pest management is to keep the pest out of New Hampshire altogether. Short of that we need to find the infestation soon after its accidental arrival when the outbreak is geographically small and affects few trees. Case in point, in 2008 the Asian longhorned beetle (ALB) was discovered in Worcester, Massachusetts setting off one of the most extensive and expensive forest pest eradication programs in history. The reason it became so extensive and thus very expensive is that the outbreak went undetected for more than ten years. In those 10 to15 years the infestation spread to over 70 square miles around Worcester, MA.

To meet the goal of keeping invasive pests out of New Hampshire we're studying modes of transportation and natural vectoring capabilities of ALB and designing quarantines to limit the movement of host material. To meet the goal of finding any accidental introduction early when it's a manageable problem we need the help of the general public. To that end, the Division of Forests and Lands worked jointly with the UNH Cooperative Extension to develop a "citizen monitoring program" that would help survey for devastating forest pests such as Asian longhorned beetle and emerald ash borer. This past summer the two major components of the project were to train a group of volunteers to collect insects from outdoor swimming pool filters and to develop a post card and directly mail it to the general public describing the Asian longhorned beetle and how to look for signs and symptoms.

Photo 1

Why pools as collection sites? Days after the discovery of ALB in Worcester experts were canvassing neighborhoods investigating the extent of the outbreak when they stumbled across a public pool attendant who said he was collecting these beetles for years in his pool filters. See photo by Mike Bohne, Entomologist and Forest Health Group Leader for the U.S Forest Service, Northeastern Area, August, 2008(*photo 1)*. We used this knowledge to create a program designed to reach out to pool sites around the state. We asked attendants to collect insects found in their pools for six weeks in July and August when the potential flight period of the ALB is at its peak. This past summer 34 volunteers distributed throughout all regions of the state participated in the

project. On a weekly basis the UNH County Extension Forester visited those sites in their county and swapped empty jars for full jars of insects the volunteers had collected. This was repeated for six weeks in July and August when the weather was warm enough to support adult ALB activity. The jars of insects were delivered to the Division of Forests and Lands Forest Health lab at Fox State Forest in Hillsborough. The insects were sorted by order, family and species to determine if any target species like ALB were present.



The results of collecting insects in pools were absolutely spectacular. At those 34 sites from around the state we collected 5,811 insects in 18 different orders. 2,444 of those were in the order *Coleoptera* (beetles) and that was really important because our target species, ALB, is a beetle. There is no doubt that if there was an infestation of ALB anywhere near those pools we would've collected some in the survey.

While **we thankfully didn't find ALB** in the pool survey this summer we did find two other invasive pests not known to exist in the counties where we found them. The first is *brown marmorated stink bug* (see Feature Creature on next page) which is an agricultural pest of fruits and vegetables. This bug was found in Rockingham County and is the first known sighting in New Hampshire. The second was *European fire ants* found in Merrimack County.

This project was a success due to the shared cooperation and hard work of volunteer citizens, UNH Cooperative Extension, the U.S Forest Service, and the NH Division of Forests and Lands. It's this type of effort and resourcefulness that will play a critical role in minimizing any detrimental forest health effects from an ever-increasing list of invasive forest pests in North America. We have funding to continue this project through the 2011 summer so please consider volunteering your time to collect insects in your pool filters or skimmers. If interested, call your County Extension Forester or the Forest Health office at 464-3016.

FEATURE CREATURE

By: Jen Weimer

Brown Marmorated Stink Bug

Headlines this summer were full of aromatic puns as Brown Marmorated Stink Bug (BMSB) populations grew in the northeast. *Halyomorpha halys*, a native of Asia, was first reported in Pennsylvania in 1998. It has since spread to New Jersey, Delaware, Connecticut, Massachusetts, New York, Maryland, West Virginia, Virginia, Tennessee, Mississippi, Missouri, Kentucky, Ohio, Indiana, North Carolina, South Carolina, Florida, California, Oregon, and most recently New Hampshire. It was detected for the first time in NH this summer in Portsmouth during our pool filter survey for Asian Longhorned Beetle (see Feature Article).

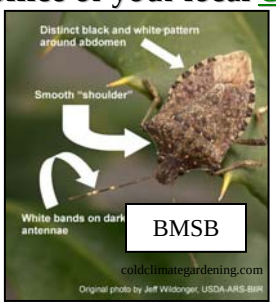
BMSB is primarily an agricultural pest of fruits and vegetables but has also been observed feeding on fruit and ornamental trees. It is a "true bug" in the order Hemiptera and gets its name from the pungent odor that is emitted when squashed. Adults are about ¾ of an inch long, brown in color, and lay eggs from June to August. Eggs are 1/16 of an inch, pale green in color, and lain in clusters of 20-30 on the undersides of leaves. Nymphs are wingless, change from red to brown in color, and have deep red eyes.

BMSB Eggs & Nymphs

In Asia BMSB has four generations per year but typically has only one in the US. However, the warmer than usual summer this past year resulted in two generations in the mid Atlantic states. This led to higher than normal populations, increased fruit tree damage, and large home invasions. Similar to the Western Conifer Seed Bug and the Asian Lady Beetle it seeks shelter indoors during the fall. Eradication of BMSB is difficult since it is exotic and has no known predators in the US. Research is underway to determine if the parasitic wasp that controls it in Asia can be released in the US.

BMSB can be easily confused with the native Brown Stink Bug (*Euschistus servus*) and the Western Conifer Seed Bug (*Leptoglossus occidentalis*). BMSB can be distinguished from the Brown Stink Bug by distinct white bands on its antennae. The Seed Bug is longer and narrower than the stink bugs. If you find the BMSB in your home please contact the NHDFL Forest Health office or your local Cooperative Extension office.

Native Brown Stink Bug



BMSB

Western Conifer Seed Bug

Fox Forest received an *Acer mono* from the NH Department of Agriculture to help monitor for ALB.

Office Notes

This summer an *Acer mono* sentinel tree was planted outside our office at Fox Forest in Hillsboro. This new monitoring tool for Asian Longhorned Beetle is being planted around the state by the NH Department of Agriculture with the help of our division's urban forester Mary Reynolds. *A. mono*, commonly known as the Painted Maple, is native to Asia and is highly attractive to the exotic beetle. Annual monitoring of the tree will aid in the early detection of ALB. A sign has been posted next to the tree to educate the public. Stop by and check it out.

The NH Forest Health Office is located in the Caroline A. Fox Research and Demonstration Forest in Hillsboro. The forest health office consists of two full time staff and several part time seasonal staff. Ray Boivin, our part time Entomologist, worked with us again this summer on the firewood study and pool filter survey. Ray sorted through thousands of insects and updated our collections. We also had 2 summer technicians again this year: Jonathon Horton from UNH and Brianna Watson from UNH Thompson School of Applied Science who surveyed thousands of trees for ALB and assisted with the EAB trap survey. Jonathon continues to work for the division as the new Forest Resource Analyst.

Please don't hesitate to contact us if you observe any forest pest damage. If you find unusual insects please capture them in a hard container, place them in a freezer, and contact us for identification.

Forest Health Section Contacts

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Forest Health Specialist
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For more information about our program and forest health issues check out our website.

You can now follow us on Twitter!

JW 12/10