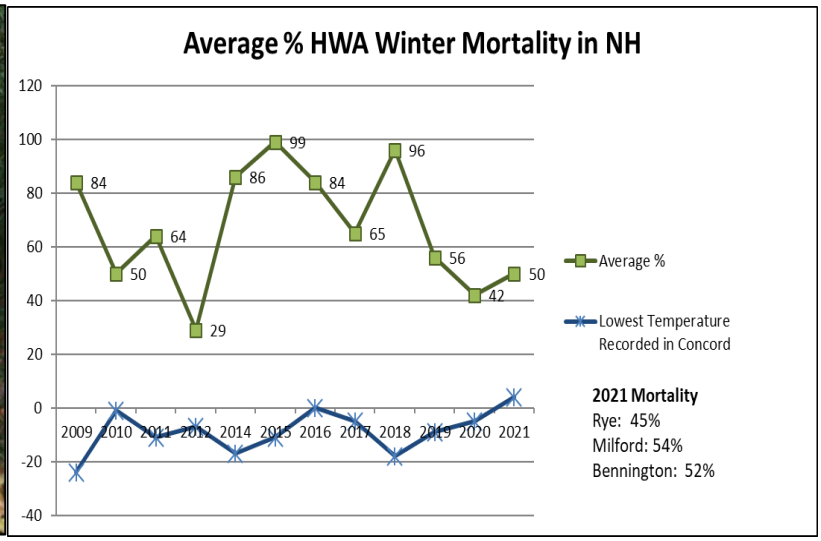
2021 New Hampshire Forest Health Highlights

Field Surveys and Trapping (By Jen Weimer)

Hemlock Woolly Adelgid and Elongate Hemlock Scale

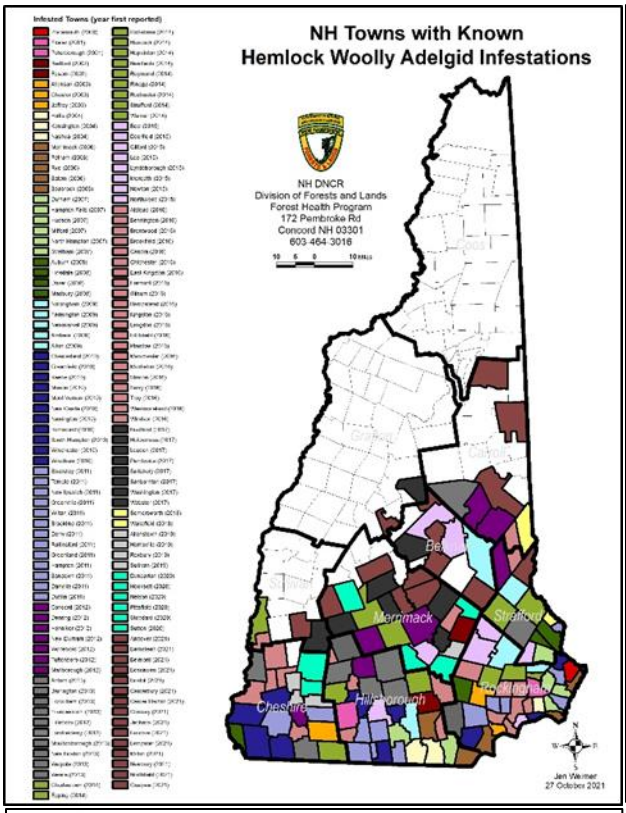
Hemlock Woolly Adelgid (HWA) surveys for 2021 were conducted in 26 towns that border infested areas. Towns surveyed included Marlow, Newbury, New London, Wilmot, Danbury, Hill, Andover, Franklin, Boscawen, Canterbury, Northfield, Tilton, Belmont, Gilmanton, Barnstead, Laconia, New Hampton, Center Harbor, Milton, Ossipee, Tamworth, Sandwich, Effingham, Goshen, Lempster, and Acworth. Infestations were found in Newbury, Andover, Boscawen, Canterbury, Northfield, Belmont, Barnstead, Laconia, Center Harbor, Milton, Ossipee, and Lempster. Landowners in Bristol, Conway, and Jackson made additional reports.

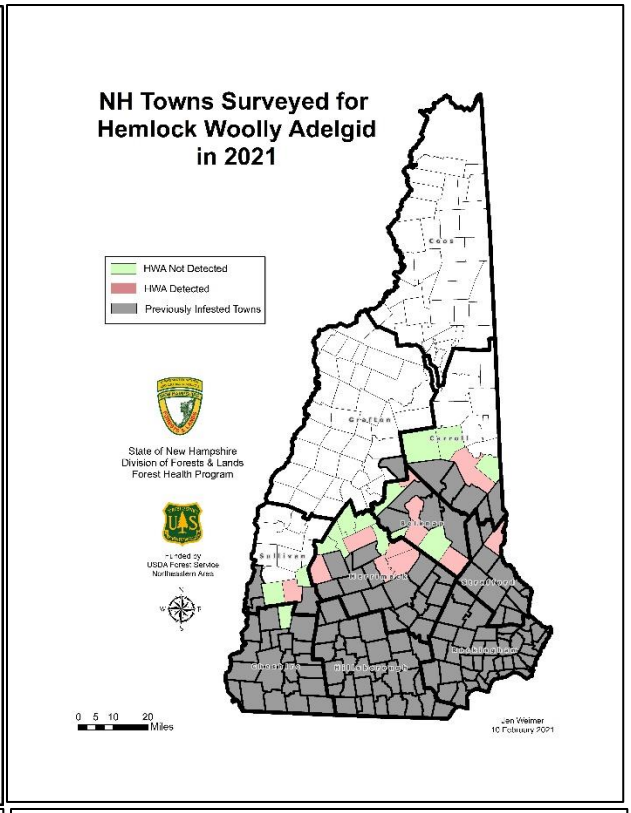
Winter mortality surveys were conducted for HWA at three sites with an average mortality of 50%, which was down from prior years. In addition, larval sampling was done at three sites where *Laricobius nigrinus* (Ln) had been previously released for HWA biocontrol. Ln larvae were recovered at the Durham field insectary. In October, we released 2000 Ln adults at Fox Forest in Hillsborough.

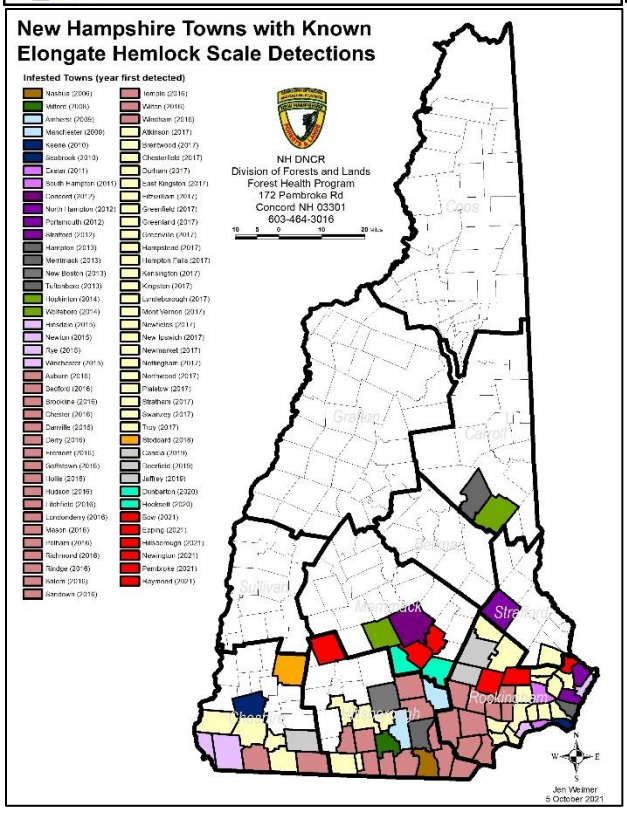


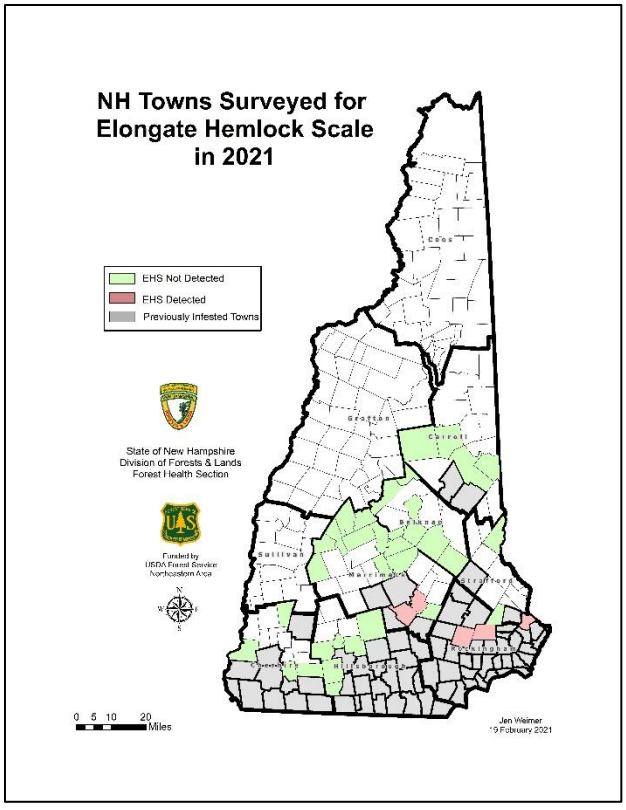
Ln Released at Fox Forest (Photo: Jen Weimer)

Elongate Hemlock Scale surveys for 2021 were conducted in 42 towns. Towns surveyed included Marlow, Newbury, New London, Wilmot, Danbury, Hill, Andover, Franklin, Boscawen, Canterbury, Northfield, Tilton, Belmont, Gilmanton, Barnstead, Laconia, New Hampton, Center Harbor, Milton, Ossipee, Tamworth, Sandwich, Effingham, Goshen, Lempster, and Acworth, Sharon, Peterborough, Dublin, Marlborough, Westmoreland, Hancock, Bennington, Francestown, Weare, Bow, Pembroke, Allenstown, Raymond, Epping, Lee, and Newington. New infestations were detected in Bow, Pembroke, Raymond, Epping, and Newington. One additional site was later detected in Hillsborough.





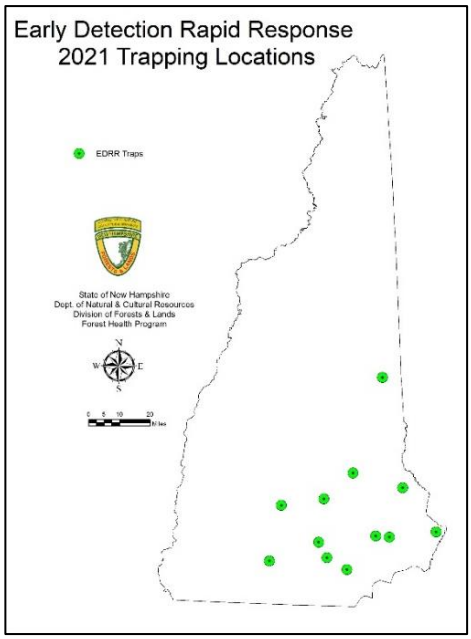




Click on maps to view larger pdf

EDRR

Early summer we participated in a regional Early Detection and Rapid Response (EDRR) trapping effort funded by the USDA Forest Service to detect and monitor newly introduced exotic scolytid beetles at 12 high-risk sites in NH. We collected 8047 Scolytines from 48 species including ***Heteroborips seriatus***, which was first found through EDRR in Massachusetts in 2008 and has spread to NH, VT, ME and PA in the last couple of years. There has not been any hosts or tree damage reported for this species yet in North America and they have only been collected in traps. We also trapped ***Xylosandrus crassiusculus***, the Granulate Ambrosia Beetle, for the first time in NH. It is an Asian species, first introduced in the south in the 1970's, but has been steadily expanding its range and is now in every eastern state south of NH and as far west as Kansas (with an outlier record in Oregon). It is a serious pest of nurseries and orchards. In addition we trapped two native species for the first time in NH; ***Hypothenemus interstitialis*** and ***Hypothenemus dissimilis***, which are also not considered pest species.



Sirex noctilio

Late summer we deployed traps at Pawtuckaway State Park for ***Sirex noctilio***, an exotic woodwasp, which had been reported by someone doing research in the area last year. We also placed several log samples in barrels taken from dying trees for insect rearing. To date we have not confirmed *Sirex noctilio* at this site. In October, the NH Department of Agriculture trapped and confirmed *Sirex noctilio* in a roadside trap in Greenfield. In addition, they also trapped a suspect *Sirex spp* in Keene for which we are awaiting confirmation.

Genome Project

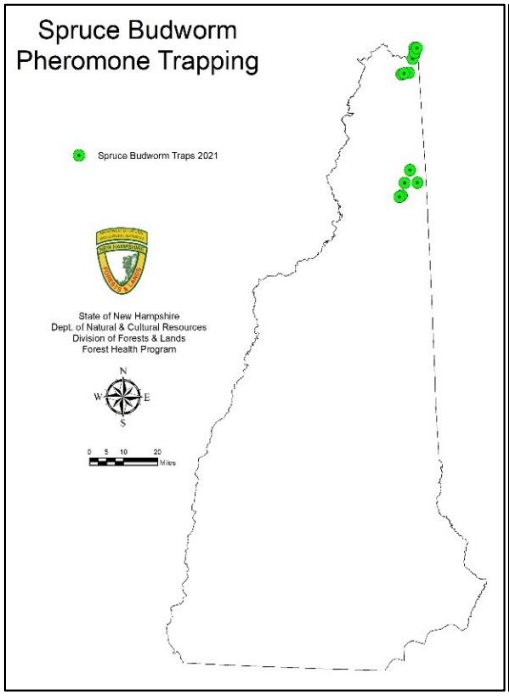
Additionally this year we saved the bycatch (non-target species) from all of our trapping for a genome project being conducted at the University of New Hampshire Hubbard Center for Genome Studies. The goal of this project is to grow the arsenal for surveillance to include screening of all bycatch through DNA barcoding, a tool that can demonstrably improve detection rates and response times for combatting forest insect pests.

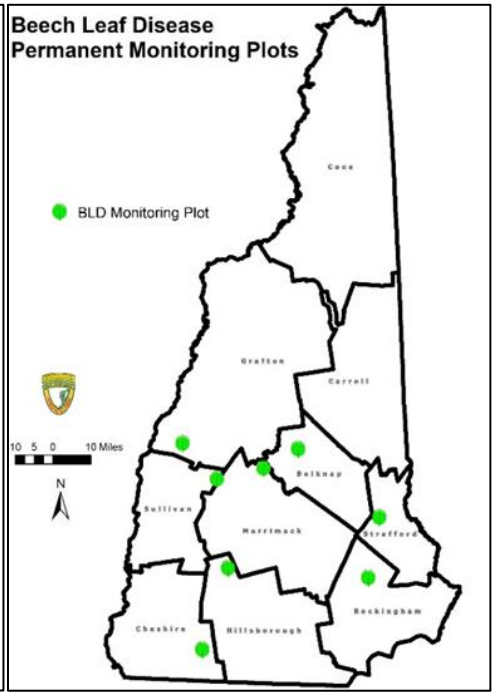
Caliciopsis pinea

In order to better understand the biology of *Caliciopsis pinea*, the fungus that causes pine canker disease, we cooperated on a regional project with Michigan State University to collect fungal spores. Spore collection traps were set up in late May at two sites in NH and collections continued into mid-November. The University of New Hampshire Office of Woodlands assisted with collections at one site in Durham.

Spruce Budworm

Trapping for spruce budworm continued this year and catches remain at endemic levels. You can find out more info and view an interactive map of the current outbreak in Maine and Canada on the Maine SBW Task Force webpage.





Beech Leaf Disease

We are keeping a close eye out for beech leaf disease (BLD) after numerous reports in Massachusetts and Maine. In anticipation of its arrival in NH, we established eight permanent BLD monitoring plots on state lands throughout the southern half of the state. The USFS has established two additional plots near the seacoast.

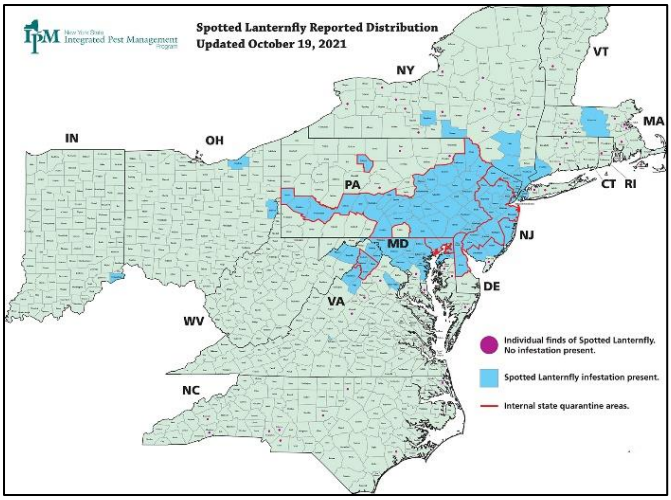
Southern Pine Beetle

A UNH graduate student trapped southern pine beetle (SPB) at two sites in Ossipee in October. This is the farthest north this destructive native beetle has been detected. While it has been expanding its range northward, it is currently not known to be infesting trees or causing tree mortality in any of the New England states where it has been detected. We began trapping for SPB in NH in 2015 and trapped through 2019 with no detections. While we had done trapping at the same sites where it was recently detected, we had only trapped in the spring. This new

detection late season may indicate we need to trap later in the fall in northern states. We plan to trap again next year likely in the spring and/or fall.

Spotted Lanternfly

We conducted surveys for spotted lanternfly (SLF) adults and egg masses on host trees including tree of heaven, its preferred host, at three high-risk sites in NH this fall due to a recent detection of an infestation in Fitchburg Massachusetts. No SLF was detected.



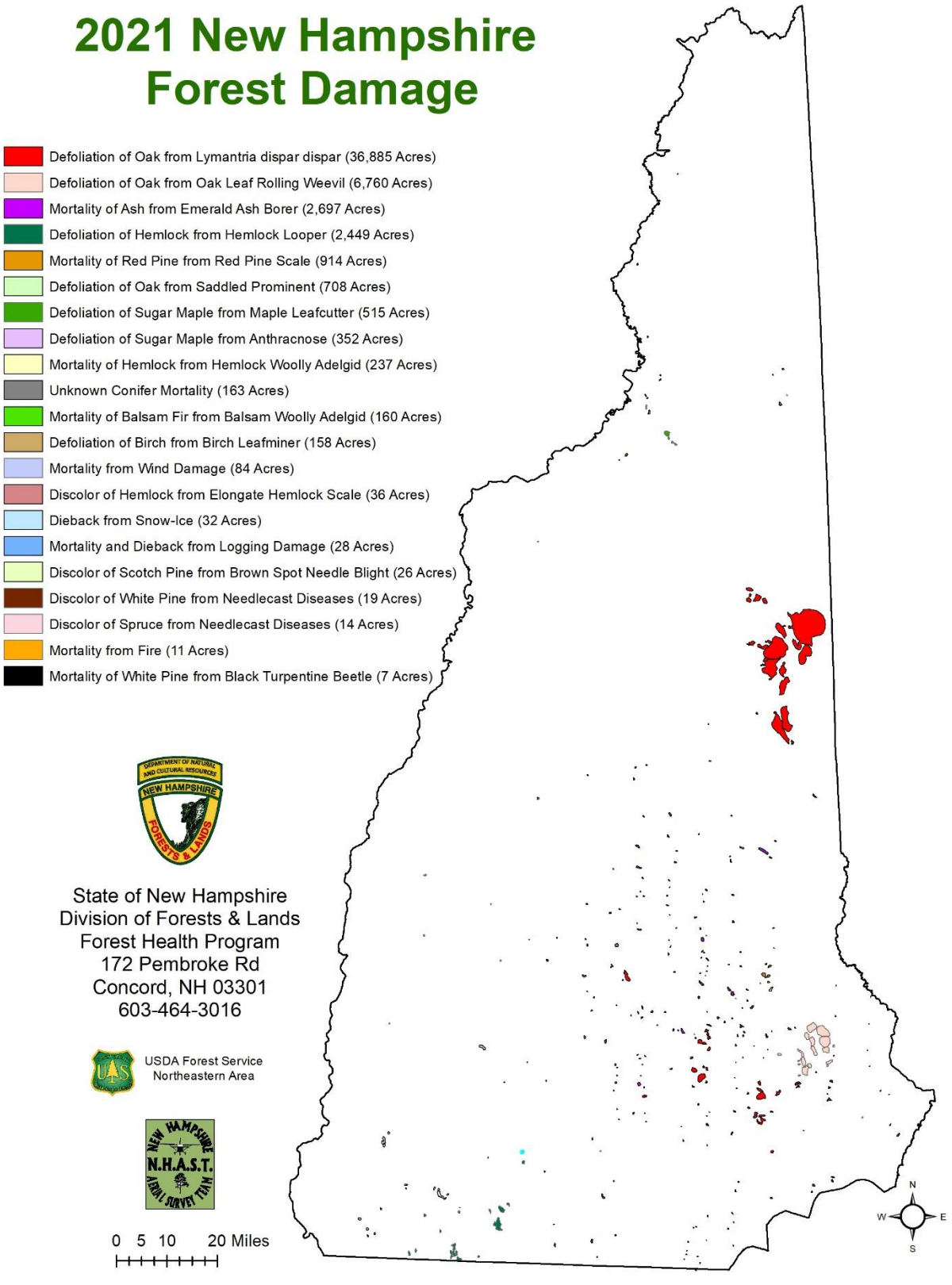
Aerial Survey Highlights

We mapped over 52,000 acres of damage in this year's aerial survey. The most common damage seen this year was defoliation from *Lymantria dispar* (formerly known as Gypsy Moth) which was mapped on 36,885 acres of red oak, mostly in the White Mountains region. We also mapped defoliation of oak from Oak Leafrolling Weevil on 6,760 acres in the southeastern part of the state, defoliation of hemlock from Hemlock Looper on 2,449 acres in the southwestern part of the state, defoliation of oak from Saddled Prominent on 708 acres in the Monadnock region, and defoliation of sugar maple from Maple Leafcutter on 515 acres throughout the state. Notable tree mortality was also mapped this year from Emerald Ash Borer (2,697 acres) and Red Pine Scale (914 acres).

Hemlock Looper defoliation (Photo-Bill Davidson)

Lymantria dispar defoliation (Photo-Bill Davidson)

2021 New Hampshire Forest Damage



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EAB Update (By Bill Davidson)

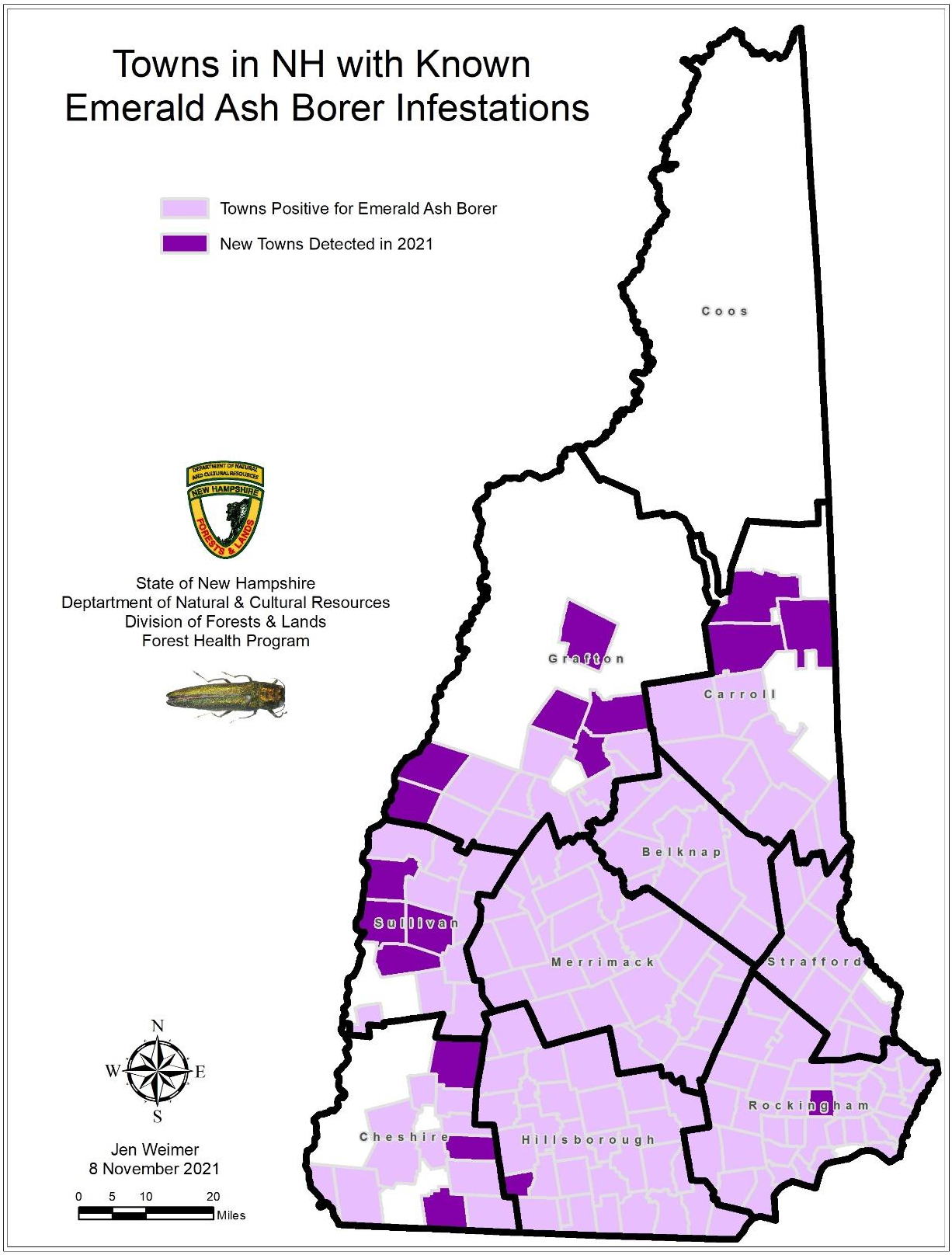
Emerald ash borer was detected in the following 18 new towns in New Hampshire in 2021: Newport, Plymouth, Campton, Rumney, Stoddard, Dublin, Sharon, Fitzwilliam, Claremont, Unity, Lebanon, Woodstock, Albany, Conway, and Bartlett, Brentwood, Cornish, and Hanover. Eleven of these detections were made via visual surveys, three through purple prism traps, and four were reports that came in from the public. There are now 165 infested towns in the state located throughout 9 of our 10 counties.

Three species of parasitic wasps (*Tetrastichus planipennisi, Oobius agrili,* and *Spathius galinae*) were released at three sites in the towns of Hillsboro, Croydon, and Rindge throughout the summer. In total, just over 13,000 wasps were released through the biological control program. Evaluation of biocontrol establishment and spread found *O. agrili* at a location ~1 mile from the nearest release site in Hopkinton, NH. *T. planipennisi* was recovered from a release site in Alton and another two sites each roughly 5 miles from the nearest release site. *S. galinae* was recovered from a previous release site in Hill, NH along with an additional location 1 mile from the nearest release site. These recoveries, along with consistent recovery in previous years, provides good evidence that the parasitoids utilized through the biological control program are becoming established throughout New Hampshire and are beginning to spread throughout the ash forests in the state.

We are also in the second year of a treatment project where we aim to protect a dozen ash trees at ten sites in each of our 10 counties for a total of 100 sites. In 2021 we treated 30 of these sites in 8 counties and have treated 60 sites over the past two years. Pockets of treated trees throughout the state will serve as refugia as the wave of emerald ash borer infestation crashes over the state. Protected trees will act as a seed source which will help jump-start the process of ash re-incorporating into our forests and in doing so, will preserve valuable local genetic diversity that might otherwise be lost.

Trunk Injection with Emamectin Benzoate. (Photo-Bill Davidson)

Towns in NH with Known Emerald Ash Borer Infestations



State of New Hampshire
Deptartment of Natural & Cultural Resources
Division of Forests & Lands
Forest Health Program

Jen Weimer
8 November 2021

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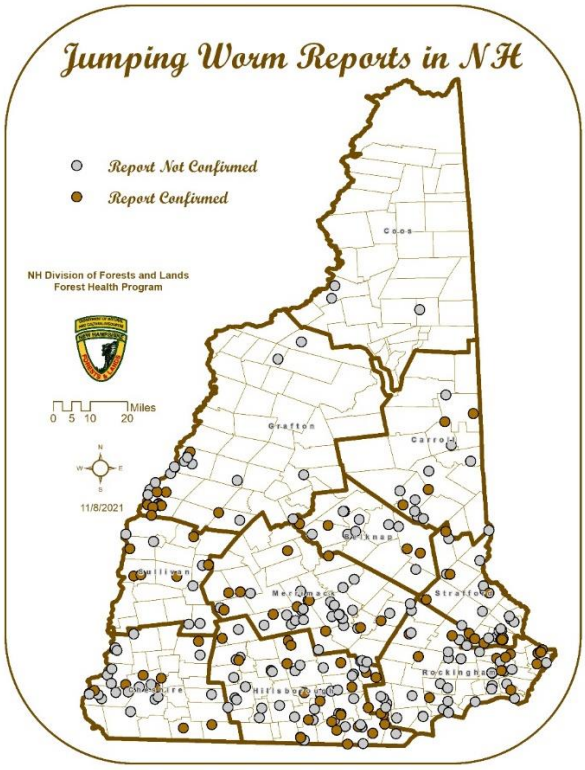
Feature Creature (By Jen Weimer)

Jumping Worms

There is a new potential forest health threat jumping up all over New Hampshire. This one is neither an insect nor a disease but rather a snake-like worm, which acts a bit crazy when disturbed. Hence, they are often referred to as crazy worms or jumping worms. Originating in Asia, the first report of jumping worms in NH was in Portsmouth in 2017 or 2018. We had a few more reports in 2019 and about forty in 2020. This jump in reports was concerning and led to an increase in outreach to determine just how wide spread it was. As a result, we received over 200 new reports in 2021 encompassing all 10 counties in NH. About half of the reports were confirmed with photos. The majority of reports were from homeowners who found them in their lawns and gardens but a few were noted in wooded areas. Most reports were associated with recent plantings from garden centers or additions of compost or mulch from either garden stores or local municipal sources. These reports suggest that careful consideration and inspection is needed when purchasing new plantings, moving plants, or adding soil amendments to your lawn or garden.



In addition to destroying your lawn and gardens, this nonnative invasive earthworm can change the structure of the forest floor, negatively affecting native plants and animals. They are very invasive and can easily devour all of the leaf litter and organic matter in the soil leaving behind mounds of coffee ground-like castings. Because they reside in the upper layers of the soil, they can be easily disturbed when raking or doing other activities that disturb the soil. Jumping worms are gray brown in color with a smooth white band that encircles the entire body near the head. Once disturbed they will thrash about and even drop their tail if picked up. Their movements are much quicker than other earthworms and appear snake-like.

We are currently planning surveys for next year to determine the extent and impact of this new pest in NH forests. If you think you have seen an overabundance of aggressive worms in your garden or forest that could be jumping worms, we would like to hear from you. Learn how to ID them and report your sightings at nhbugs.org.

Office Notes

The NH Forest Health Program office and lab is located at the Caroline A. Fox Research and Demonstration Forest in Hillsboro. Our small staff monitors the condition of NH's 4.8 million acres of forest. You can help by contacting us if you observe any forest damage. Photos can be uploaded at NHBugs.org or you can contact us directly. Follow us on social media to keep up to date on forest health issues. We currently have 1945 followers on Facebook, 852 followers on Twitter, and 1328 followers on Instagram. Thanks for being so social with us! In addition, we email quarterly updates in March, June, and September. If you are not already on the mailing list, you can sign up on our website or Facebook page.

Forest Health Contacts

Program Coordinator
Kyle Lombard
603-464-3016
Kyle.Lombard@dncr.nh.gov

Forest Health Specialist
Jen Weimer
603-419-0079
Jennifer.Weimer@dncr.nh.gov

Forest Health Specialist-EAB
Bill Davidson
603-892-5156
William.Davidson@dncr.nh.gov

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