

# New York 2021 Forest Health Highlights

## Forest Resource Summary

New York state is 61% forested - forests cover 18.6 million acres of our 30.2 million total acres (about one acre per resident). Seventy-eight percent of this land is privately owned and managed for wood or pulp. The State owns 19 percent of the land, which mostly encompasses the Adirondack Park. Most of the land owned by the State is forested. These forest lands provide a recreational base for millions of residents and others visiting the State's scenic regions. New York's forests also produce timber, providing employment to 2 percent of the State's workforce. The manufacture of wood products provides \$2.4 billion annually to the State's economy. The forest resource is made up of a variety of forest types, mostly maple and other hardwoods, along with pine, oak, and eastern hemlock.



Figure 1 Map of NY State showing forested areas of 5 acres and larger

## Aerial Surveys

In 2021, New York State forest health staff covered just over 13 million acres during aerial surveys, and mapped about 959,000 acres of forest damage in total. US Forest Service ForWarn data was used for preflight reconnaissance and planning. Defoliation by *Lymantria dispar dispar* was the most broadly observed damage, covering about 726,000 acres. Tree mortality caused by emerald ash borer, Southern pine beetle, and hemlock wooly adelgid was also frequently observed.

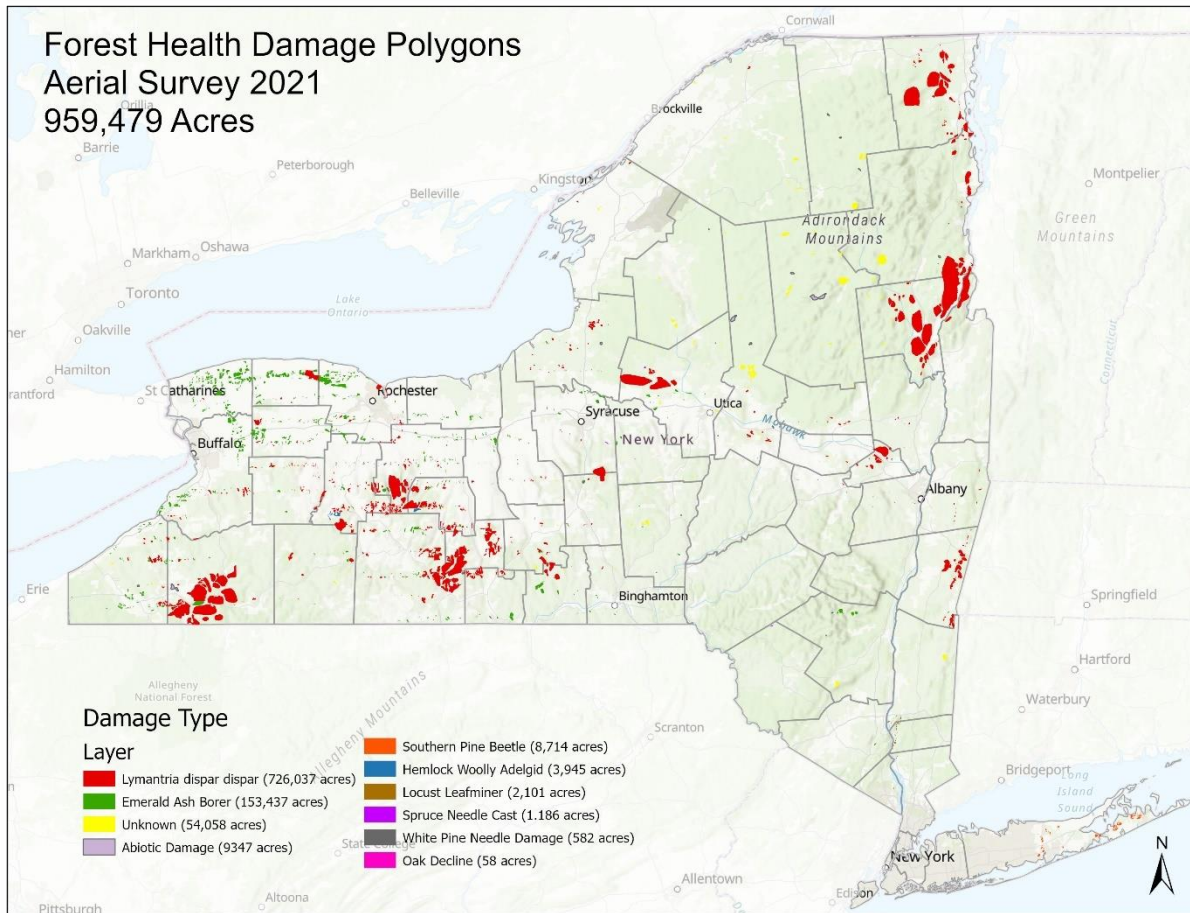


Figure 2 Map of forest damage detected by aerial survey in 2021.

## Forest Damage

### Insects

#### Asian longhorned beetle

There has been an active Asian longhorned beetle (ALB) eradication program in New York State for over 20 years (ALB was first found in Brooklyn, New York in August 1996). Since that time, teams of survey crews have been scouting out infestations. Trees found to be infested are removed and destroyed, while healthy trees are sometimes treated to prevent infestations from expanding. ALB has now been eradicated from all boroughs of New York City. There is now only one remaining active quarantine area in New York, covering 53 square miles and located in Central Long Island.

## Southern pine beetle

Southern pine beetle (SPB) continues to cause pine mortality on Long Island. Sustained suppression efforts from the DEC's Forest Health Unit continued in 2021. However, an increase in SPB populations was observed within the Core of the Central Pine Barrens and this was especially acute on the South Fork of Long Island. In addition to suppression, DEC's SPB program also focuses on SPB prevention. The aim is to create healthy pine barrens that are resistant to SPB outbreak, through the ecological restoration of these globally rare communities. In January and February of 2021, DEC thinned and mechanically treated nearly 20 acres in Sarnoff State Forest and contracted the thinning of 26 acres in October of 2021. DEC and CPBC implemented prescribed fire in the demonstration forest in the Spring and Fall of 2021. Elsewhere in New York State, increased numbers of SPB were found in beetle traps in the Lower Hudson Valley, and 11 SPB were caught in beetle traps at a new location, the Saratoga Sand Plains. However, no infested trees have yet been detected anywhere in New York State other than Long Island.



*Figure 3 Picture of a controlled burn to restore pine barrens at a DEC demonstration forest at Rocky Point.*

## Hemlock woolly adelgid

Hemlock woolly adelgid (HWA) continues to cause widespread damage and mortality to native forest and ornamental eastern hemlock trees. In 2021, the trend of increasing adelgid number continued throughout the state. This is likely tied to mild winter temperatures resulting in low overwintering mortality of HWA. Hemlock mortality and decline are recorded regularly throughout the known range of HWA in New York. Damage is most severe in areas that have been infested the longest, such as much of the Catskills and Finger Lakes regions. In some of these areas, most of the trees are infested, and many of them are in declining health or dead. DEC continued pesticide treatments in both Lake George Wild Forest and Hemlock-Canadice State Forest to protect sensitive hemlock ecosystems there. Ultimately, it is hoped that prudent chemical treatments will help to buy time for biological control to become established and effective across the landscape.





*Figure 4 Picture of DEC technician Andrew MoskaLee injecting insecticide directly into a hemlock tree to control hemlock woolly adelgid.*

#### Emerald ash borer

Emerald ash borer (EAB) has expanded in range has expanded to nearly every corner of the State. In 2021, over 150,000 acres of ash mortality was mapped during aerial surveys. Research activities into biological control and surveys to locate potentially resistant ash trees are being conducted in all the infested regions of New York.

#### Spotted Lanternfly

The first New York State infestation of spotted lanternfly (SLF) was discovered in Staten Island in August 2020. Infestations have now also been confirmed in all boroughs of New York City, as well as Westchester, Rockland, Orange, Ulster, Broome, and Tompkins Counties. SLF threatens the agriculture and forestry industries and is also a nuisance pest. The nymphs and adults feed on over 70 different plants with piercing sucking mouthparts.

*Lymantria dispar dispar*

DEC mapped about 726,000 acres of defoliation by this pest during the annual aerial detection survey. Defoliation was observed on oak, maple, apple, hickory, birch, willow, basswood, beech, aspen, white pine, spruce, and hemlock. This was the 2nd year of severe defoliation for the western Finger Lakes region. Fortunately, wet weather in June and July promoted an increased presence of NPV and *Entomophaga maimaiga* and resulting caterpillar mortality in the Finger Lakes was significant.

Outside of the Finger Lakes region, the impact of epizootic disease was less. In Clinton County, maples experienced the brunt of the defoliation, while to the south in Essex, Warren, and Saratoga, oak, white pine, and hemlock were the hardest hit. Pockets of defoliation were detected throughout the Mohawk Valley and into Oneida and Oswego Counties. In the west, Allegany State Park, New York's largest state park at 65,000 acres, experienced heavy defoliation throughout. The Office of Parks, Recreation, and Historic Preservation (OPRHP) is conducting egg mass surveys in 23 State Parks spread across 7 of the 11 OPRHP Regions in NYS to determine where treatment may be necessary to maintain forest health.



Figure 5 Aerial photo of a forest defoliated by *Lymantria dispar dispar* in Columbia County, NY, 2021

## Pathogens

### Beech leaf disease

Beech leaf disease is the latest threat to beech trees. It can kill mature trees in 6 to 10 years and younger trees in just a few years. Each year, DEC Forest Health conducts visual surveys across the state to identify infested stands and map the spread of beech leaf disease. Monitoring plots are established to assess the symptom progression of beech leaf disease and the change in stand characteristics as the disease progresses. There has been significant expansion across New York in the past few years. Newly detected counties in 2021 include Bronx, Nassau, Queens, Putnam, Dutchess, Orange, Tompkins, Cayuga, and Genesee.

Since beech leaf disease has only recently been recognized, its biology and vectors are not well understood. DEC is working on a small study to track the local spread of beech leaf disease in the forest. The study takes place in a maple beech cherry stand currently being managed. Most of the symptomatic trees are small understory beech. In just one year, the area of visibly infected trees increased from 1 acre to 4.6 acres. We plan to revisit the site next year and map the new expansion.

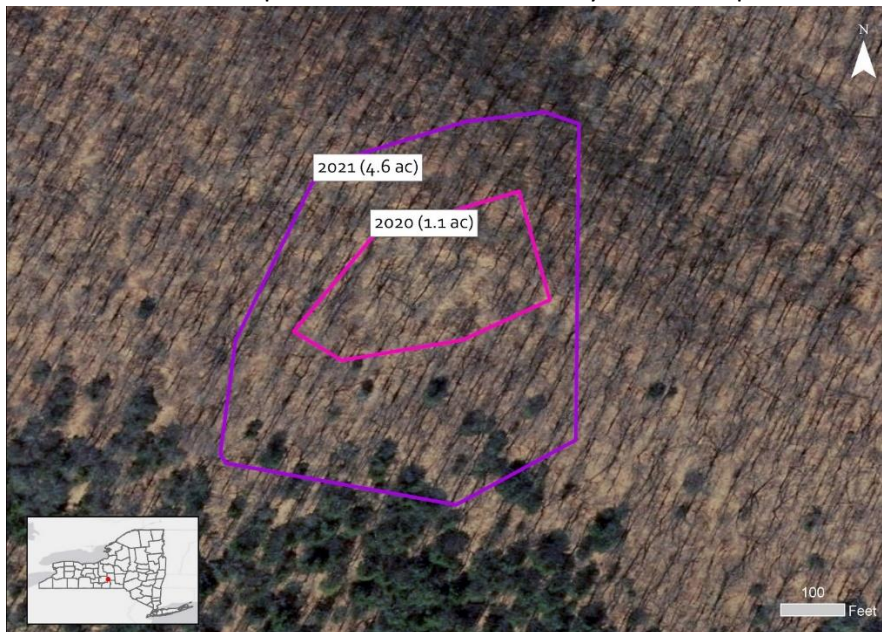


Figure 6 Map showing one-year expansion of beech leaf disease at Kennedy State Forest



## Oak wilt

DEC continues early detection research for oak wilt using trapped nitidulid beetles. No new infected counties were detected in 2021 and thus no suppression work was conducted. In 2020, a total of 20 samples were positive for the fungus, many of which were in Steuben County. DEC has long suspected that the oak wilt fungus was present in this area, due to nearby infections to the south in Pennsylvania and to the north around Canandaigua Lake, but has not found symptomatic trees. Positive beetle samples were also collected around previously treated infection centers in Middlesex (Yates County) and Glenville (Schenectady County). In 2021, all these areas were further investigated via aerial and ground surveys and no symptomatic trees were found. Nitidulid samples from 2021 are still being processed and tested.

## White pine decline

DEC Forest Health has been working with regional foresters to promote white pine silvicultural methods outlined in the Field Manual for Managing Eastern White Pine Health in New England (Livingston et al.) We encourage the use of low-density management to mitigate impacts of important health problems that face white pine in the Northeast, such as white pine needle damage and *Caliciopsis* canker. In 2021, work on a proposed demonstration forest at Balsam Creek State Forest progressed when foresters marked two stands of white pine, totaling 29 acres, that will be reduced from 124 to 30 trees/acre through a series of two cuts. Harvest is planned for winter of 2021-2022. Forest Health collected preliminary tree health data and will continue to monitor the site post-treatment to compare health between managed and control stands. A trail system and informational kiosks will be established to educate foresters and land managers on the benefits of low-density management. In Saratoga County, a newly acquired, high-density 20-acre parcel of white pine was reduced to 30 trees/acre in late 2020-early 2021 and is the site of another planned demonstration forest.



Figure 7 Picture of DEC foresters and forest health staff meeting with forest pathologists Isabel Munck (US Forest Service) and Bill Livingston (University of Maine) to learn about low-density white pine management.

## Invasive Plants

### Giant Hogweed

Giant Hogweed, a noxious invasive plant that causes a severe skin reaction, is present in 52 counties in the State. This was the fourteenth year of controlling giant hogweed plants by DEC forest health and partner agency staff. Based on preliminary data analysis, there are currently 1,475 sites that previously had giant hogweed plants that had no plants in 2021 due to past control efforts; 915 of these sites were monitored in 2021 by DEC/partner agency crews. There are 1,239 known sites where giant hogweed plants are present; with the largest and densest of these found in the western half of the State. During the 2021 field season crews controlled giant hogweed plants at 1,030 sites using manual and/or chemical control methods. Our control methods have been very successful; 54% of all known sites now have no giant hogweed plants. Public reporting to our giant hogweed information line is encouraged and helps to find new sites. Information is disseminated to owners and the public through our giant hogweed information line, outreach materials and website.



*Figure 8 Picture of a DEC technician looking up at a flowering giant hogweed plant (approximately 12' tall).*



## Kudzu

Kudzu, a fast-growing invasive vine originally native to Asia, is present in 14 counties in New York State. Half of those counties are in the Hudson Valley, while the other half make up New York City and Long Island. DEC is aware of 188 unique sites based on property boundaries, or 80 unique geographical areas when neighboring sites are grouped together. Sixteen of those groups (53 sites) are found in the Hudson Valley, and those sites are controlled by partner agencies. The other 64 groups (135 sites), found in New York City and Long Island, are controlled by DEC crews. Kudzu sites are located on private, state, county, city, town, village and railroad properties and owners are contacted every year to obtain permission to visit each site. At sites where plants are found, a mix of manual (root-crown removal) and chemical control methods (foliar spray and cut-stump control) are used to combat the vines. Sites where no plants are found continue to be monitored each year, until no plants are found for three consecutive years, at which point the site is considered eradicated. Due to DEC and partner control efforts, 42 sites that no longer have plants are currently being monitored and 22 sites have been deemed eradicated. Outreach materials and information is provided by crews and information line staff to owners and interested parties.



*Figure 9 Picture of DEC technician Austin Shay mapping a newly reported kudzu infestation.*

## Forest Health Diagnostic Lab

The Forest Health Diagnostic Lab continues to provide insect and forest pathology diagnostic services to stakeholders of New York State, and promotes research and survey methods development within the various Forest Health programs. The lab supports outreach and education through its regular contributions to DEC Facebook and Twitter feeds and the Conservationist Magazine.

In 2021, the Lab began participating in the USFS's Urban Rearing early detection project, in which we collect diseased or insect-invaded woody material from arborists and rear out potential insects inside. The USFS provided the barrels and shelving. The Lab has, so far, established partners in Schenectady and Albany. The Lab is also participating in a USFS-funded DNA barcoding project, in which we are working with a genetics lab to identify all survey bycatch material. In 2021, the Lab responded to over 1000 emails from the public concerning invasive species as well as other insect, pathogen, and plant identification. During our peak season (May 1- September 30), staff responded to 1058 public emails from all nine DEC regions. In addition to tracking reports of beech leaf disease, *Lymantria dispar dispar*, Asian jumping worm, and other important forest pests and pathogens, the Lab also receives unique reports of foreign species, such as a tropical brown widow spider observed in Region 4 and an Argentinian wood cockroach colony reported in Region 9. The Lab also encourages public participation in invasive species reporting through its ALB Pool Survey program, where the public are invited to send the Lab pictures of longhorned beetles they may find in their pool filter, which had over 100 participants this year. By addressing the public's invasive species, pest, and pathogen concerns, the Lab continues to support DEC's larger mission to protect New York's natural resources.