Forest Health Visual Surveys 2021

New York State Department of Environmental Conservation – Forest Health

NYS DEC Forest Health and partners conducted visual surveys for many damage causing agents in New York this past year. These include beech leaf disease, hemlock woolly adelgid, thousand cankers disease, asian longhorned beetle, southern pine beetle, oak wilt, and the insect formerly known as gypsy moth. Following are the results of these surveys.

Beech Leaf Disease

Beech leaf disease (BLD) 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.

There has been significant expansion across New York in the past few years. Newly detected counties this year include Bronx, Nassau, Queens, Putnam, Dutchess, Orange, Tompkins, Cayuga, and Genesee. (Figure 1) Existing infestations increased in severity. BLD has been spreading across Westchester and Suffolk counties, where we received the most public reports from.

Figure 2 shows this year's survey results, displaying where beech leaf disease was and was not found. This does not include public reports or additional surveys downstate, which will be included in the final map, to be found in the BLD Annual Summary 2021. Surveys were conducted in 59 out of 62 counties this year.

Figure 1. Map showing BLD infested counties in NY, by year of initial observation

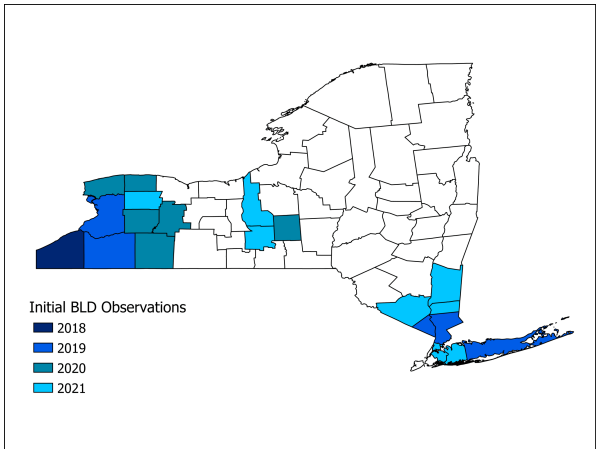
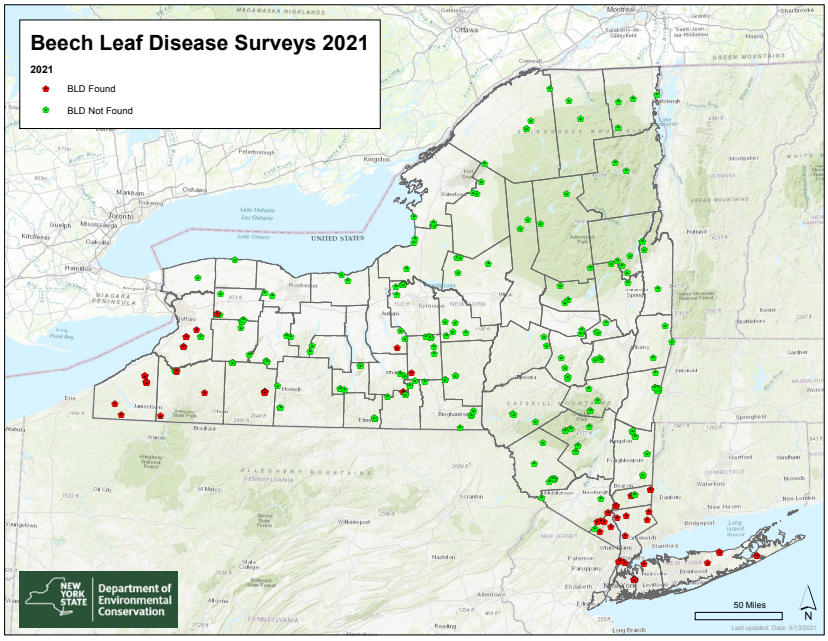


Figure 2. Map showing the positive and negative BLD survey results from 2021



Hemlock Woolly Adelgid

Hemlock woolly adelgid (HWA) is an insect that kills hemlock trees. It has been spreading north in New York since it was first observed downstate in 1985. Figure 3 shows towns where HWA has previously been found in the state. Figure 4 shows the survey results from this year where hemlock woolly adelgid was and was not found.

2021 was a big year for expanding HWA populations in general, in part due to low winter mortality last year. There were several new infested towns found along the leading edge, and significant expansion found in Warren and Washington counties. Existing infestations increased in severity.

Figure 3. Map showing HWA infested towns in NY from previous years

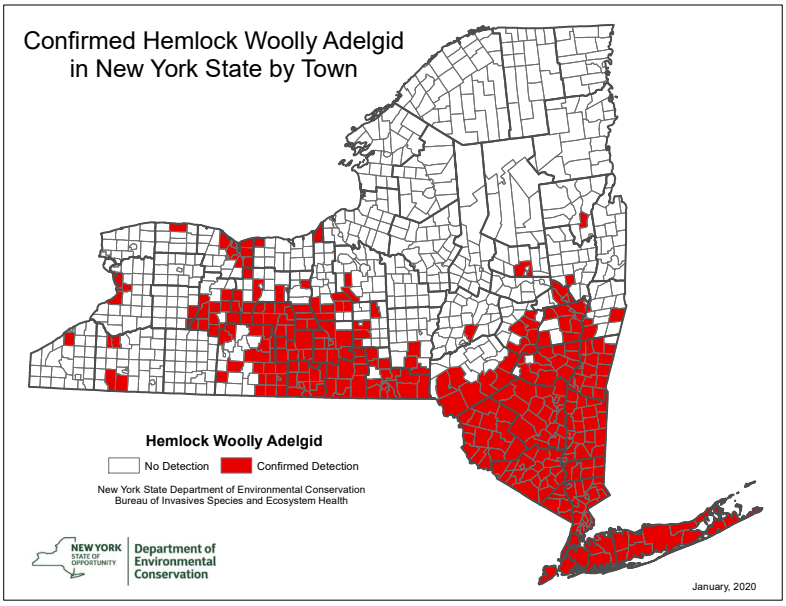
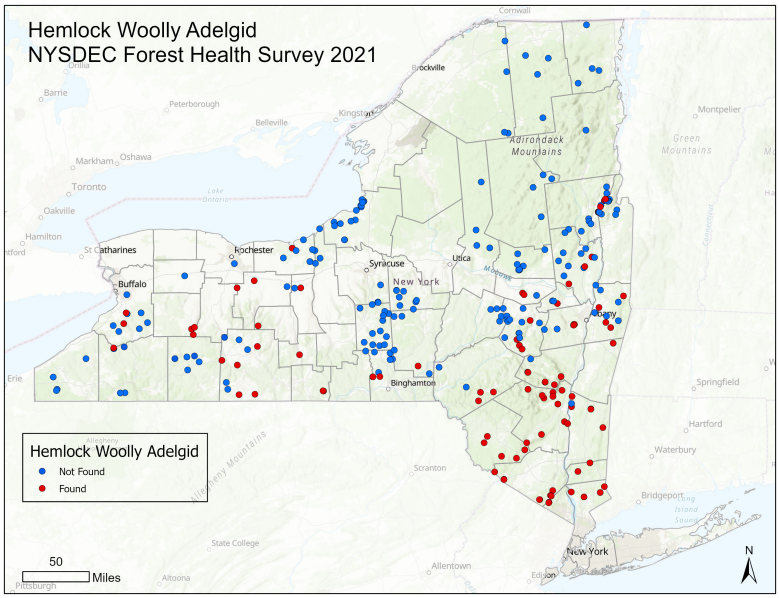


Figure 4. Map showing the positive and negative HWA survey results from 2021

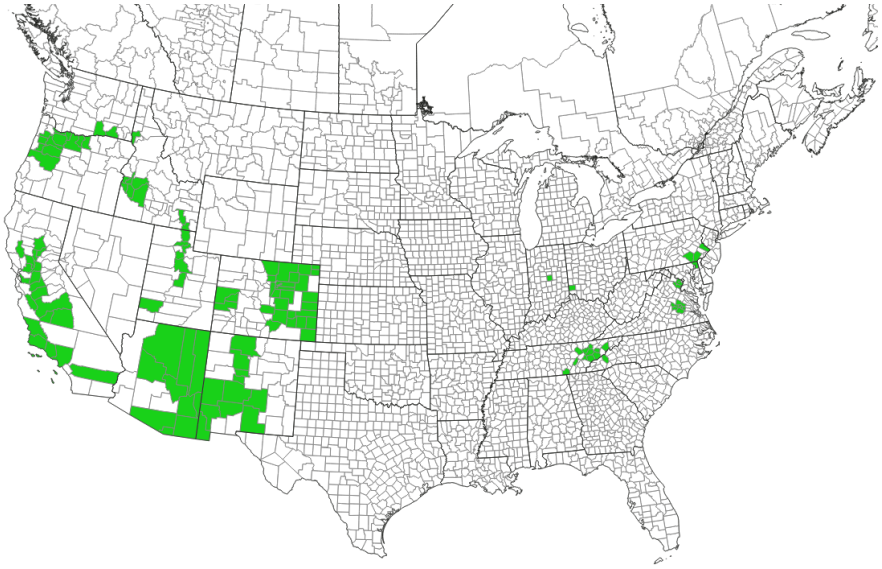


Thousand Cankers Disease

Thousand Cankers Disease (TCD) is a fungus that can kill walnut trees in just a few years. Every year we survey the counties with the most black walnut, and have not yet found any evidence of TCD, or its vector, the walnut twig beetle.

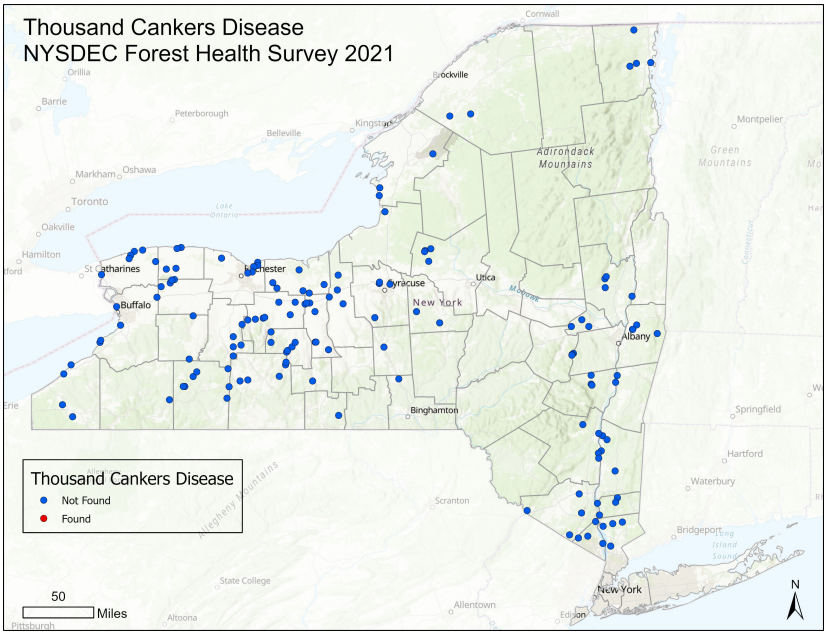
Figure 5 shows county detections of thousand cankers disease nationwide, with the closest detection in southeastern Pennsylvania. Figure 6 shows this year's survey results, all of which were negative for TCD.

Figure 5. Map showing counties with TCD detections in the United States



EDDMapS. 2021. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online at http://www.eddmaps.org/; last accessed November 30, 2021.

Figure 6. Map showing the TCD survey results from 2021, all negative

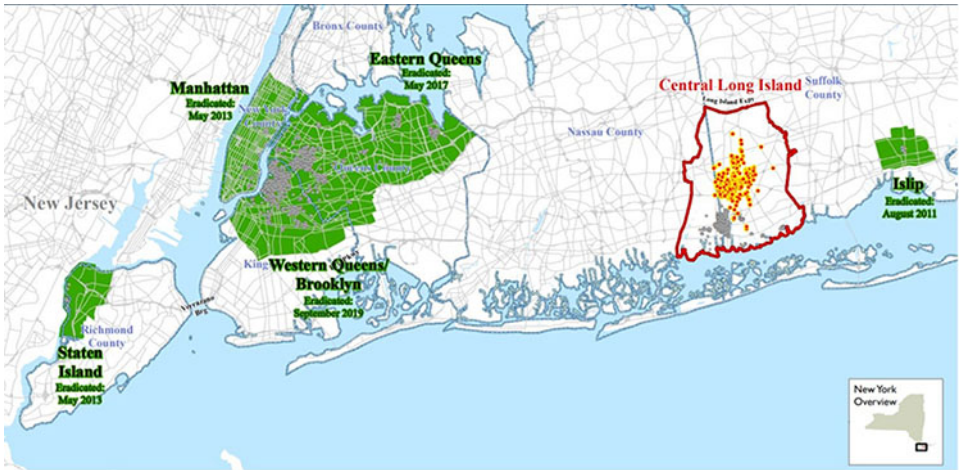


Asian Longhorned Beetle

Asian longhorned beetle (ALB) attacks and kills a large variety of hardwoods. It can cause major destruction in the forest. There have been ongoing infestations downstate since 1996. The current infestation is contained to central Long Island, which can be seen in Figure 7.

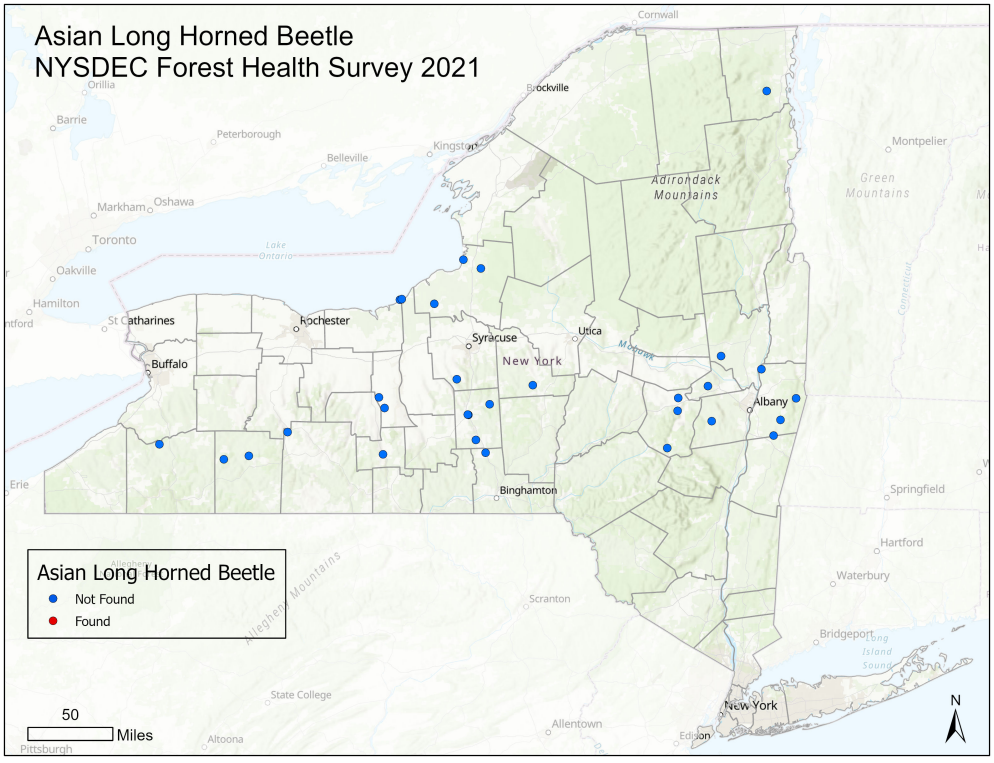
We surveyed campgrounds across the state for asian longhorned beetle, since it is known to hitch a ride in firewood. No evidence of the insect was found, which is shown in Figure 8.

Figure 7. Map showing past and current Asian longhorned beetle infestations in NY



Map provided by USDA APHIS

Figure 8. Map showing the ALB survey results from 2021, all negative

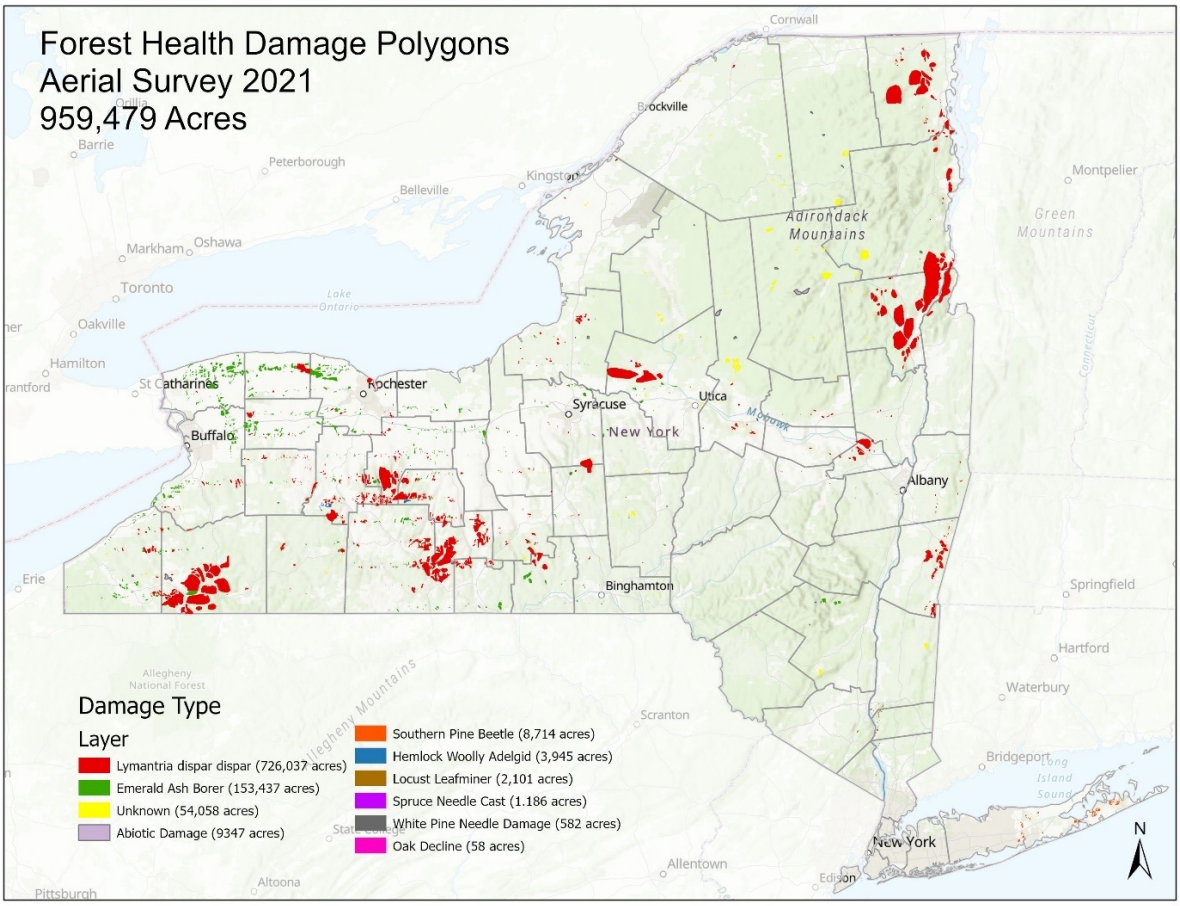


Aerial Surveys

The aerial and groundtruthing surveys are part of a national survey conducted by the US Forest Service. The purpose is to track and map forest changes over large areas, and to provide an overview of forest health conditions around the state and around the country. Each year the aerial surveyor flies over the state and maps out areas of trees that are discolored or damaged, and the groundtruther drives and hikes to those areas and confirms what is wrong with the trees.

Defoliation by the insect formerly known as gypsy moth was the most broadly observed damage in 2021. Other frequent causes of tree mortality mapped were emerald ash borer, southern pine beetle, and hemlock wooly adelgid. (Figure 9)

Figure 9. Forest health damage mapped by aerial survey in 2021



The Insect Formerly Known as Gypsy Moth

Gypsy moth caterpillars (*Lymantria dispar dispar*) feed on a large variety of host trees including oak, maple, crabapple, hickory, basswood, aspen, willow, birch, pine, spruce, hemlock, and more. Oak is their preferred species. The insect is currently undergoing a name change and is between common names at this time.

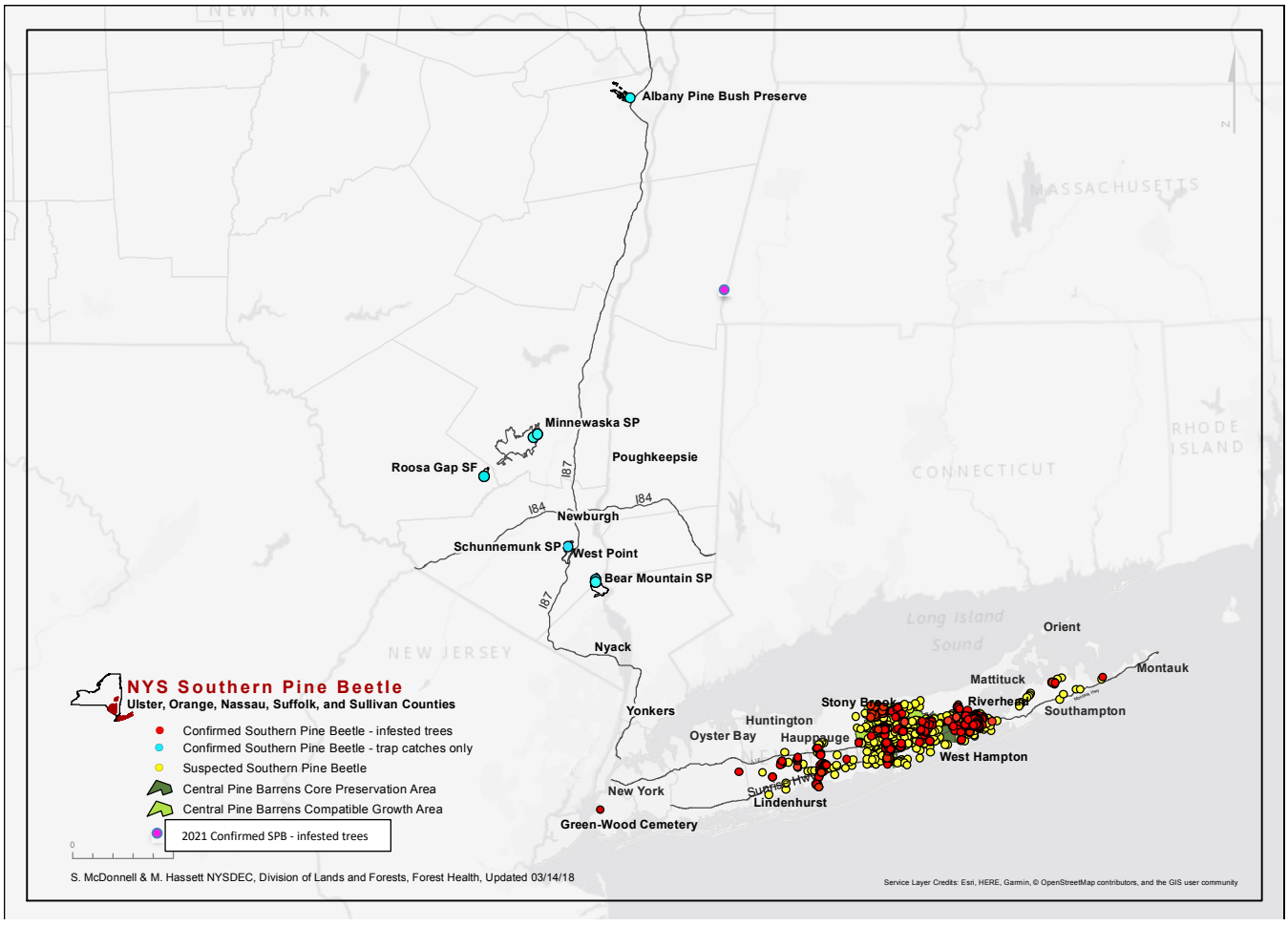
Populations rise and fall over the years from not noticeable to heavy defoliation. This past year was a large outbreak year, with elevated amounts of caterpillars causing noticeable leaf damage across the state. Figure 9 shows 726,037 acres of *Lymantria dispar* damage as mapped by the aerial survey. Populations were especially high in Clinton, Warren, Saratoga, Cattaraugus, Orleans, Monroe, Livingston, Ontario, Seneca, Yates, Steuben, and Schuyler counties.

Southern Pine Beetle

Southern Pine Beetle (SPB) is a bark beetle that attacks pine trees, and has caused massive destruction in southern pine forests. As a result of climate change, this beetle native to the southern US has moved north. In 2014 an infestation was discovered on Long Island. SPB gets out of control in overcrowded forests such as the Long Island Pine Barrens, which has not had regular forest management and has seen the suppression of natural fires, which is a key ecosystem process in pine barrens.

This year 8714 acres of SPB damage was mapped from the air. There was an increase in SPB populations in the core of the Central Pine Barrens and the south fork of Long Island. In late 2021, 3 pitch pines infested with southern pine beetle were found in Copake in Columbia county, on the border of Massachusetts. Figure 10 shows the approximate location in pink. This is the first time infested trees have been found outside of Long Island in NY. These trees were found in a preliminary search in response to a positive trap. It is expected that more infested trees will be found when a thorough survey is done in early 2022.

Figure 10. Map showing previous years of confirmed and suspected locations of SPB in NY



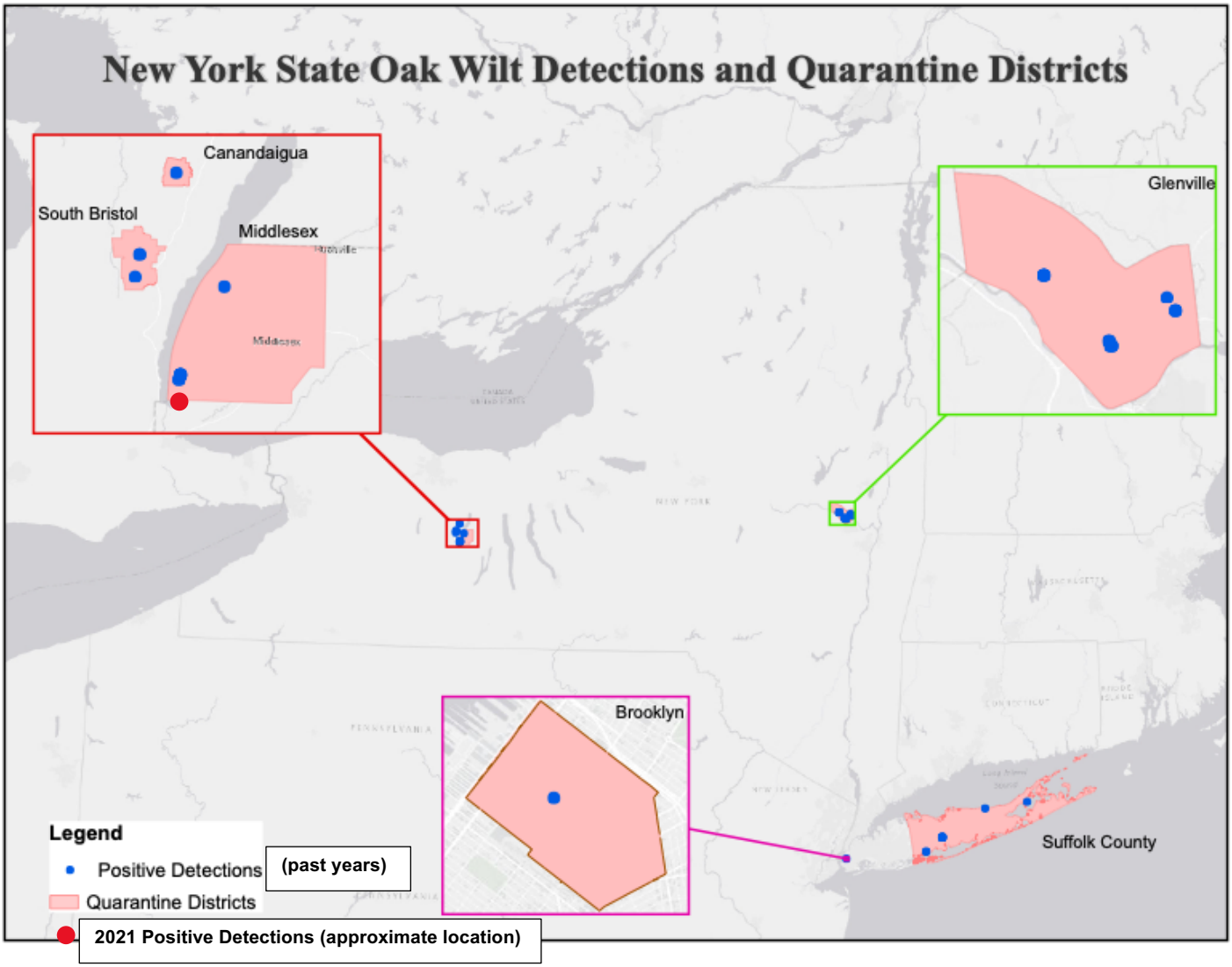
Oak Wilt

Oak wilt is a fungus that can kill red oaks in just a few weeks, and white oaks in a few years.

Figure 12 shows the 3 areas of the state where oak wilt infections have been found past and present. Each year these areas are carefully flown over and surveyed to monitor for any spread. This year there were 48 trees marked as suspicious and investigated for symptoms of oak wilt. Most of the damage was determined to be caused by other factors, such as defoliation.

One of the locations surveyed was found to have 2 trees infected with oak wilt. This site is on the border of Middlesex and Italy in Yates county, and fairly close to the previous southernmost find there. Figure 11 shows the approximate location of this year's positive finds in red. Note that this map has not yet been updated to show the new quarantine boundaries in this area. The infected trees have been cut down and burned on site.

Figure 11. Map showing areas of NY where oak wilt has been found past and present



Acknowledgements

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