



NEW YORK
STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

New York State Oak Wilt Response

2018 ANNUAL REPORT

DIVISION OF LANDS AND FORESTS

Andrew M. Cuomo, Governor | Basil Seggos, Commissioner



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Executive Summary

The New York State DEC Division of Lands and Forests has continued to eradicate or control oak wilt, a fungal disease that affects oak trees, since it was first detected in Glenville in 2008. In 2018, more than 400 symptomatic trees were detected using aerial surveys, ground surveys, and public reports. Seventy-nine of these were found to be potentially infected with oak wilt and were tested for the fungus by the Cornell Plant Disease Diagnostic Clinic. Four samples came back positive: three trees in South Bristol and one tree in Glenville. This is the first time oak wilt has been detected in South Bristol, and the fifth time it has been detected in Glenville.

Management activities continued in Glenville, Central Islip, Riverhead, and Brooklyn. A total of 97 trees were removed in Glenville from two infection centers that were detected in 2017. Stump grinding was conducted in Central Islip, Riverhead, and Brooklyn after a full year had passed from the date the trees were removed with no sign of regrowth. At one of the two newly detected infection centers in South Bristol, the landowner opted to begin management activities on their own, removing nine oak trees and digging trenches to disrupt root grafts.

DEC staff conducted door-to-door surveys in infected areas and provided information to more than 700 homeowners in the Town of Glenville and Suffolk County. Outreach materials, including bus shelter ads, informational kiosks at management sites, and mobile signs were used to inform the public about the symptoms of oak wilt and prevention methods. More than 100,000 people were reached via staff presentations, DEC Delivers emails, social media posts, and YouTube video views.

Background



A symptomatic tree found in South Bristol during an aerial survey

Oak wilt, a disease that affects oak trees, was first identified in the United States in Wisconsin in 1942 (Wilson and Lester 2002)¹, and has caused extensive damage in several upper Midwest states and Texas. It is caused by *Bretziella fagacearum*, a fungus that develops in the xylem, or water-carrying cells of trees. The fungus blocks the flow of water, causing the leaves to wilt and fall off, killing the tree. All oaks are susceptible to the fungus, but red group oaks can die within one to six weeks, while white group oaks may take years to succumb.

Oak wilt was first detected in New York State in Glenville (Schenectady County) in 2008 and again in the same area five years later. Since 2013, oak wilt has been confirmed in Brooklyn,

Islip, Riverhead, Southold, and Canandaigua, and newly detected in South Bristol (Ontario County) in 2018.

The New York State Department of Environmental Conservation (DEC) Division of Lands and Forests (DLF) created an Oak Wilt Response Plan to prevent, detect, and manage the disease in New York. An Incident Command System (ICS) organization structure (See Appendix A, Figure 1) was established by DLF in Central Office (Albany, NY) to apply consistent implementation of response activities, delineate roles, and responsibilities, and effectively disseminate information

¹ Wilson, A. D. and D. G. Lester. (2002). "Trench Inserts as Long-term Barriers to Root Transmission for Control of Oak Wilt." 1067-1074. Retrieved from <http://www.treesearch.fs.fed.us/pubs/5222>.

Detection and Monitoring

Aerial Surveys

Aerial surveys were conducted between July and October over the Riverhead, Southold, Islip, Glenville, Canandaigua, and Brooklyn infections, including a 16-square-mile area around each site. The survey over the Canandaigua infection was extended to include Bristol after a concerned landowner reported symptomatic oaks.

Several symptomatic oaks were detected during aerial surveys, including 54 in Canandaigua, Bristol, and South Bristol; 24 in Glenville; 29 in Suffolk County; and 20 in Brooklyn (See Appendix C, Table 1).

Ground Surveys

Using aerial survey data and public reports of symptomatic trees, DEC Lands and Forests staff conducted ground surveys across the state from July through October. Staff also conducted 777 miles of ground surveys along roadways in areas considered to be high-risk due to there being a large oak population and/or their proximity to New York quarantine districts or Pennsylvania counties with oak wilt detections (See Appendix B, Figure 2). A total of 316 trees were checked during ground surveys.

Sampling

Samples were collected from 79 symptomatic trees across the state and sent in for oak wilt testing. Oak species tested for the disease included red oak (*Quercus rubra*), swamp white oak (*Quercus bicolor*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), black oak (*Quercus velutina*), chestnut oak (*Quercus montana*), English oak (*Quercus robur*), and swamp Spanish oak (*Quercus palustris*). The oak wilt fungus can be difficult to diagnose, so several methods of testing were used. Samples were analyzed by staff at the Cornell Plant Disease Diagnostic Clinic in Ithaca, NY, using live culture methods, standard PCR (polymerase chain reaction), and DNA sequencing procedures. One of the samples collected in Glenville and three samples collected in South Bristol tested positive for oak wilt (See Appendix C, Table 1 and Appendix D, Figure 3).



DEC staff uses a pole pruner to sample an oak tree for oak wilt.



DEC staff climbs a tree to reach branches for oak wilt sampling.

Control Tactics and Treatment



Root graft disruption trench installed in South Bristol to help prevent the spread of oak wilt

A total of three infected trees were removed from the infection sites in Glenville (Table 2). The stumps were treated with glyphosate to kill any remaining tissue and prevent the spread of the fungus through the roots to other trees. At the Glenville and South Bristol management sites, a total of 105 uninfected trees adjacent to the infected ones were removed to create a buffer. In South Bristol, a trench was dug at the edge of the buffer to sever roots that had grafted together.

Four non-oak trees were planted on public and private properties in Islip and Riverhead that had infected trees removed in 2016.

Table 2. 2018 Summary of Tree Removal and Disposal

Location	Infected Trees Removed	Buffer Trees Removed	Herbicide Applied	Root Graft Disruption Applied	Trees Chipped	Stumps Ground
Glenville	3	94	Yes		Yes	
South Bristol		11	Yes	Yes		
Central Islip & Riverhead						8
Brooklyn						1

Regulatory Actions

DLF established quarantine districts (formerly known as protective zones) in areas with confirmed oak wilt infection sites to prevent potentially infected oak wood from being moved out of the regulated areas. The discovery of multiple infection sites on Long Island in 2016 led to the development of guidelines for determining the type of quarantine district that would be established. In general, these guidelines are:

- When there is only one infection center per town, a neighborhood quarantine district will be established.
- When there would be two or more quarantine districts per town, a town quarantine district will be established.
 - Infection centers require separate quarantine districts if there is more than a mile between the infected trees.
 - An infection center must fall within the town limits for a quarantine district to count toward the town's total.
- A county quarantine district will be established when there would be quarantine districts in four or more towns.
- DLF will also consider the square mileage of the infection site and treatment area, and the size of the associated town or county when determining the type of quarantine district that will be established.
- A quarantine district was established around the new infection centers in South Bristol (See Appendix E, Figure 4).

Research and Development



Window sampling, where a portion of the bark is removed, is potential sampling method for oak wilt.

Symptom Monitoring

In management areas, trees that had a high probability of becoming infected were photographed during the growing season to document changes over time if symptoms began to appear. Photos were taken of the same trees from the same angles every two weeks.

No symptoms were photographed during the 2018 growing season, but this monitoring will be continued in future years to record the progression of any potential disease symptoms.

Improved Sampling Methods

DLF staff worked closely with regional experts from the U.S. Forest Service and the Cornell Plant Disease Diagnostic Clinic to improve sampling methods, collection techniques, and training for the identification of oak wilt symptoms. New sampling techniques, including trunk and root collar sampling, are being evaluated and may be alternatives to branch sampling when symptomatic branches are out of reach or have died.

Sap Beetle Trapping

In the central United States, sap beetles (Coleoptera: Nitidulidae) have been the primary insects that transport the oak wilt fungus. DEC deployed 23 insect traps in Brooklyn, Canandaigua, and Central Islip from March to October to determine what sap beetle species are present in New York State and the time of the year they are most active. Knowing the diversity and seasonal distribution of insects that may transport oak wilt will help guide management decisions. Preliminary trapping results show populations of nitidulid beetles peaking between May and July.

Public Information and Outreach

Outreach and education are important tools for the detection and prevention of oak wilt. Several events and tactics were used to inform the public and stakeholders about the disease.

- DEC staff gave a presentation on oak wilt to municipal authorities at the annual Association of Towns Meeting in Manhattan.
- Municipalities and other stakeholders in areas with infected oak trees were contacted to create partnerships for oak wilt detection, management, and outreach.
- Various presentations, workshops, and trainings were conducted across the state for professional staff, partners, municipalities, and college students. Some programs were individual events, and others were part of established venues such as the Society of American Foresters Annual Meeting and the NYS International Society of Arboriculture Annual Conference. DEC staff interacted with more than 200 participants.
- Door-to-door surveys were conducted in neighborhoods around infection centers in Glenville and Suffolk County to provide residents with information about oak wilt, reaching 350 homeowners and 396 homeowners, respectively.
- Mobile signs were used in the Finger Lakes, lower Hudson Valley, and Catskill regions to inform people about prevention methods for oak wilt, including when to prune oaks and to use local firewood. Approximately 10,000 drivers passed the mobile sign in Canandaigua Lake State Marine Park every day.



An example of a management kiosk in Sanders Preserve in Glenville

- Print materials were developed and distributed to specific target audiences, including arborists and landscape professionals.
- Bus shelter displays were used throughout New York City to inform specific audiences about the symptoms of oak wilt.
- Electronic methods of outreach dissemination were used, including social media posts on DEC's Facebook and Twitter pages, DEC press releases, DEC Delivers emails, and YouTube videos.
 - A total of 36,268 people viewed DEC's oak wilt Facebook posts.
 - A total of 6,806 people viewed oak wilt Twitter posts.
 - Nearly 3,000 people viewed oak wilt YouTube videos.
- DEC Delivers informational emails were sent to 62,359 subscribers.

Appendix A

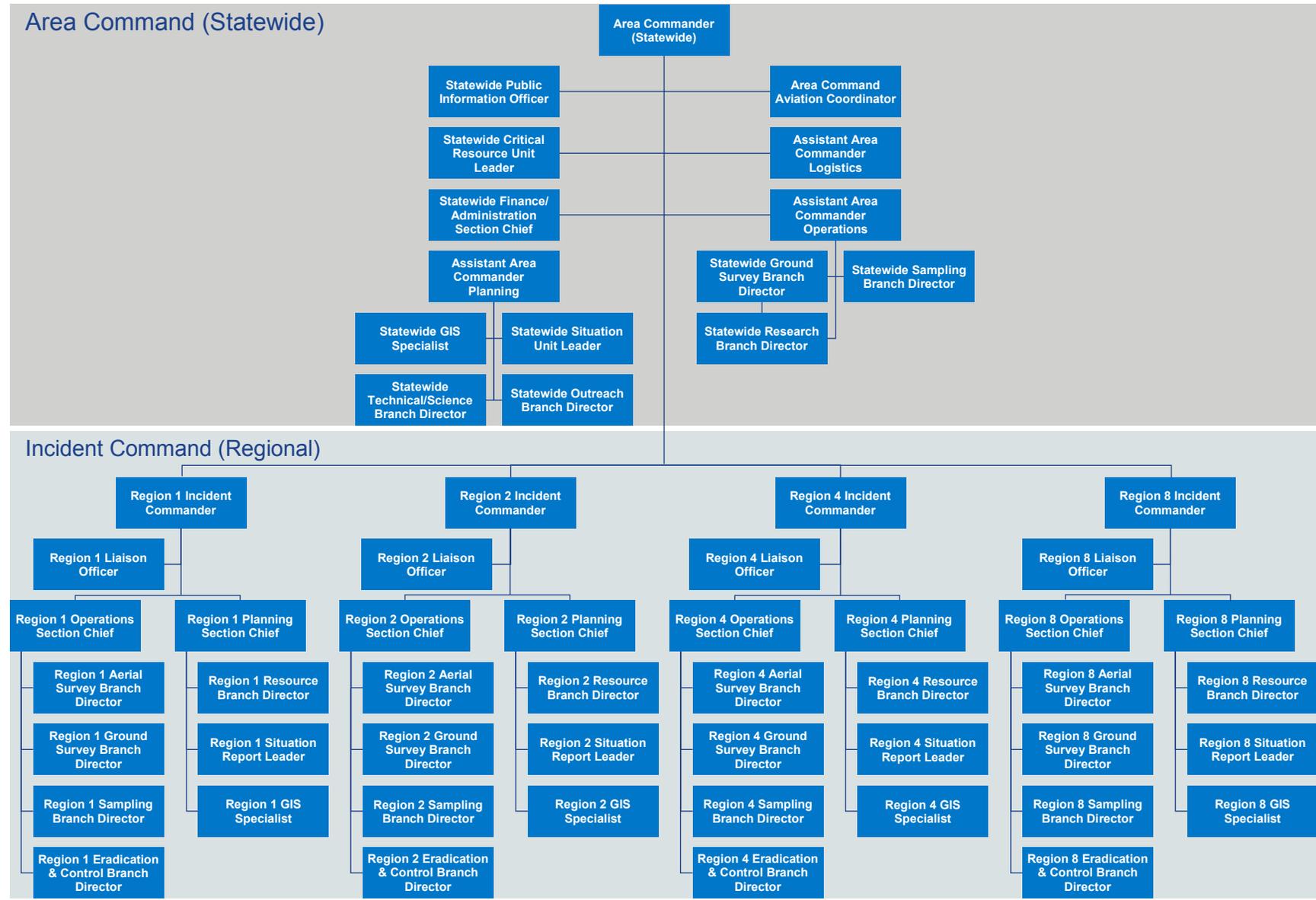


Figure 1. The Area Command System in place during 2018.

Appendix B

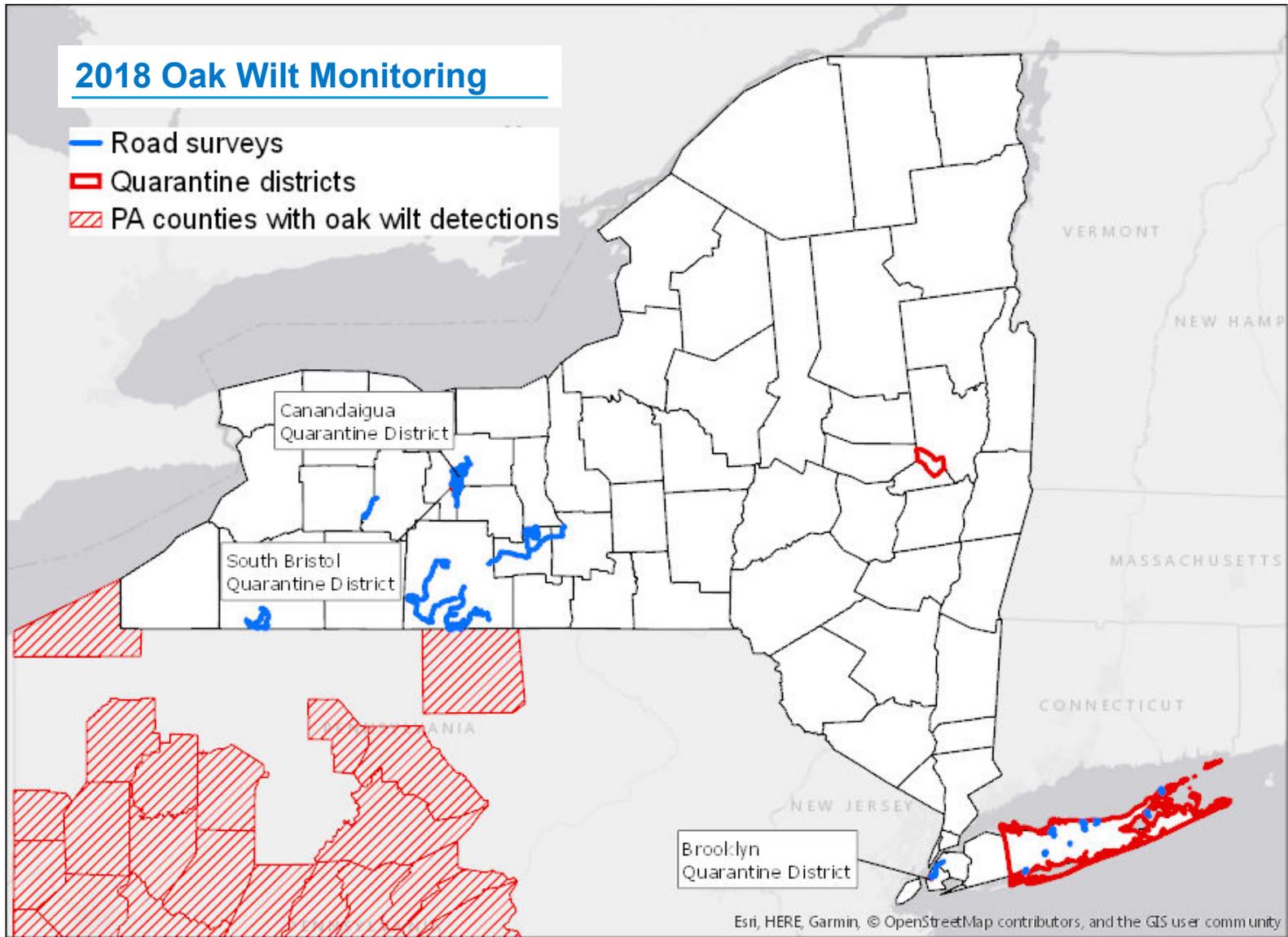


Figure 2. A map showing oak wilt survey locations in 2018. The blue lines show the routes logged during road surveys

Appendix C

Table 1. Trees Detected/Checked Through Surveys and Sampled for Oak Wilt				
DEC Region/County	Aerial Surveys Damaged Trees Detected	Trees Checked During Ground Surveys	Trees Sampled	Oak Wilt Positive Trees
REGION 1				
Suffolk	29	168	35	
REGION 2				
Kings	6	11	5	
Richmond	9	9	3	
New York	1	3		
Queens		12		
Bronx	3			
REGION 3				
Westchester		2	1	
Ulster		4	1	
Dutchess		1		
Rockland		2		
Orange		1		
REGION 4				
Schenectady	22	8	4	1
Albany	2	10	3	
Columbia		1	1	
Delaware		1		
Otsego		1		
REGION 5				
REGION 6				
Lewis		1		
Oneida		2		
REGION 7				
Chenango		1		
Tioga		1		
Tompkins		5	4	

Table 1. Trees Detected/Checked Through Surveys and Sampled for Oak Wilt

DEC Region/County	Aerial Surveys Damaged Trees Detected	Trees Checked During Ground Surveys	Trees Sampled	Oak Wilt Positive Trees
REGION 8				
Steuben		8		
Livingston		5	2	
Ontario	75	39	17	3
Monroe		2		
Wayne		3		
Schuyler		4	2	
REGION 9				
Erie		4	1	
Cattaraugus		2		
Chautauqua		1		
Niagara		3		
Wyoming		1		
Total	147	316	79	4

Appendix D

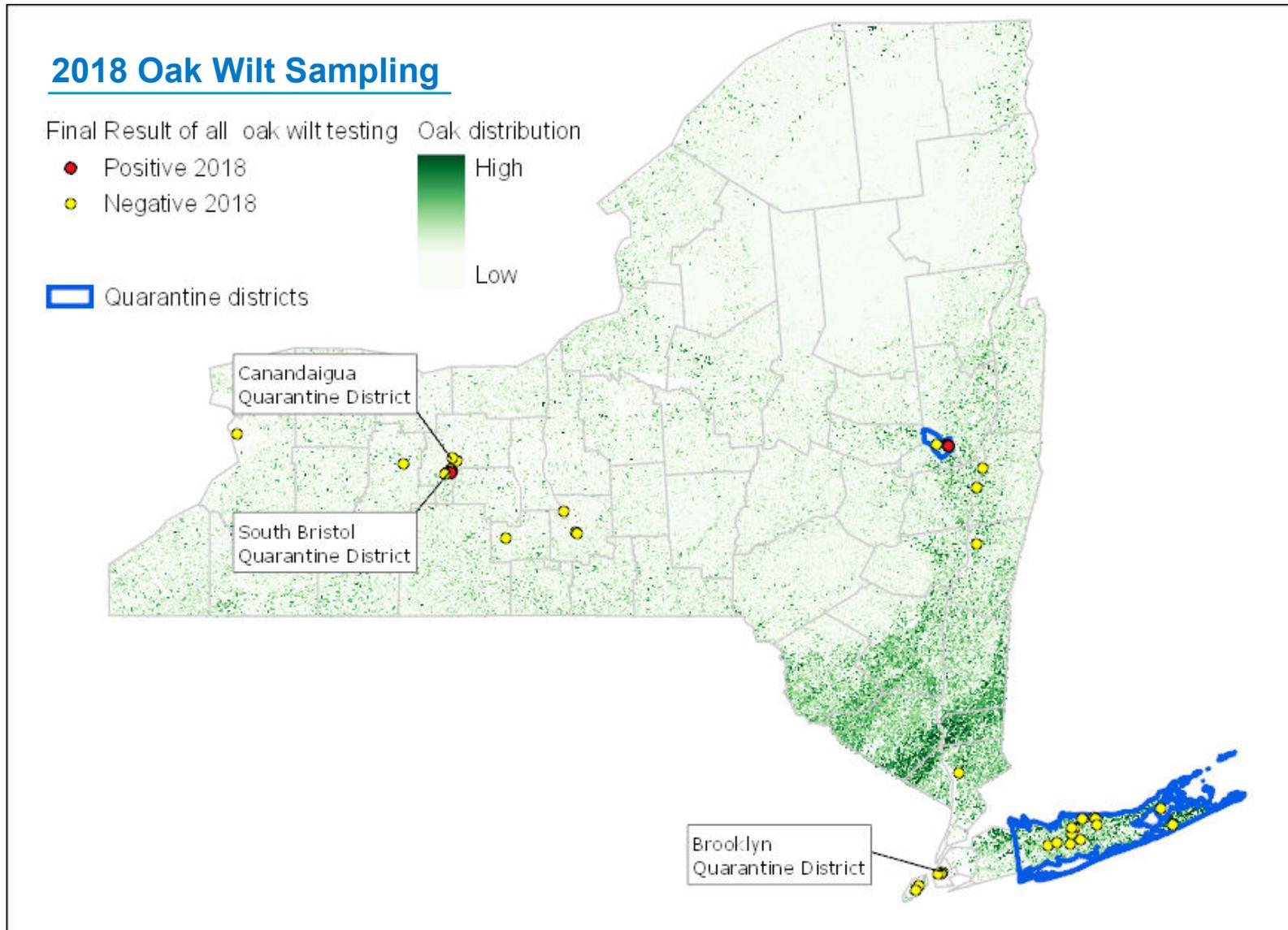


Figure 3. A map showing NY sampling results. The only samples that tested positive in 2018 were collected in Schenectady and Ontario counties.

Appendix E

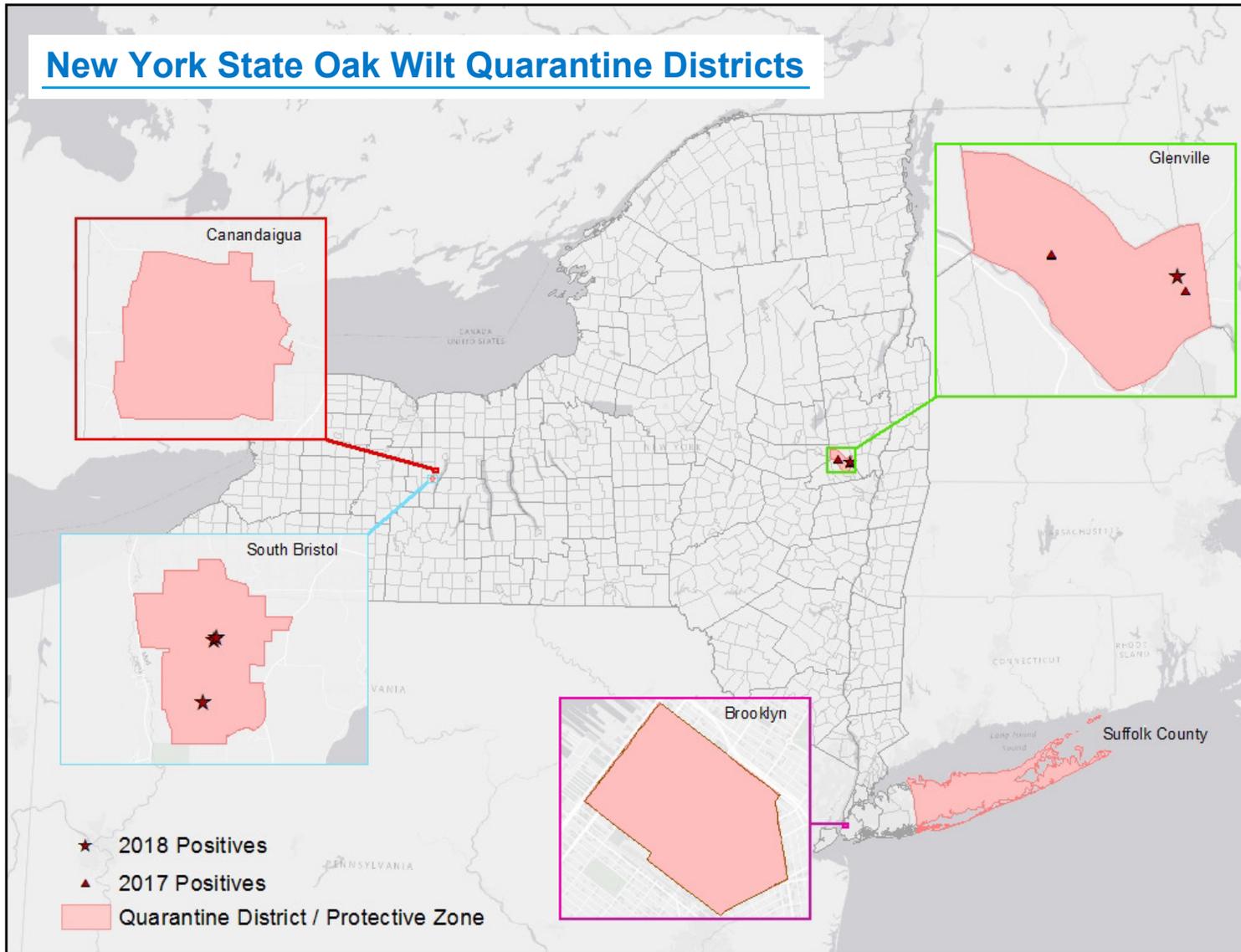


Figure 4. Quarantine districts in Canandaigua, Brooklyn, and Suffolk County were established in 2017. The quarantine district in Glenville was expanded in 2018. The quarantine area in South Bristol was put into effect in early 2019.



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