NEW YORK STATE | Department of Environmental Conservation

Oak Wilt Monitoring and Management in New York

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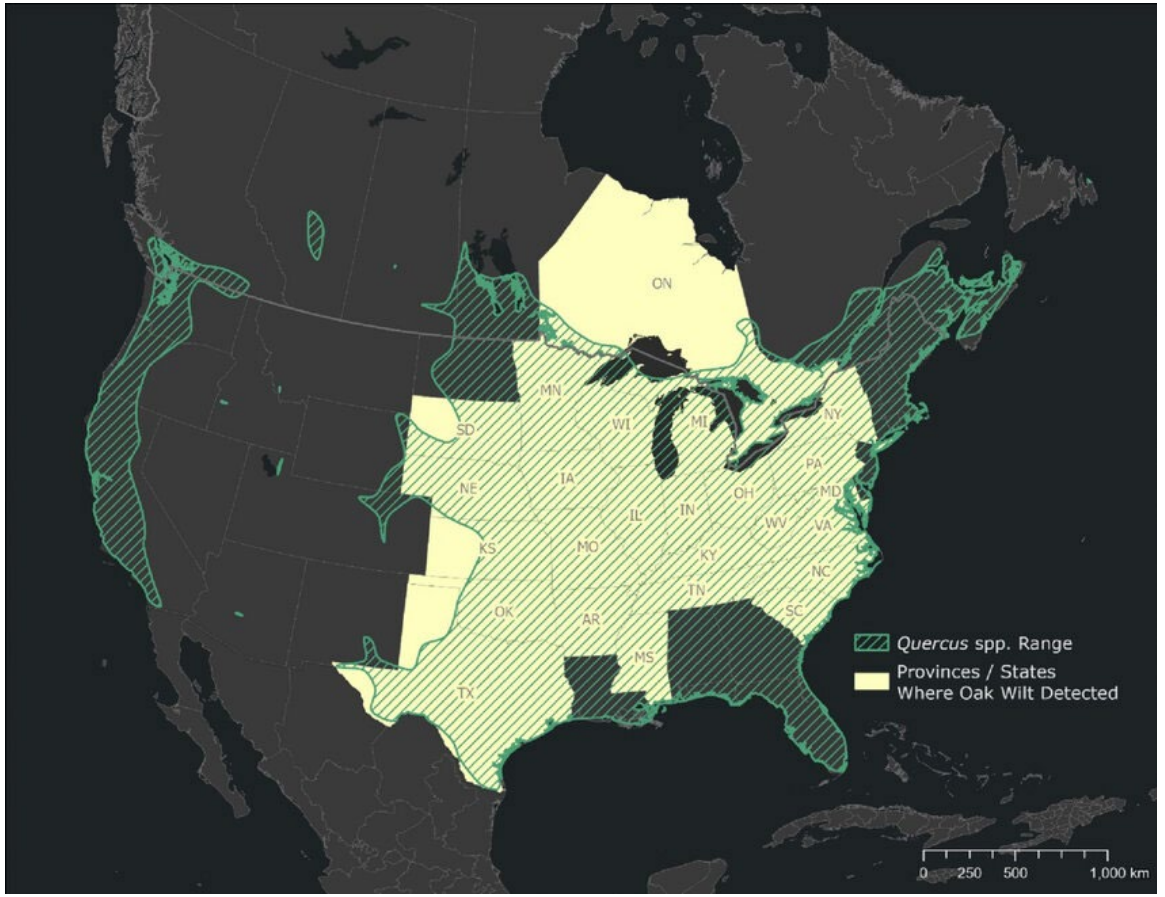
03/10/26

Oak Wilt Historical Background

- First detected in North America in Wisconsin in 1942
- Unknown origin
  - Likely introduced from Central or South America
- Present through much of Midwest and Texas by 1950
- Increase in northeastern part of its range since 2000
  - New York (2008)
  - Ontario (2023)
- Has killed then of thousands of trees throughout the eastern part of North America



Tischenko, Lisa, et al. "Oak genomics for nature-based solutions: shaping future forests and resilient landscapes in Canada." *Tree Genetics & Genomes* 20.3 (2024): 15.

Biology

Bretziella fagacearum

- Fungal disease that plugs vascular system of oak trees, preventing flow of water and nutrients from roots → crown
- Red Oaks more severely impacted than White Oaks
  - RO: Mortality few weeks → few months
  - WO: Mortality takes years, symptom progression from branch to branch
- Symptoms
  - Wilting of leaves: Discoloration near outer edges and leaf drop of >50% in June – August (**sudden mortality**)
  - Branch dieback progressing from top down or from wounded area
  - Dark streaking may be visible in sapwood
  - Presence of fungal spore mats below bark

Dispersal

Aboveground dispersal

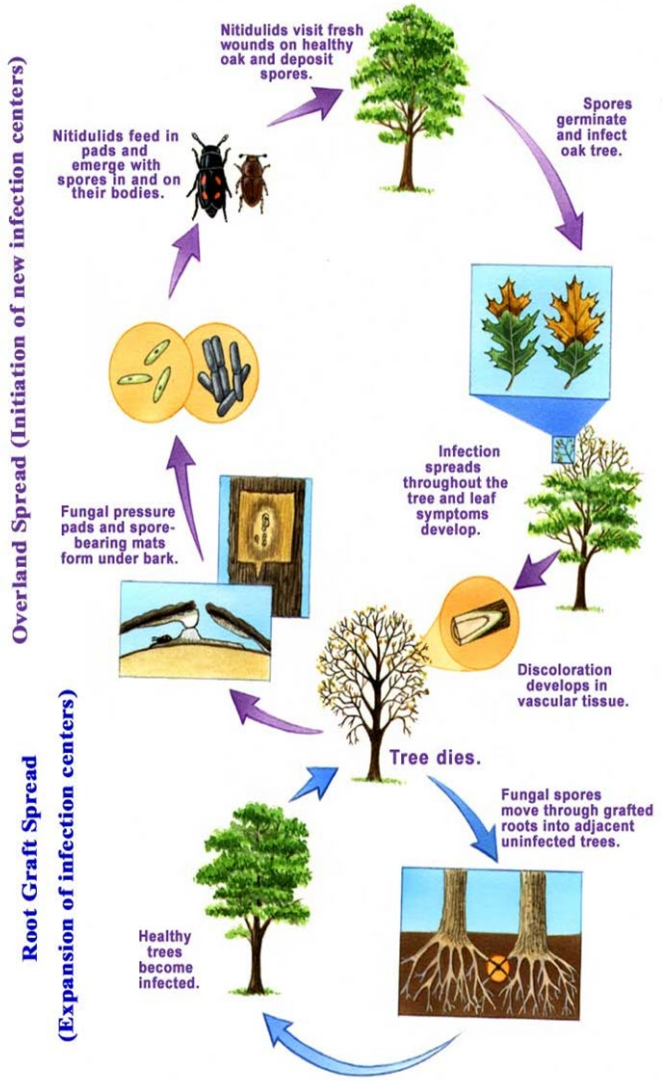
- Nitidulid beetles
- Oak bark beetles

Belowground dispersal

- Root grafting (more red oak specific)

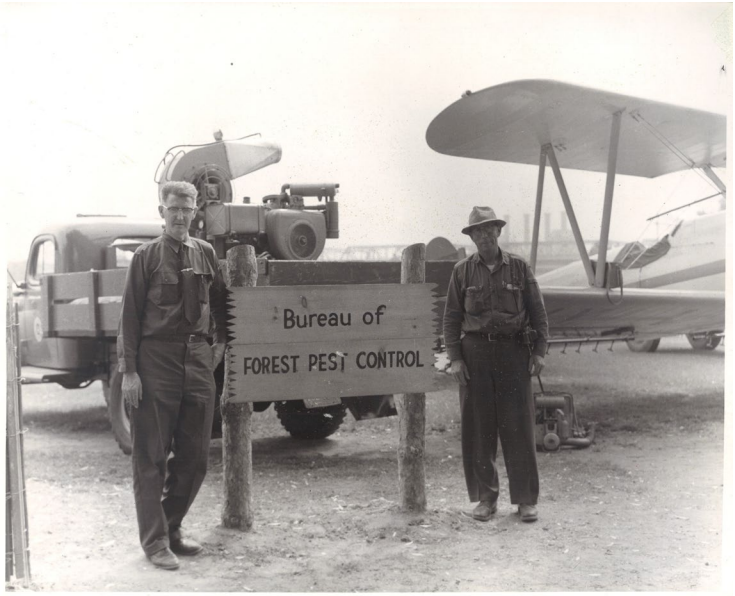
Human dispersal

- Movement of firewood



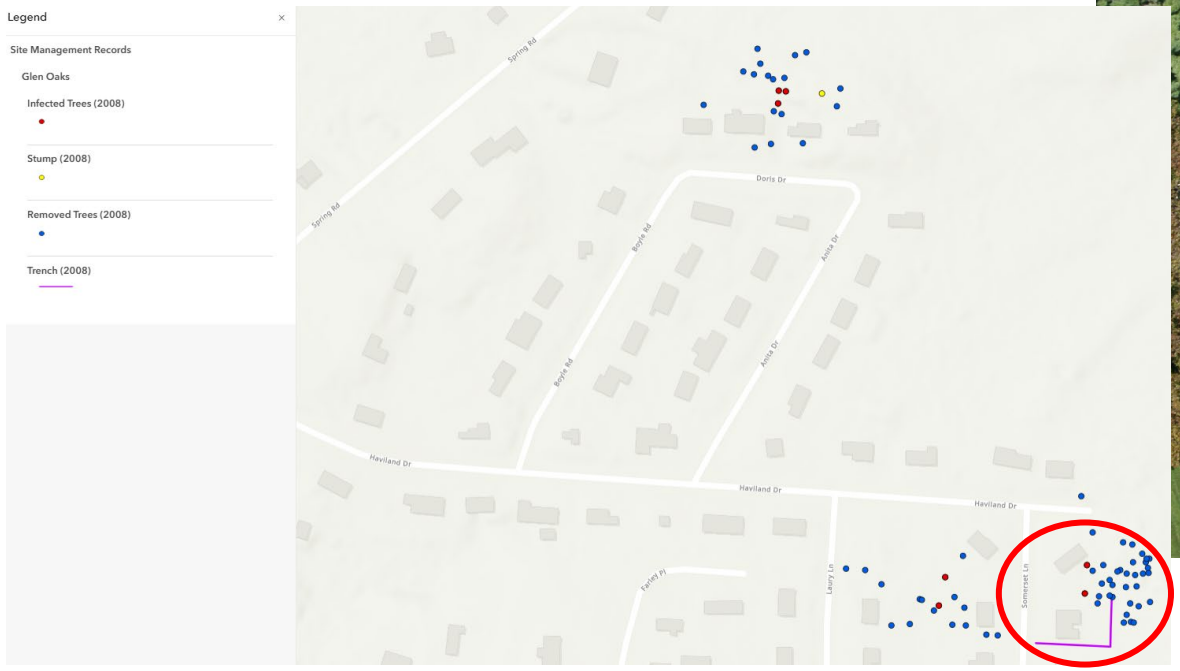
New York History

- First aerial surveys for oak wilt conducted in 1951
- Annual aerial surveys along Pennsylvania border through 1960
- Sampled suspicious oaks and sent to Cornell for morphologic assessment (culture)
  - All results negative



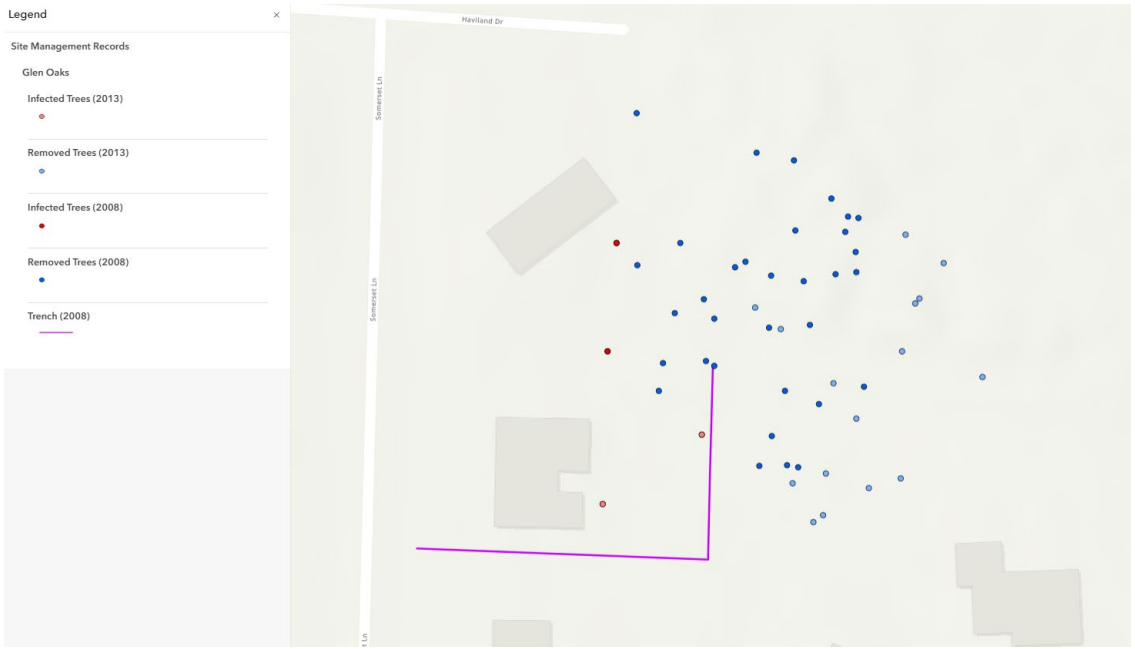
First Detection: Glen Oaks

- **Glenville, Schenectady County: 2008**
  - Homeowner alerted of multiple trees showing symptoms of oak wilt
  - 7 infected trees + 1 stump from 2007 dead tree (fungal mat)
  - 150-foot buffer→ 73 red oaks
  - Trench dug per homeowner request

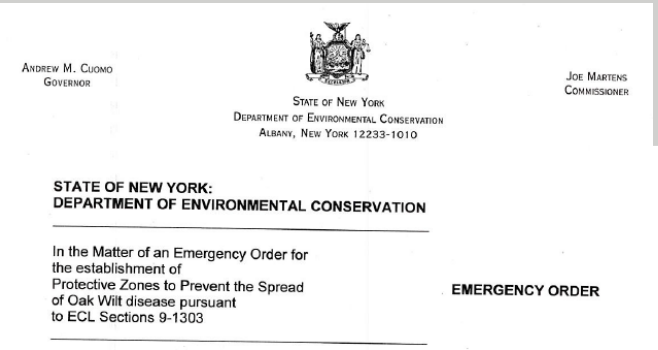


Second Detection: Glen Oaks

- **Glenville, Schenectady County: 2013**
  - 2 infected trees at trenched property
  - Evidence of 5-year prolonged root graft dispersal
  - 2nd 150-foot buffer→ 18 more red oaks
  - Over $250,000 on management in Glen Oaks



Initial Management Strategy



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DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-1010

STATE OF NEW YORK:
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of an Emergency Order for the establishment of Protective Zones to Prevent the Spread of Oak Wilt disease pursuant to ECL Sections 9-1303

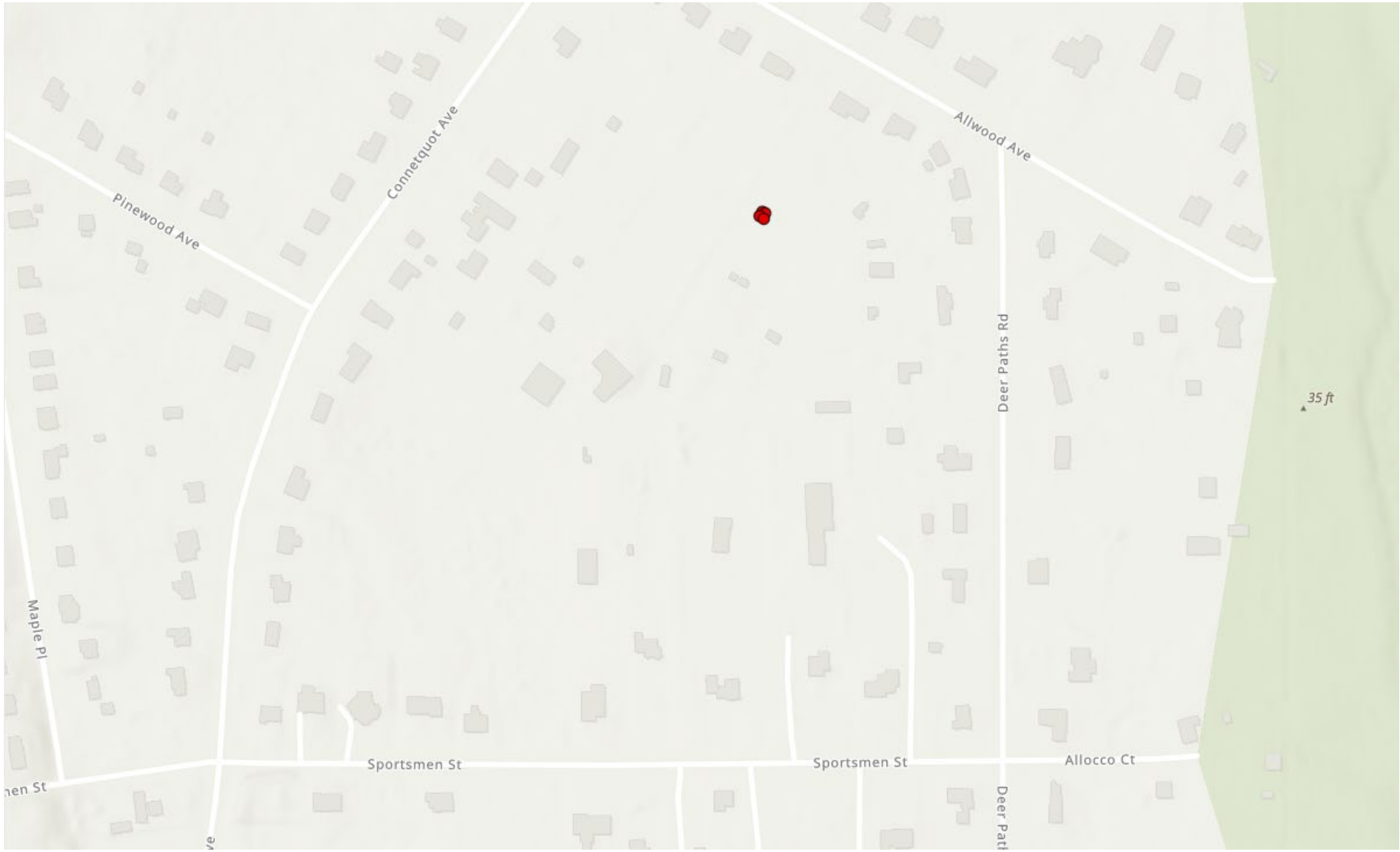
EMERGENCY ORDER

- Conduct July and September aerial surveys over infected area
- Revisit **infection centers** to search for newly infected trees
- Establish **Protective Zones (PZ)** to allow access to private property for necessary management
- Sample branches and send to Cornell University Plant Disease Diagnostic Clinic (CUPPDC)
  - Culture Result
  - PCR Analysis
  - DNA Sequencing*
- Cut and destroy infected and potentially root-grafted trees
  - Hire contractors
  - 150-foot buffer of red oaks
  - Grind stumps

Central Islip, Suffolk County, Long Island (2015)

- Forest Health alerted by NYSDAM (AGM) of potential infection of Pin Oaks in Town of Islip
  - Horse pasture
  - CUPPDC confirmed 4 infected oaks late in 2015
  - Contractors removed trees in April 2016

Central Islip, Suffolk County (2015)



Central Islip, Suffolk County (2016)

9 additional trees discovered to have oak wilt in summer of 2016

Long Island/NYC (2016)

- 4 other oak wilt infection centers discovered in LI/NYC summer 2016
- County wide PZ around Suffolk County
- Neighborhood wide PZ around Green-Wood Cemetery in Brooklyn

Change to management strategy:

- Only removed infected trees
- ~$22,500 for 5 sites

Western NY: Canandaigua (2016)

Public report to local Cornell Cooperative Extension

- Pruned tree lost all it's leaves and died in 2015
- Cut down but neighboring RO ~10 feet away also lost all it's leaves in August 2016.
- Sample sent to CUPDDC, positive alerted DEC
- Walked 280 acres of forest and aerial surveyed surrounding 16 square miles with no additional positives.
- Used **Bruhn et al. 1990** to remove neighboring red oaks
  - More conservative approach

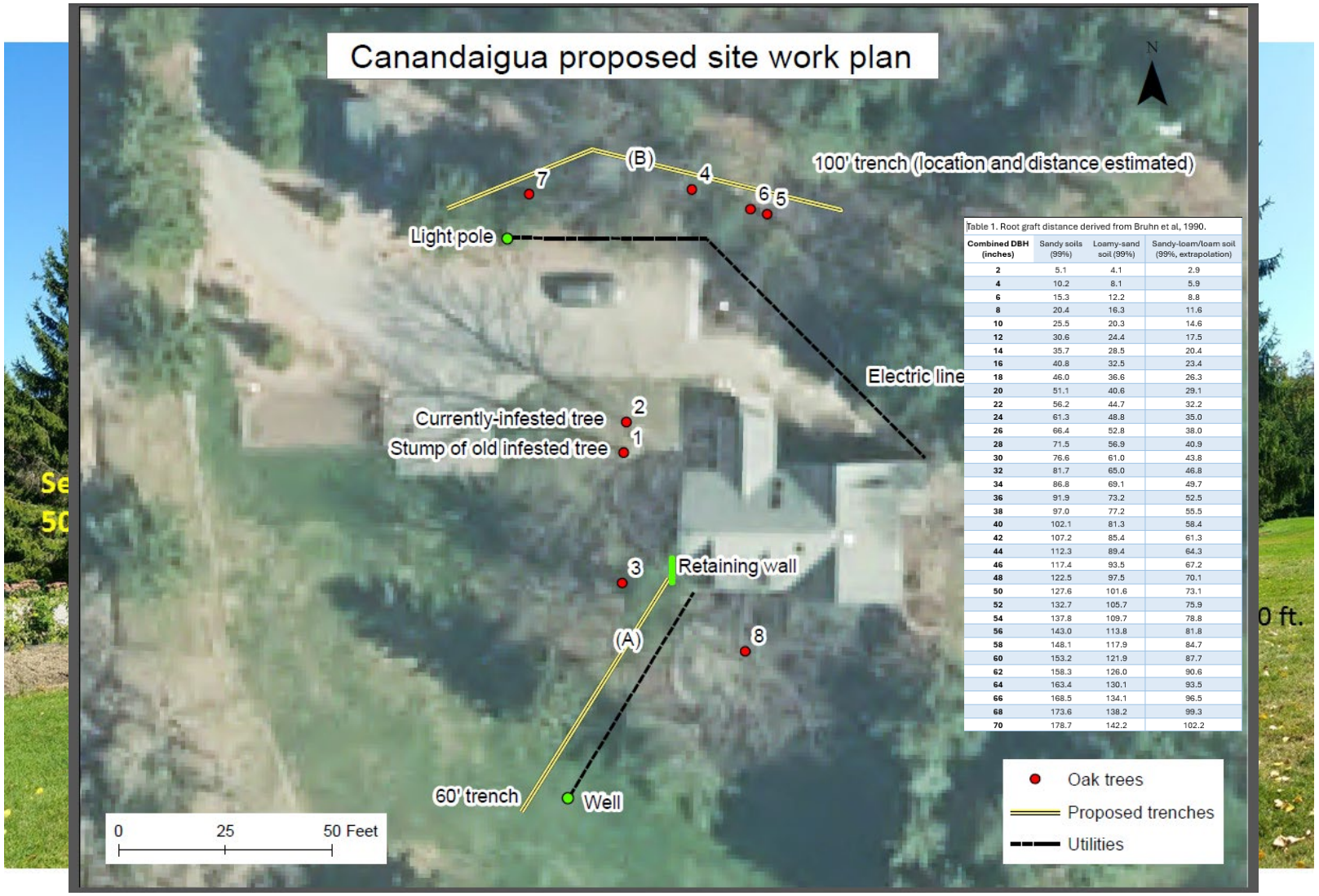
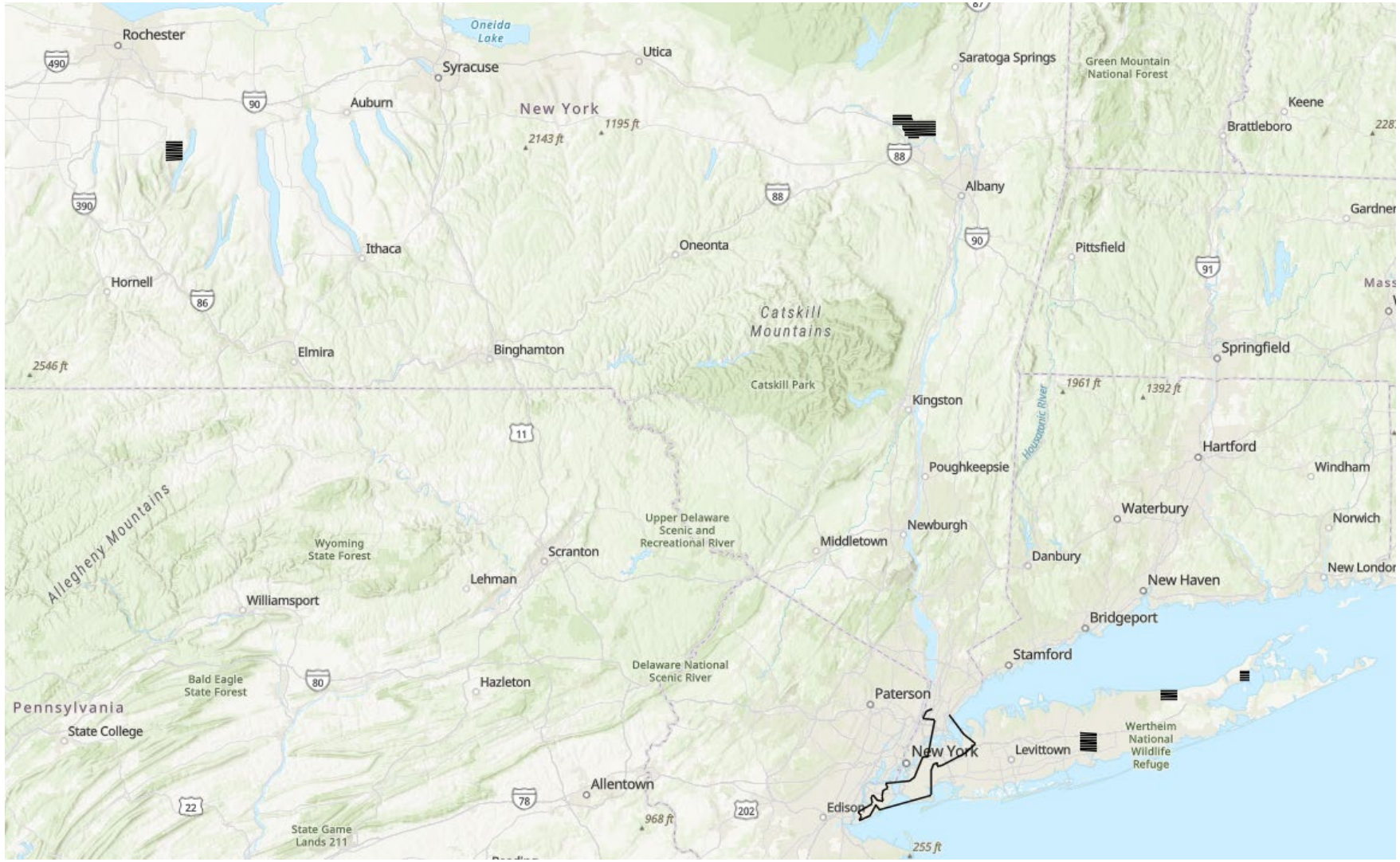


Table 1. Root graft distance derived from Bruhn et al, 1990.

Combined DBH (inches)	Sandy soils (99%)	Loamy-sand soil (99%)	Sandy-loam/loam soil (99%, extrapolation)
2	5.1	4.1	2.9
4	10.2	8.1	5.9
6	15.3	12.2	8.8
8	20.4	16.3	11.6
10	25.5	20.3	14.6
12	30.6	24.4	17.5
14	35.7	28.5	20.4
16	40.8	32.5	23.4
18	46.0	36.6	26.3
20	51.1	40.6	29.1
22	56.2	44.7	32.2
24	61.3	48.8	35.0
26	66.4	52.8	38.0
28	71.5	56.9	40.9
30	76.6	61.0	43.8
32	81.7	65.0	46.8
34	86.8	69.1	49.7
36	91.9	73.2	52.5
38	97.0	77.2	55.5
40	102.1	81.3	58.4
42	107.2	85.4	61.3
44	112.3	89.4	64.3
46	117.4	93.5	67.2
48	122.5	97.5	70.1
50	127.6	101.6	73.1
52	132.7	105.7	75.9
54	137.8	109.7	78.8
56	143.0	113.8	81.8
58	148.1	117.9	84.7
60	153.2	121.9	87.7
62	158.3	126.0	90.6
64	163.4	130.1	93.5
66	168.5	134.1	96.5
68	173.6	138.2	99.3
70	178.7	142.2	102.2

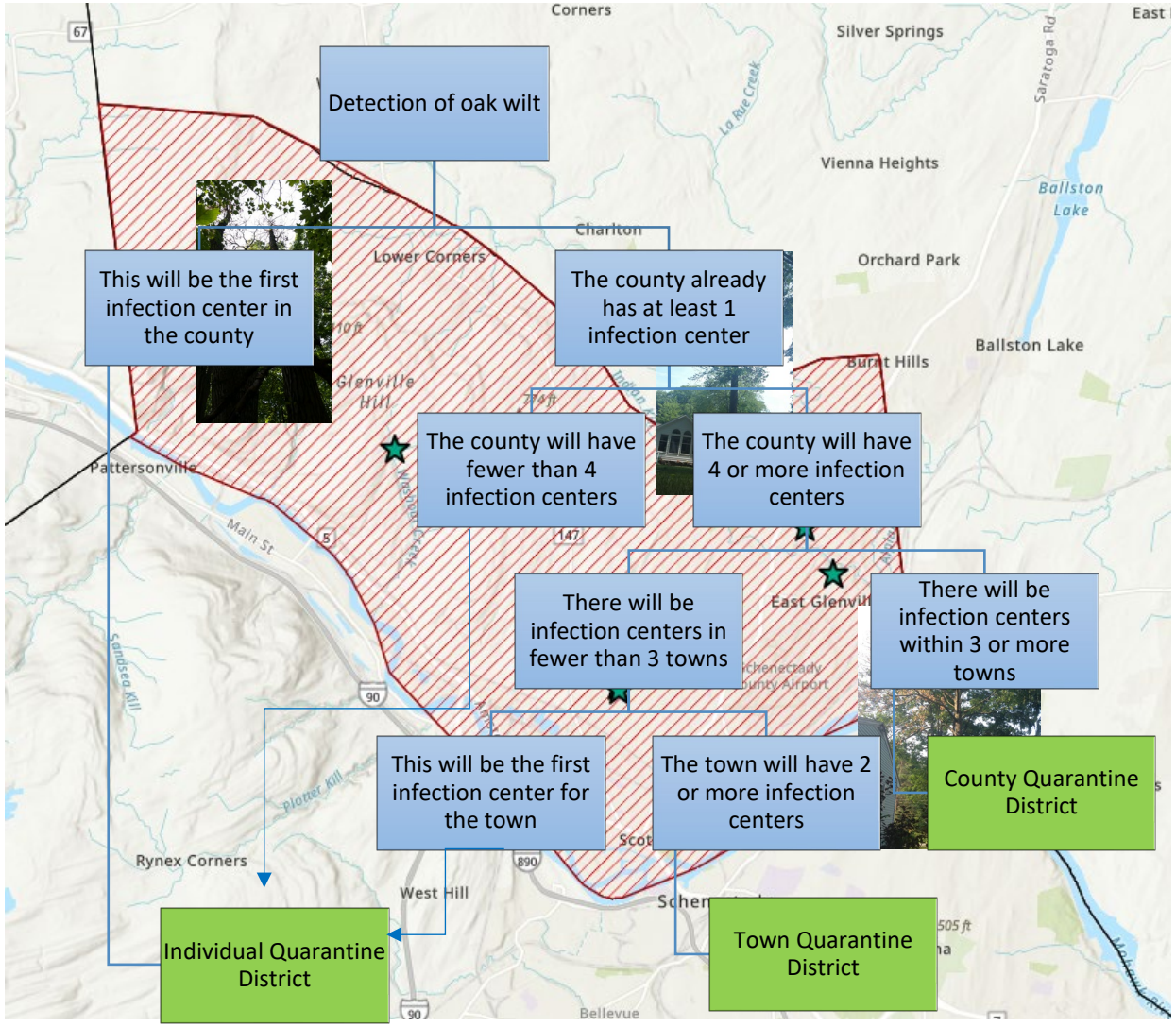
Detection Efforts Post 2016



2017 & 2018: Expansion of Original Infection Center

Town of Glenville

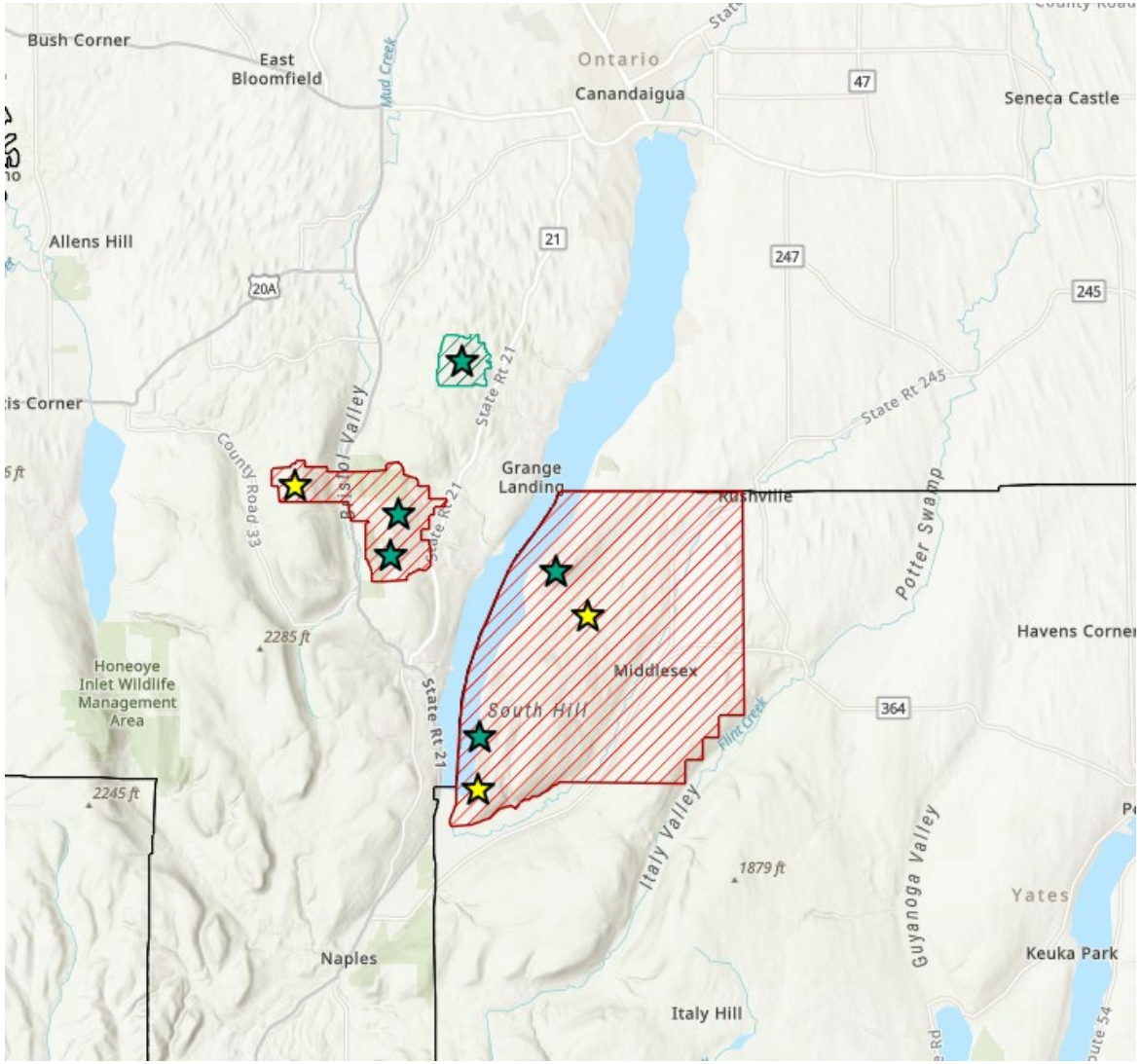
- Aerial surveys discovered 3 additional infections (2 in 2017 and 1 in 2018)
- 4 total trees infected with oak wilt
- Tree cutting done in house unless in the presence of hazards (powerlines)
- Development of Protective Zone **AND Quarantine District (QD)**
  - QD prohibits movement of oak outside of quarantined area
- Neighborhood PZ → Town PZ & QD
  - Protocol developed for growing infection areas



Additional Oak Wilt Infections: 2018-2022

All discovered in Western NY near **Canandaigua Lake**

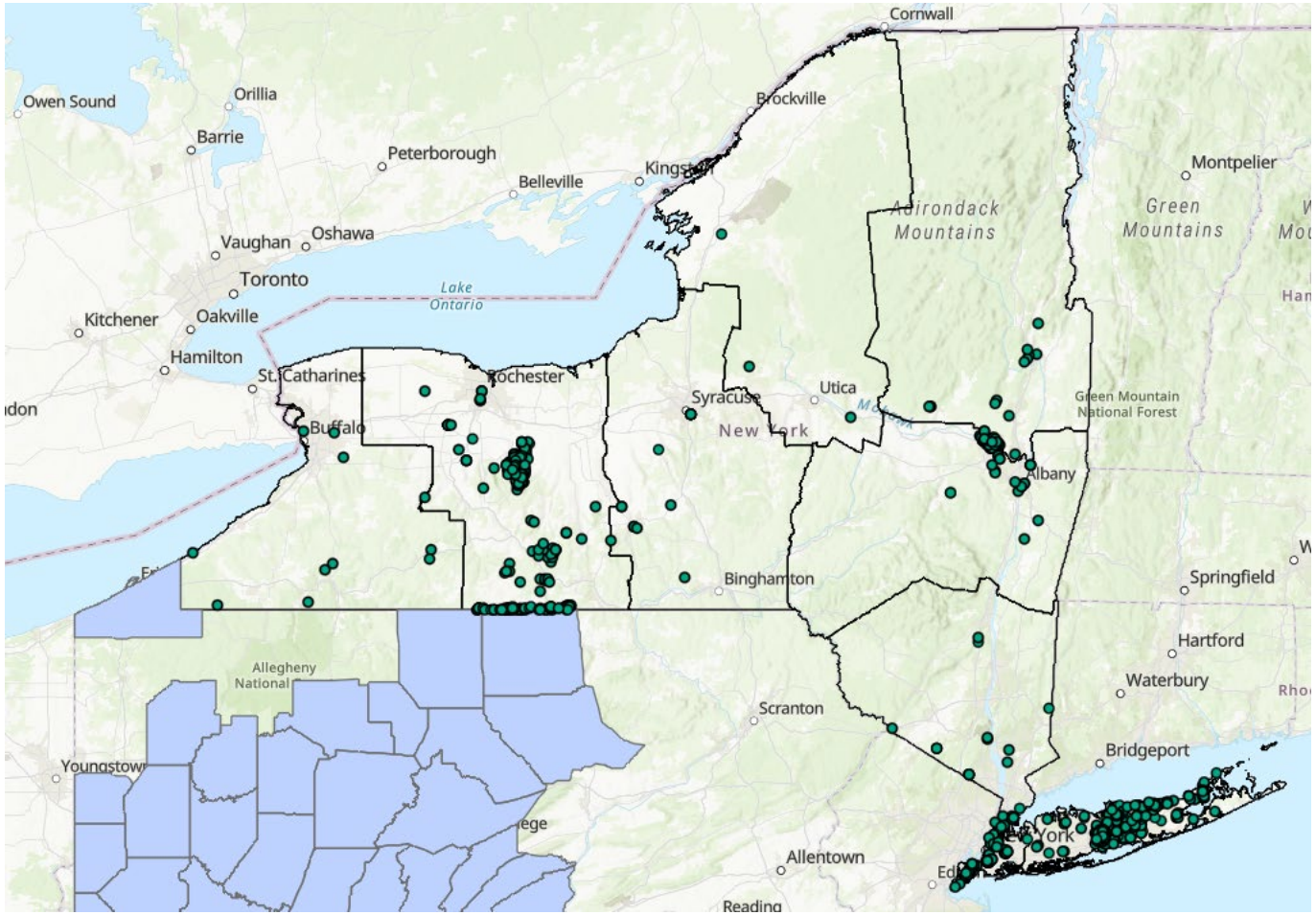
- In total 5 towns across 2 counties
  - Ontario County (3)
  - Yates County (2)
- Three PZQD's along sides of Canandaigua Lake
- Primarily 1 or 2 tree detections found through annual aerial survey efforts
  - Stumps no longer removed and instead treated with herbicide to kill root system
  - Began to only take neighboring trees rather than all trees included in Bruhn et al. 1990
  - Combo of chipping and burning



Detection Efforts Elsewhere

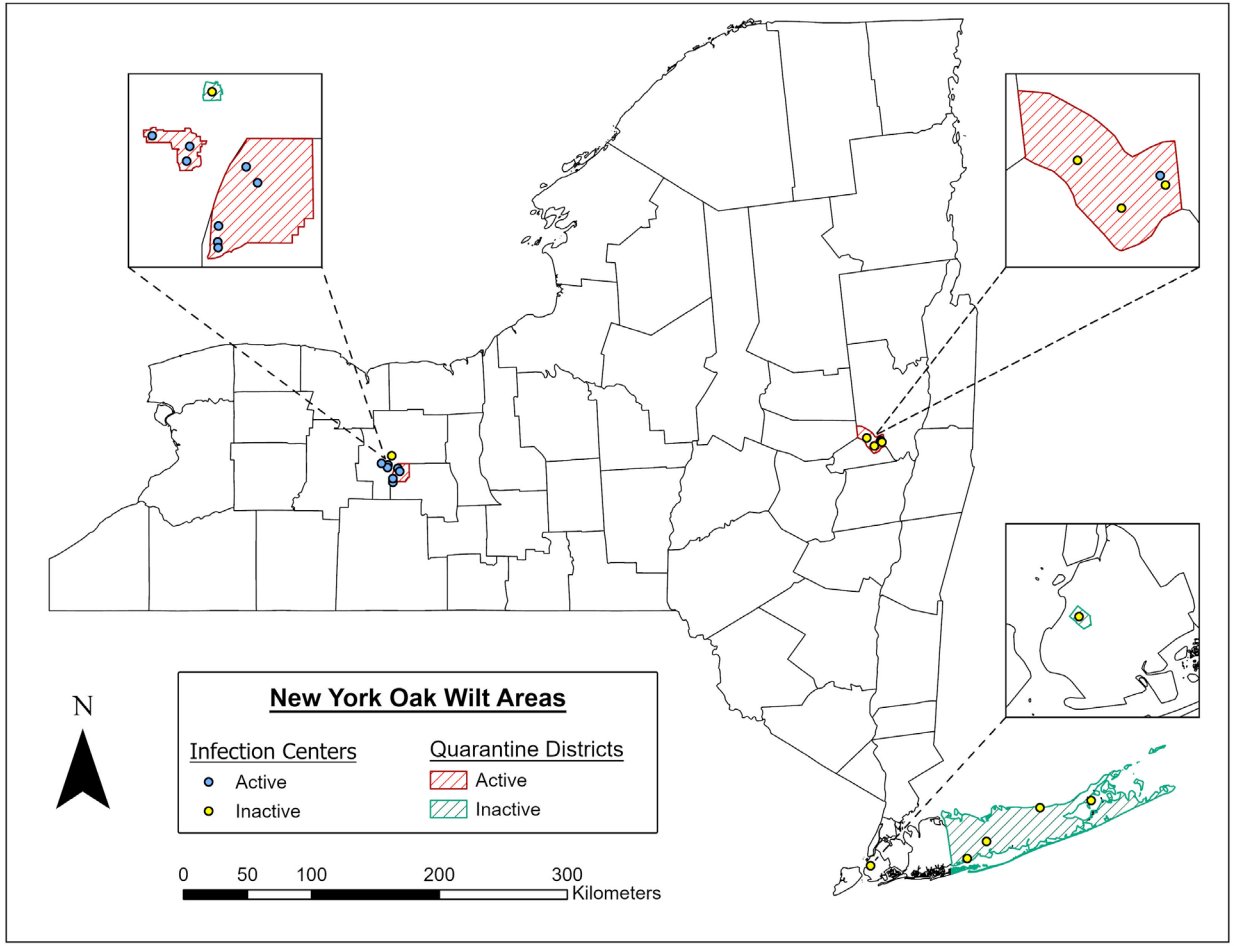
2016-2023

- 859 oak wilt specific site visits across New York
- 245 sampled and sent to CUPDDC
- No additional positive detections in
  - Long Island or NYC after 2016
  - Glenville after 2018
- Significant scouting near PA border found no connection between PA infections and those in Western NY



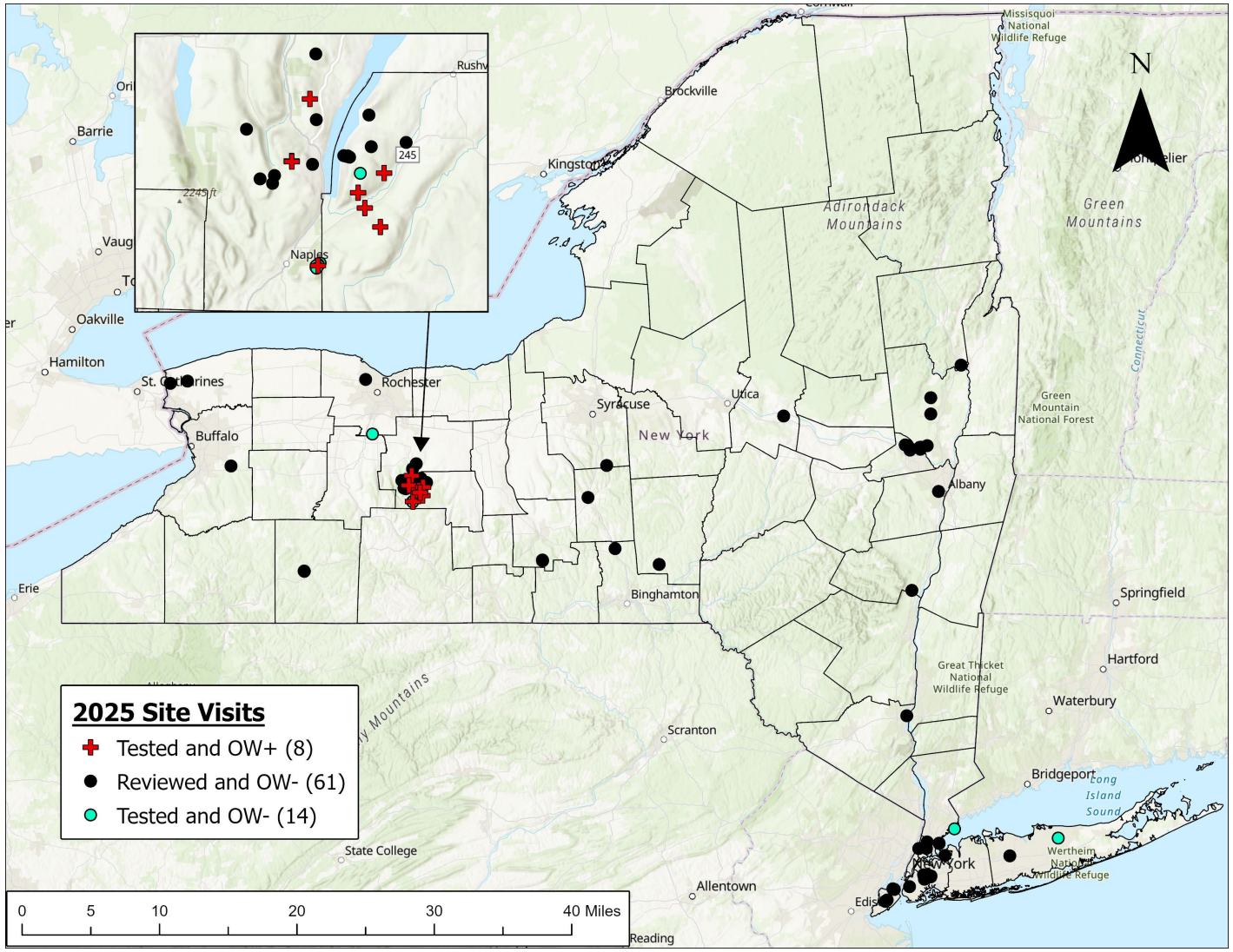
2024 Oak Wilt Updates

- Quarantines lifted at end of 2023 in NYC, Long Island, and Canandaigua
  - All with 6 years of continuous aerial and ground surveys with lack of positive detections
- Quarantine remained in place in Glenville due to 2018 infection
- Quarantines on both sides of Canandaigua Lake remained active with recent infections as of 2022



2025 Site Visits

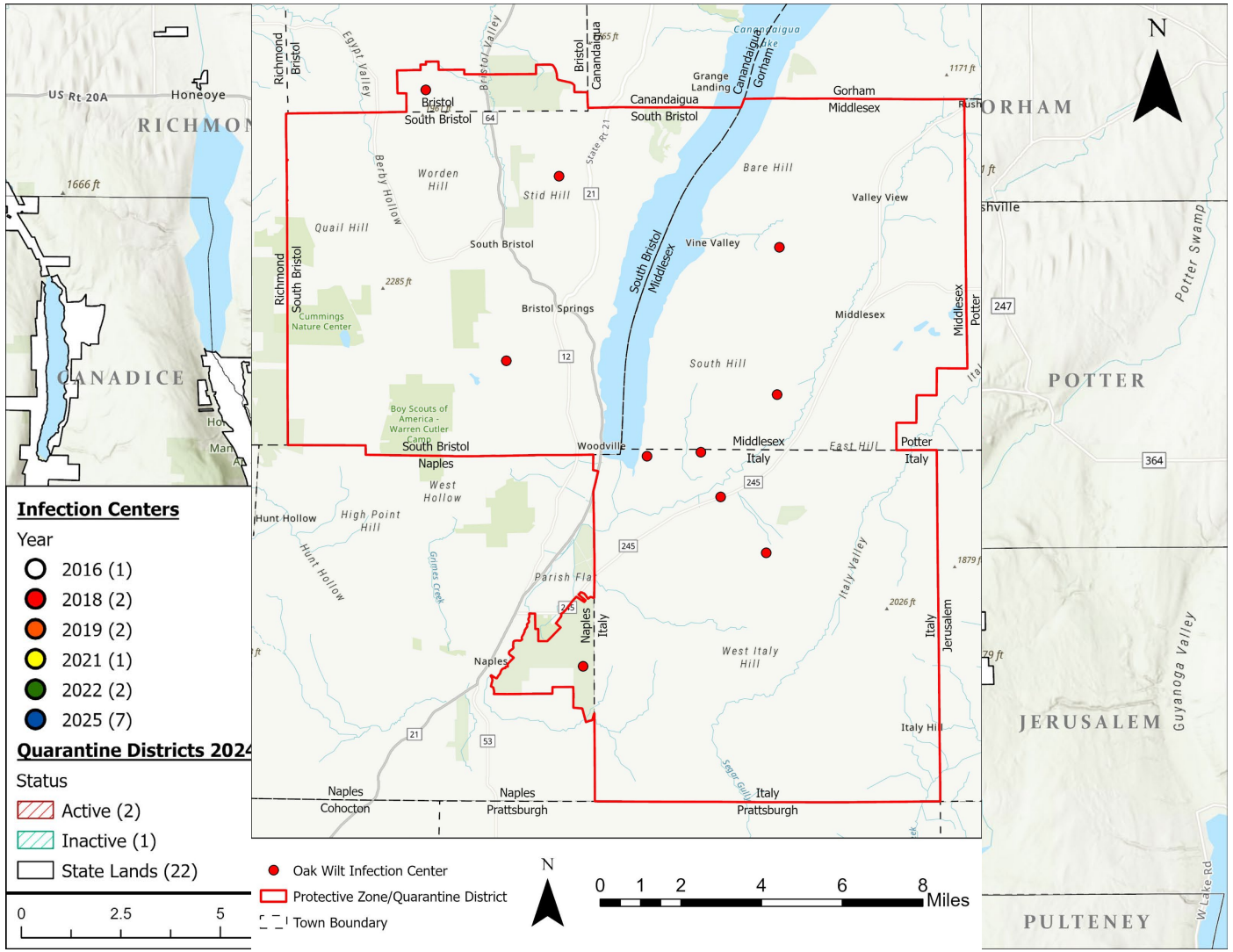
- 83 trees visited for potential oak wilt
  - Sourced from July aerial surveys, public reports, and ground surveys
  - Wet spring led to significant number of other pathogens
- 22 trees sampled and sent to Cornell University Plant Disease Diagnostic Clinic (CUPDDC)
  - Branch **and** leaf sampling at most sites
- 8 positives trees across 7 sites
  - All near Canandaigua Lake



Canandaigua Lake Oak Wilt

Southward expansion of oak wilt near Canandaigua Lake

- 3 infections on state land
  - Hi Tor Wildlife Management Area
  - Unique management challenges due to presence of the endangered Northern Long-eared Bat
- Management method at most sites was single tree removal, chipping/burning, and herbicide treatment of cut stumps
- Expansion of two previous quarantines into one quarantine spanning 5 towns with 10 “active” infection centers



Site Management: Hi Tor WMA, Naples, Ontario County

- DEC staff discovered 2 suspicious trees near skid trail of timber sale on state land (outside flightlines)
- 1 of 2 initial trees came back positive for oak wilt
- Further scouting discovered 30 suspicious oaks throughout sale area
- All treated as positive for oak wilt, all red oaks sampled in September
- All additional oaks tested negative for oak wilt
- Further examination of symptomatic trees found significant TLCB outbreak within stand

2025 Canandaigua Lake Takeaways

Oak wilt present in some capacity since 2016

- Yearly aerial surveys necessary

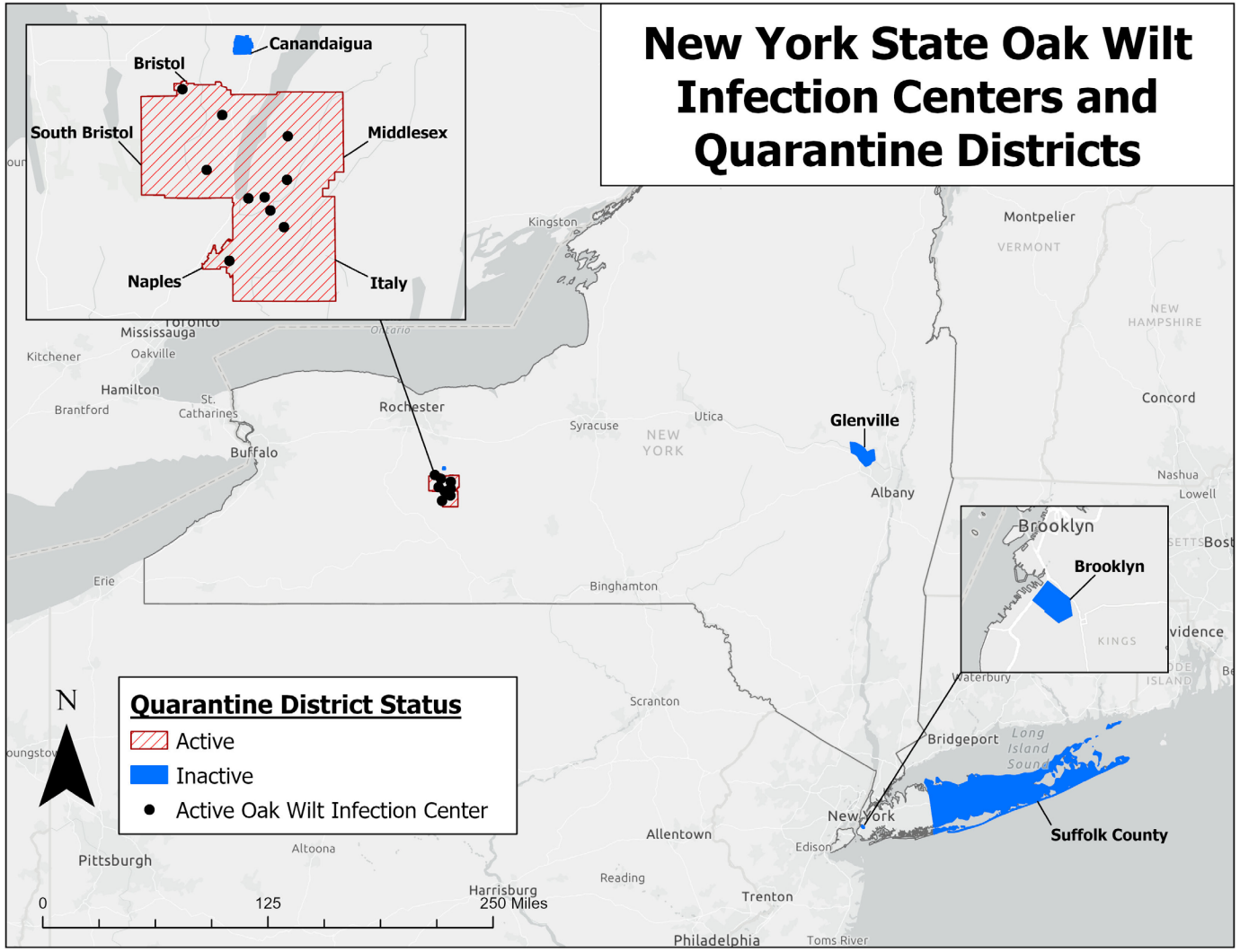
4/7 sites in 2025 had evidence of pruning or mechanical damage

Need better outreach in area regarding BMPs

Will look to expand aerial surveying efforts in Finger Lakes area

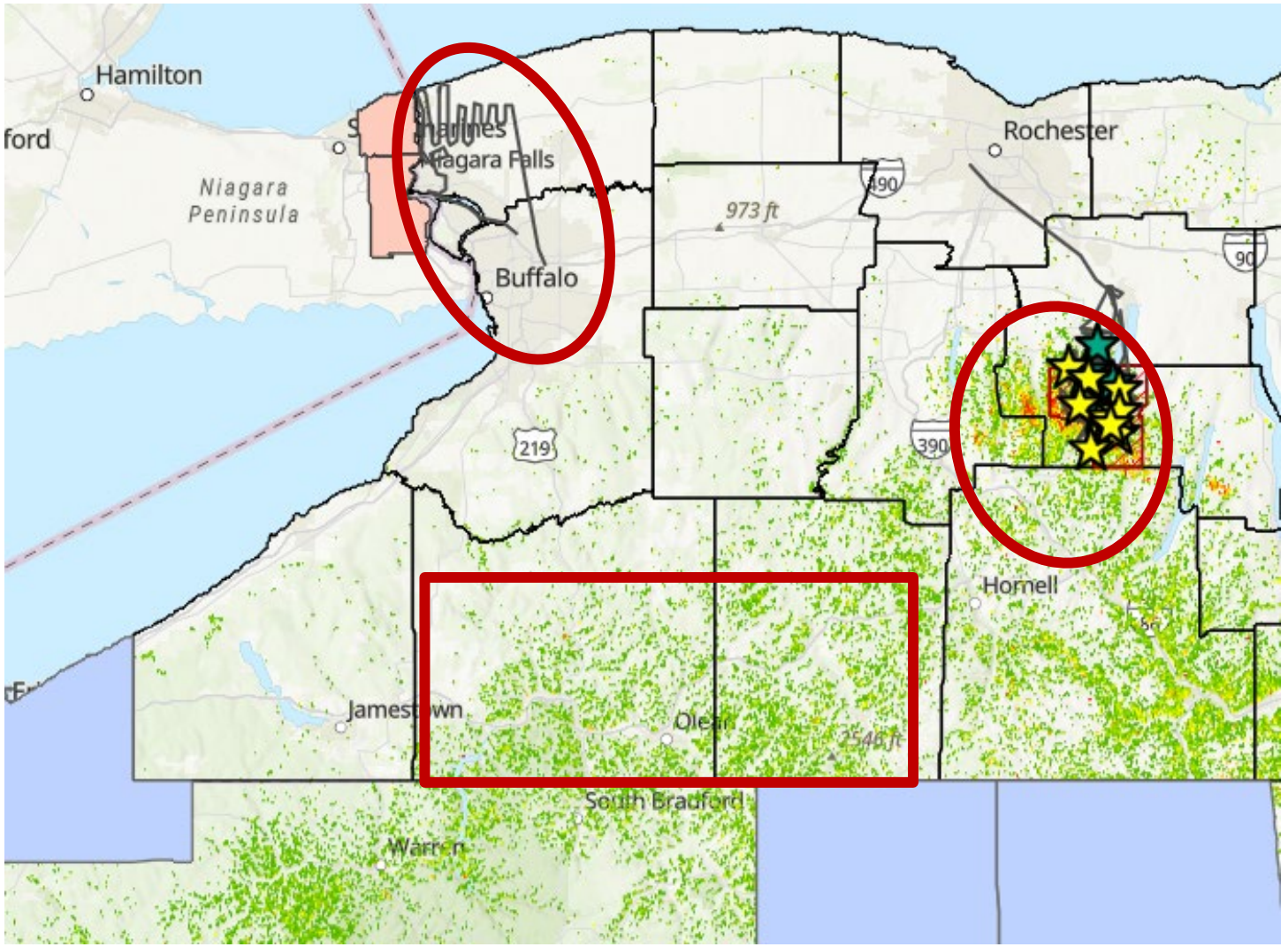
Good News from Glenville!

- 2025 marked 7th year of aerial surveying efforts without a positive detection in Town of Glenville
- **Quarantine lifted from New Yorks original infection center**
- Only active quarantine remaining in Western New York
- Will continue aerial surveys in Glenville for multiple years



2026 Goals

- Increase Western NY aerial survey efforts
  - Greater Finger Lakes coverage
  - Niagara/Erie County
  - Southwestern New York
- Research goals:
  - Nitidulid species & dispersal
  - Root grafting



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Thank you everyone!

Site Management: South Gannett Hill Road, South Bristol, Ontario County

- 2 trees spotted during aerial survey
  - Both trees positive for oak wilt, with the one likely the cause of root graft dispersal from 2 neighboring dead oaks
  - Importance of annual aerial surveys
- Contracted out due to presence of powerlines

Nitidulid Sampling

A Metabarcoding Amplicon Sequencing Approach for Reliable Early Detection and Surveillance of Oak Wilt (*Bretziella fagacearum*) from Trap-Collected Nitidulid Beetles

by Lawrence M. Gordon [1,*], Ryan S. Crandall [2], Muriel Kelly [1], Jeffrey A. Hall [1], Joseph L. Sevigny [1], Adane S. Nigatu [1], Stephen D. Simpson [1], Krystalynne Morris [1] and W. Kelley Thomas [1]

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