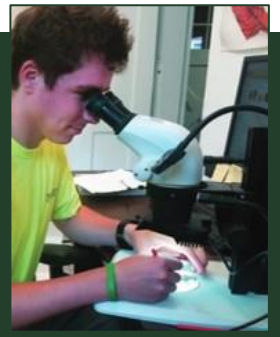
NEW YORK STATE | Department of Environmental Conservation

Pest & Disease Threats to New York Forests

August 15, 2025

Amanda Dillon, Research Scientist, Forest Health Research Lab Manager



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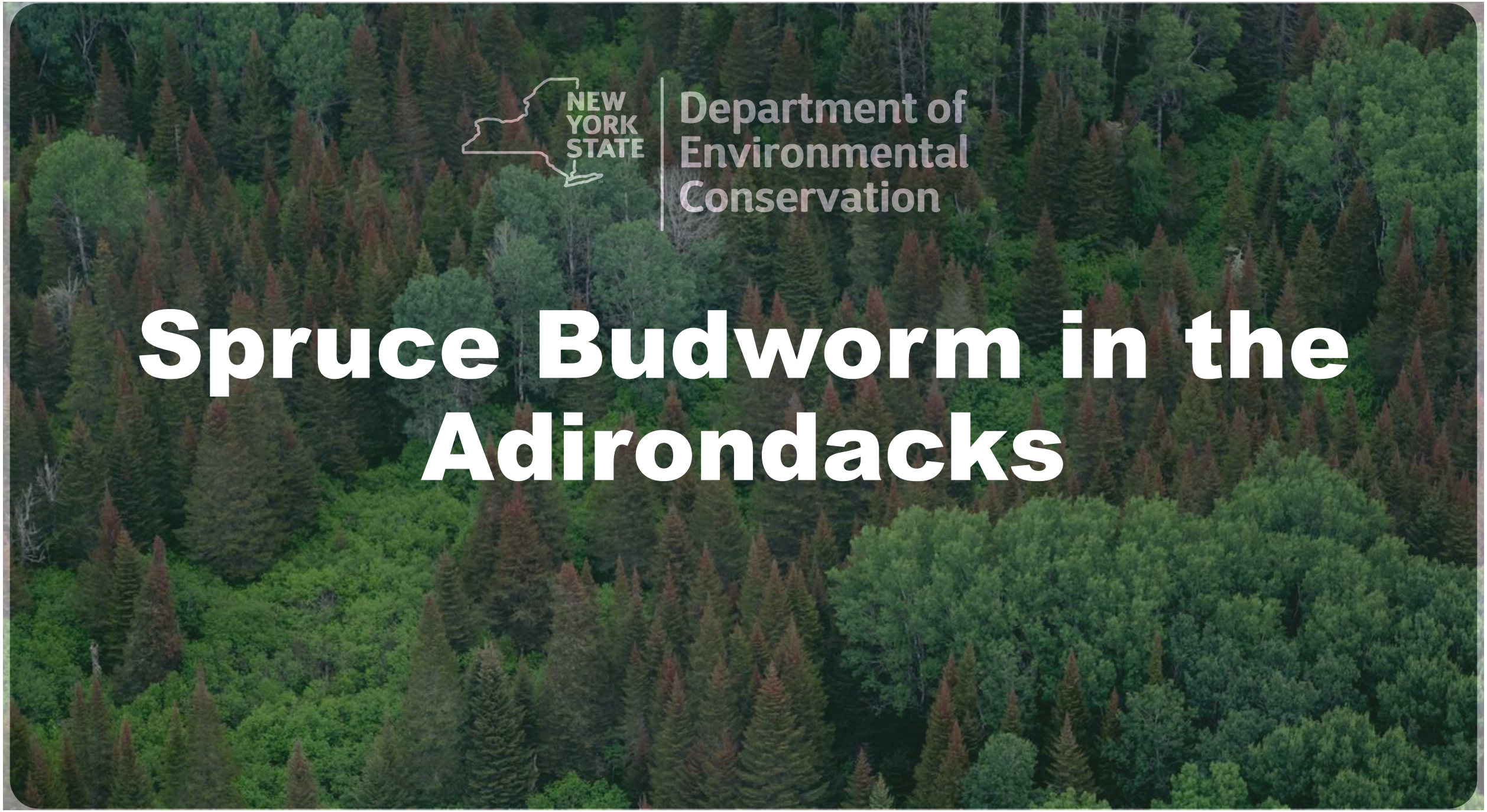
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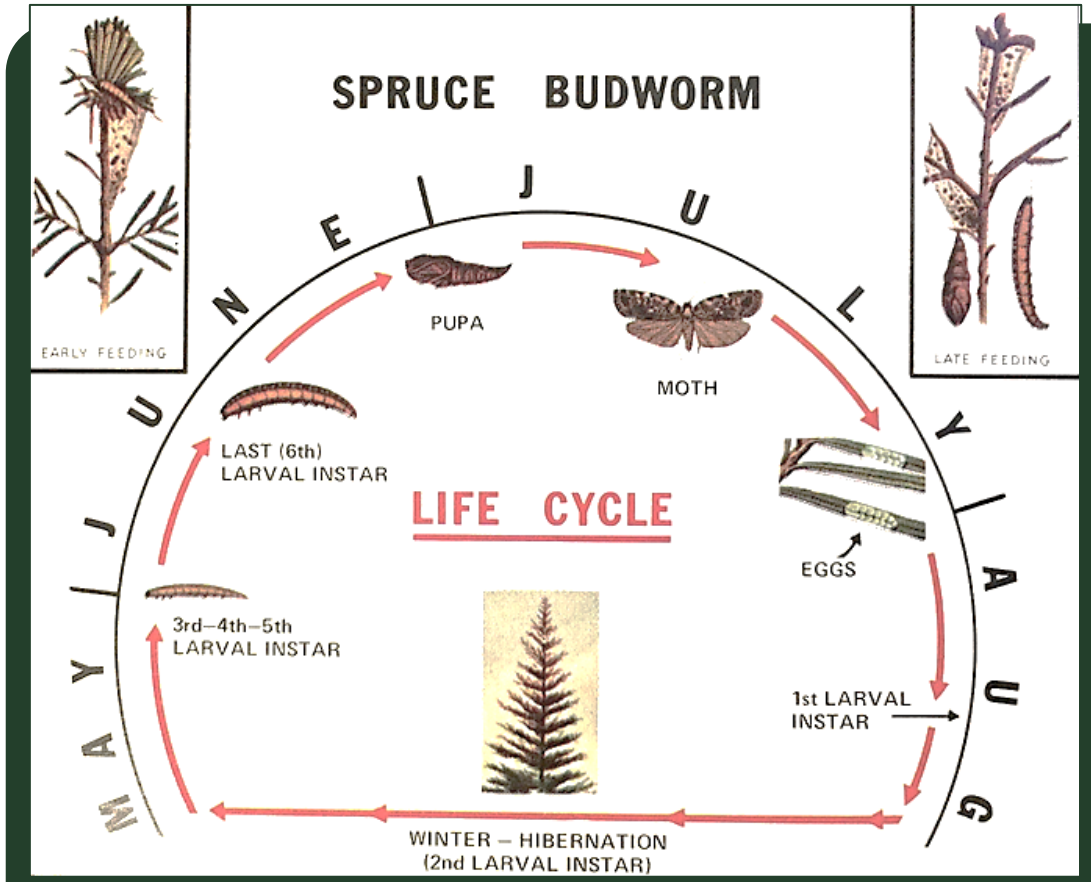
Spruce Budworm in the Adirondacks



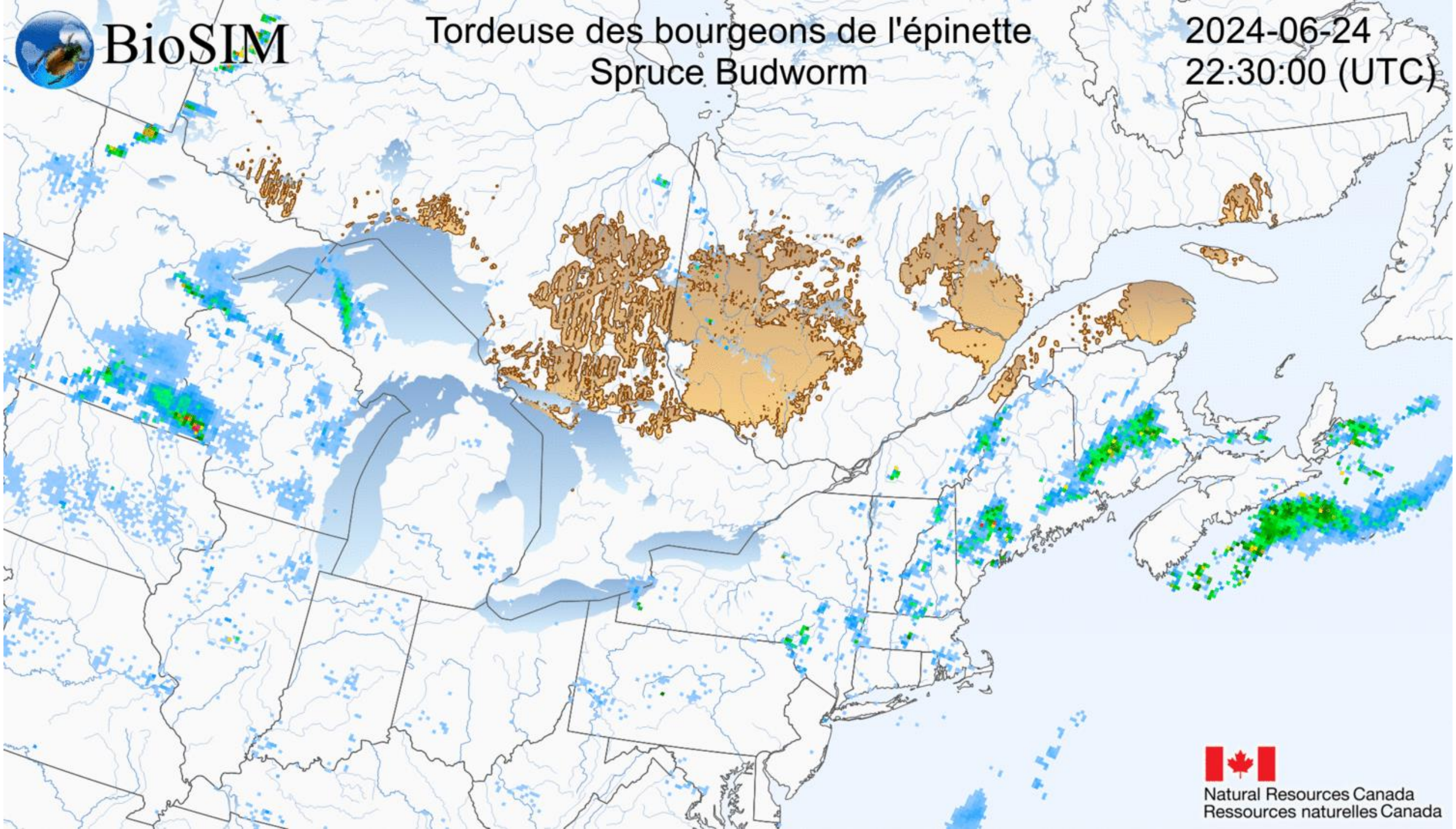
Egg masses

- Females lay ~200 eggs in clumps of 20 on needles
- 1st instars don't feed; they disperse via a silk strand, create a hibernacula, molt, and then enter diapause
- L2's emerge in spring; most feeding damage occurs as later instars

Signs and Symptoms

Spring/summer:

- Needle browning at tips along with silk
- Branches missing new growth needles
- “Scorched” tops of trees
- Aerial surveys look for reddish spruce/fir trees


BioSIM
Tordeuse des bourgeons de l'épinette
Spruce Budworm
2024-06-24
22:30:00 (UTC)
Natural Resources Canada
Ressources naturelles Canada

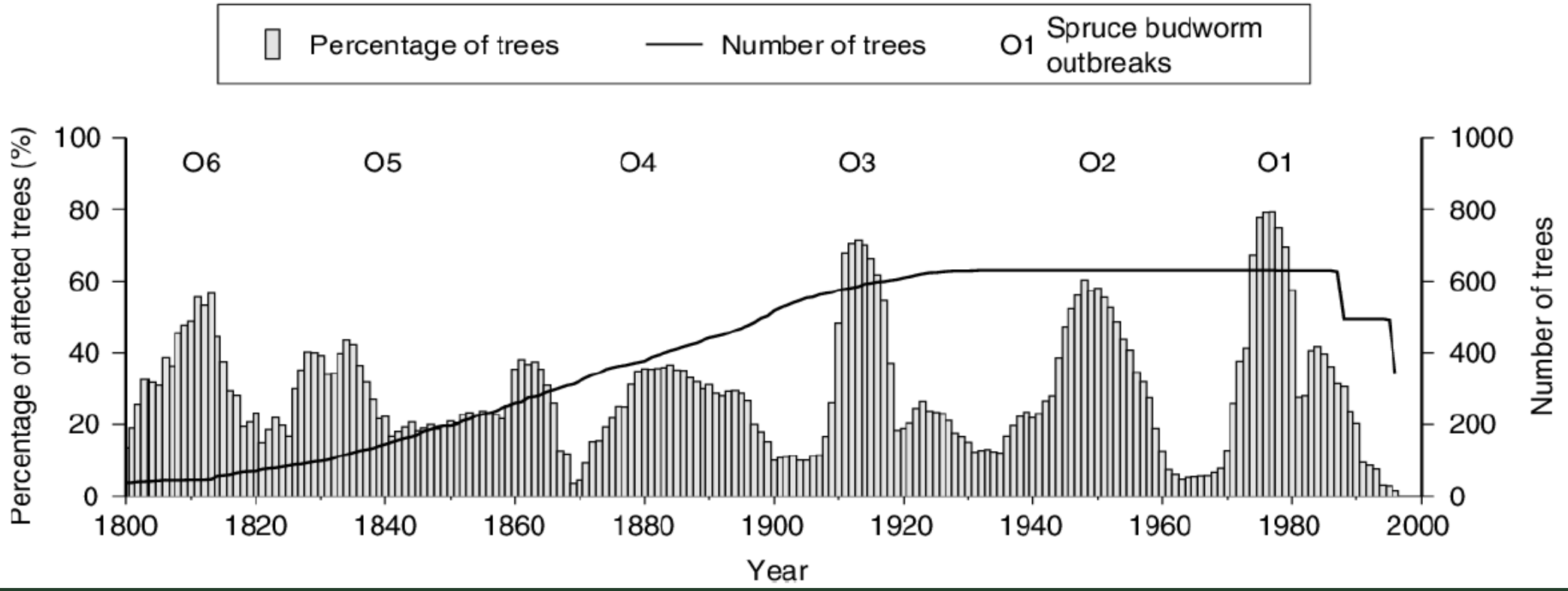
Stand susceptibility

Most relevant factors:

- Host abundance (particularly balsam fir)
- Habitat suitability
- Defoliation
- Distance to infestation in the previous year
- Slope
- Abundance of hardwoods
- Average degree days above 5C
- Elevation
- Site index
- Vertical complexity
- Autumn precipitation
- Wind velocity

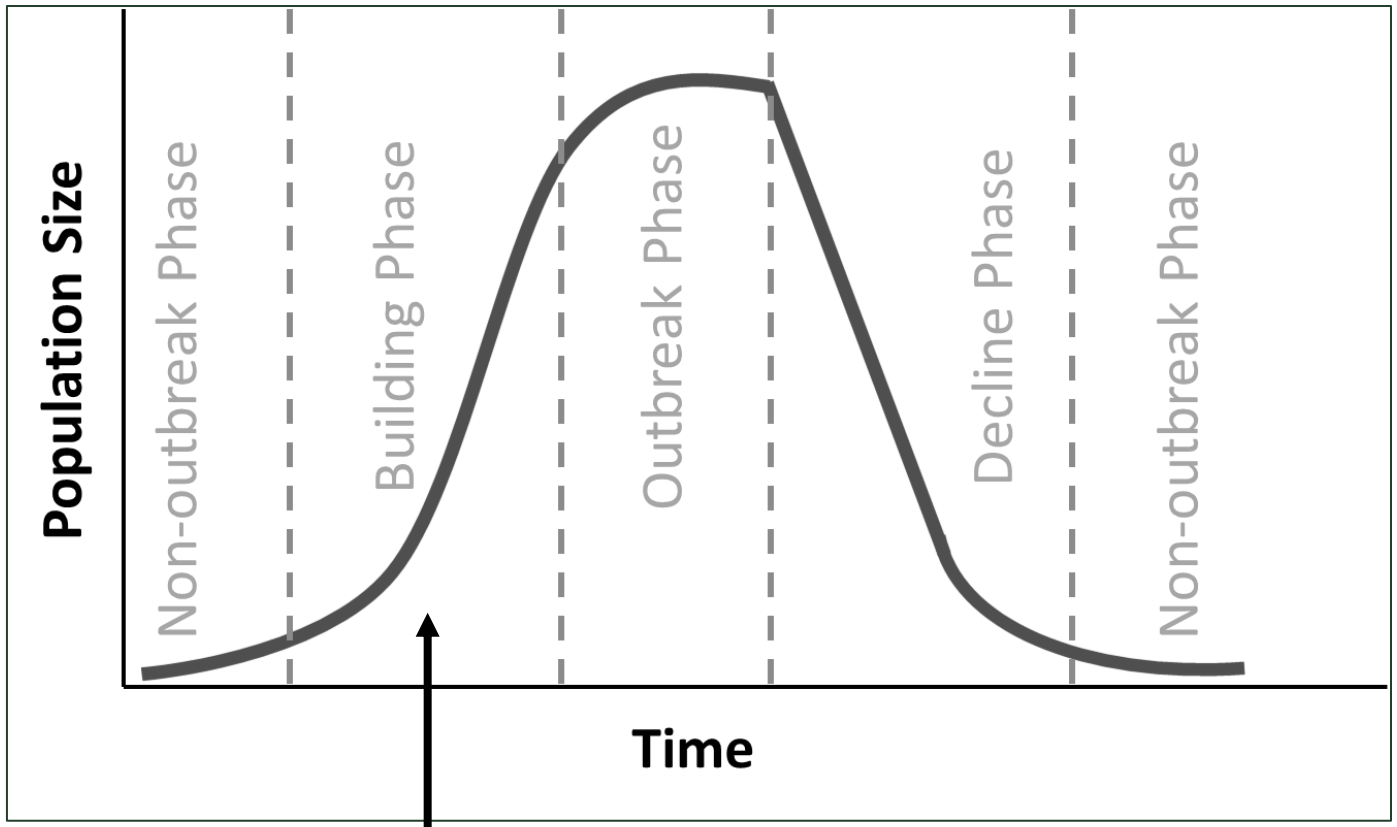
Outbreaks

- Cyclical, eruptive outbreaks **every 30-60 years**
- SBW history (1600-1800) = regional outbreaks that didn't spread to adjacent forests
- 20th century = 3 major outbreaks, each one increasingly severe and more widespread
- There are ~7.9 million acres of spruce-fir forests in Maine, about 800,00 in New York



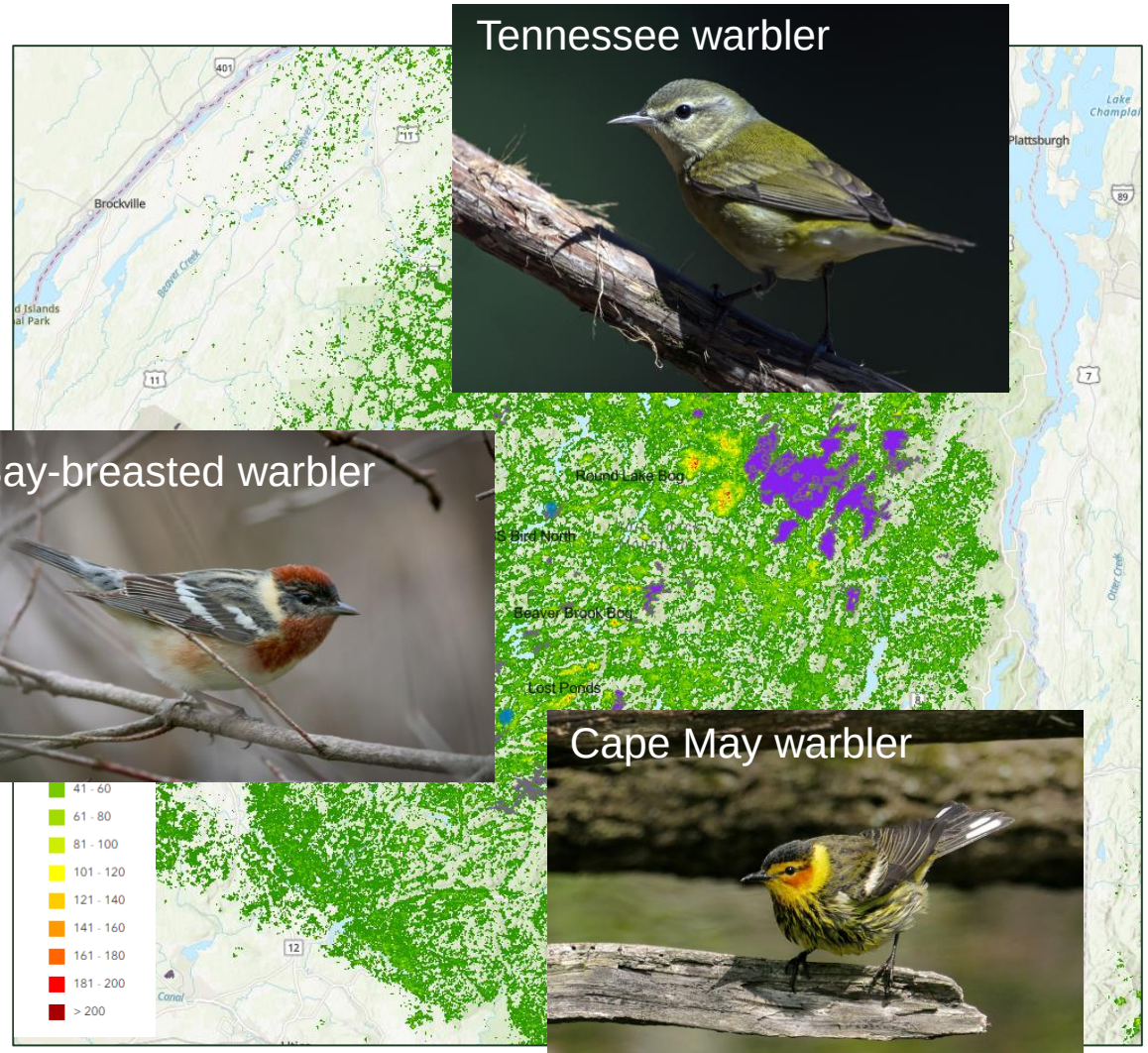
Stages of an Insect Outbreak

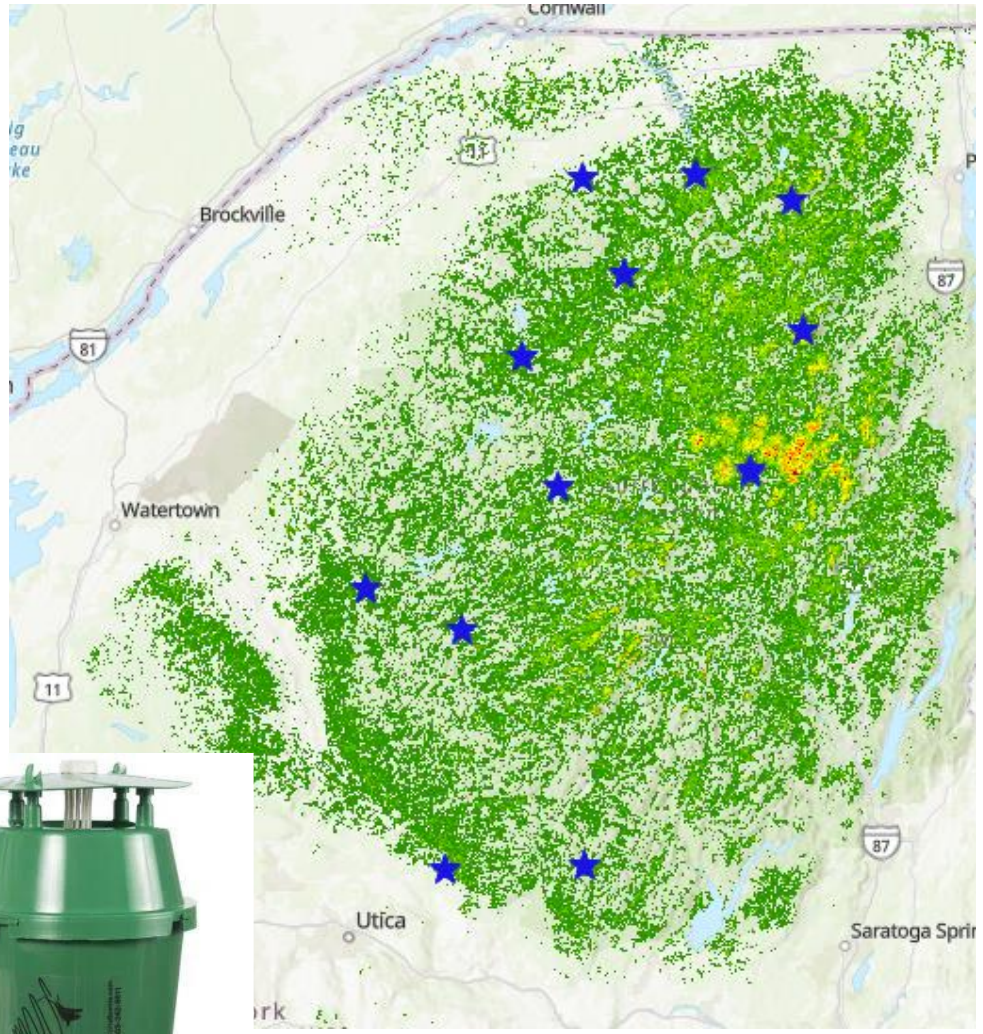
Traditional SBW Management: Foliage Protection Strategy

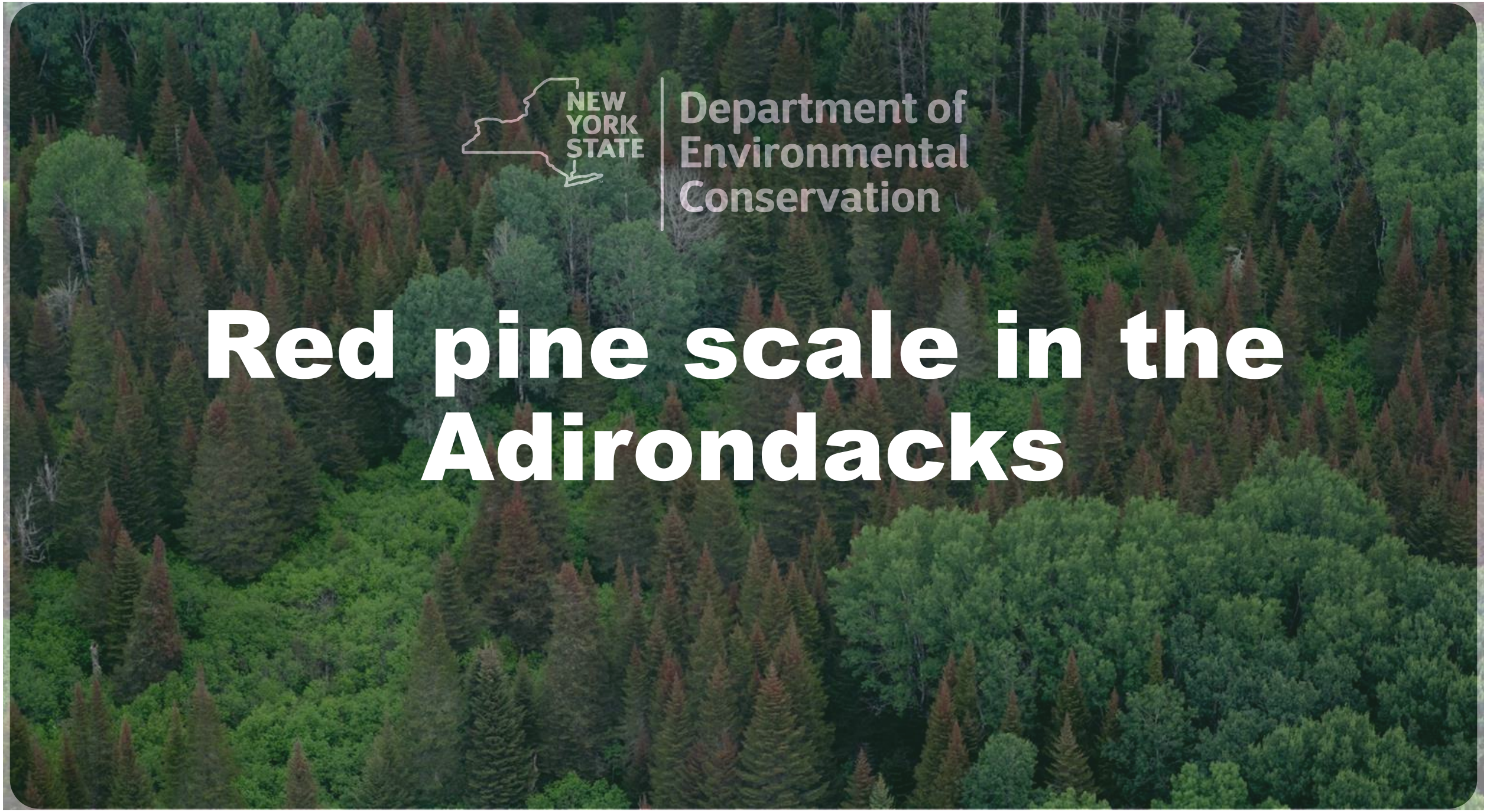


Building phase goes unnoticed because there are no significant impacts.

2025 Surveys



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Red pine scale in the Adirondacks

Red Pine Scale

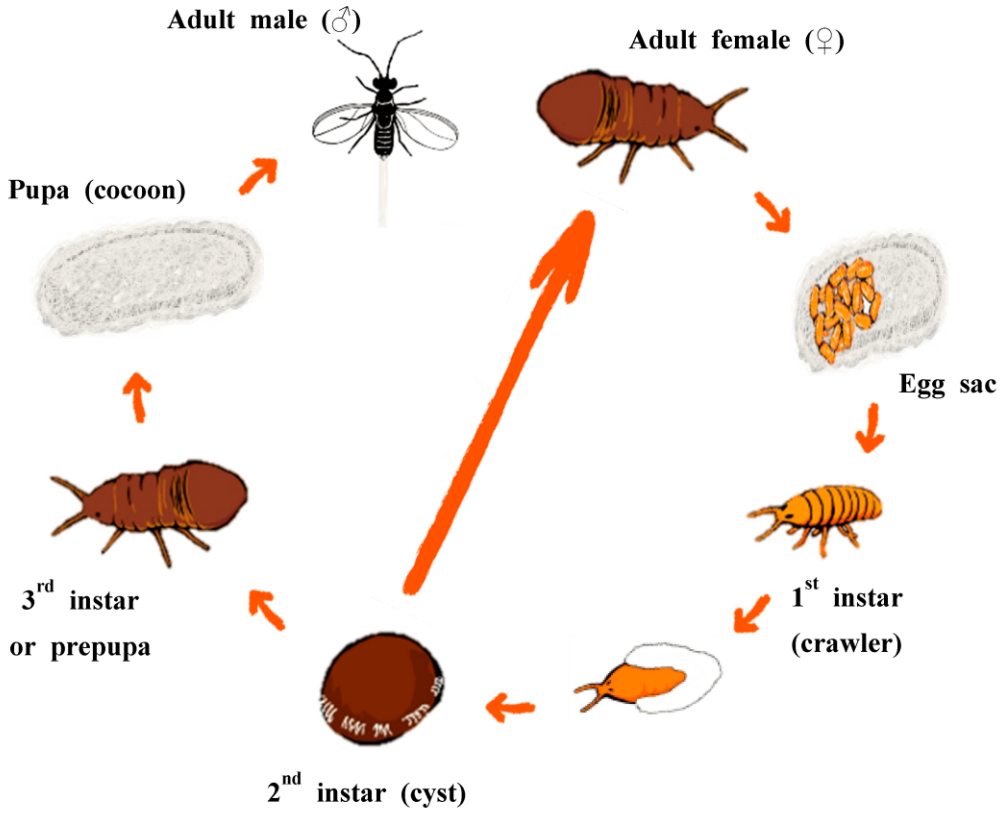
- *Matsucoccus matsumurae*
- Native to Japan
- First NA detection in 1946 in Easton, Connecticut

Life Cycle

Two generations a year

- 1st Generation
  - Eggs laid in May
  - 1st instar in June
  - Cyst stage (2nd instar) mid-July
  - Pre-adult males spin cocoons in August and turn into winged adults
  - Pre-adult females emerge from cyst stage, mate, and lay eggs inside ovisacs August – September

- 2nd Generation
  - Crawlers hatch in late Fall, become dormant, and overwinter in ovisacs
  - Turn into cyst stage in April and rapidly develop into adults



"We have no way of controlling it," Fred L. Gerty Jr., a New York State forester, said during an inspection tour the other day. "The real problem with this insect is that if it continues to spread, it will one day kill every red pine tree on the North American continent."

-New York Times, 1977

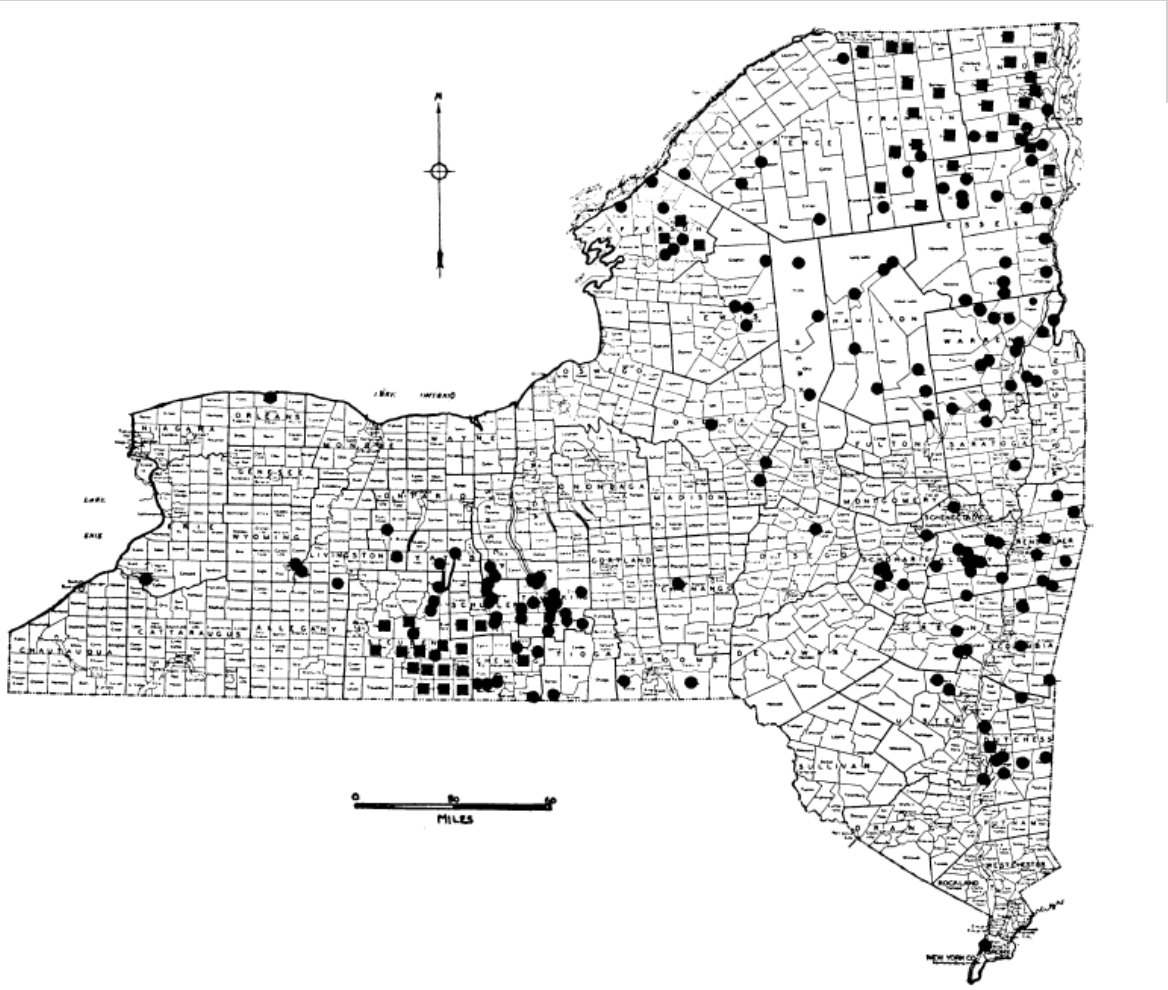


FIG. 2. The natural distribution of red pine in New York. See text for explanation.

Cook, David B., et al. "The Natural Distribution of Red Pine in New York." Ecology, vol. 33, no. 4, 1952, pp. 500–12. JSTOR, https://doi.org/10.2307/1931524. Accessed 5 Dec. 2024.

Red pine scale

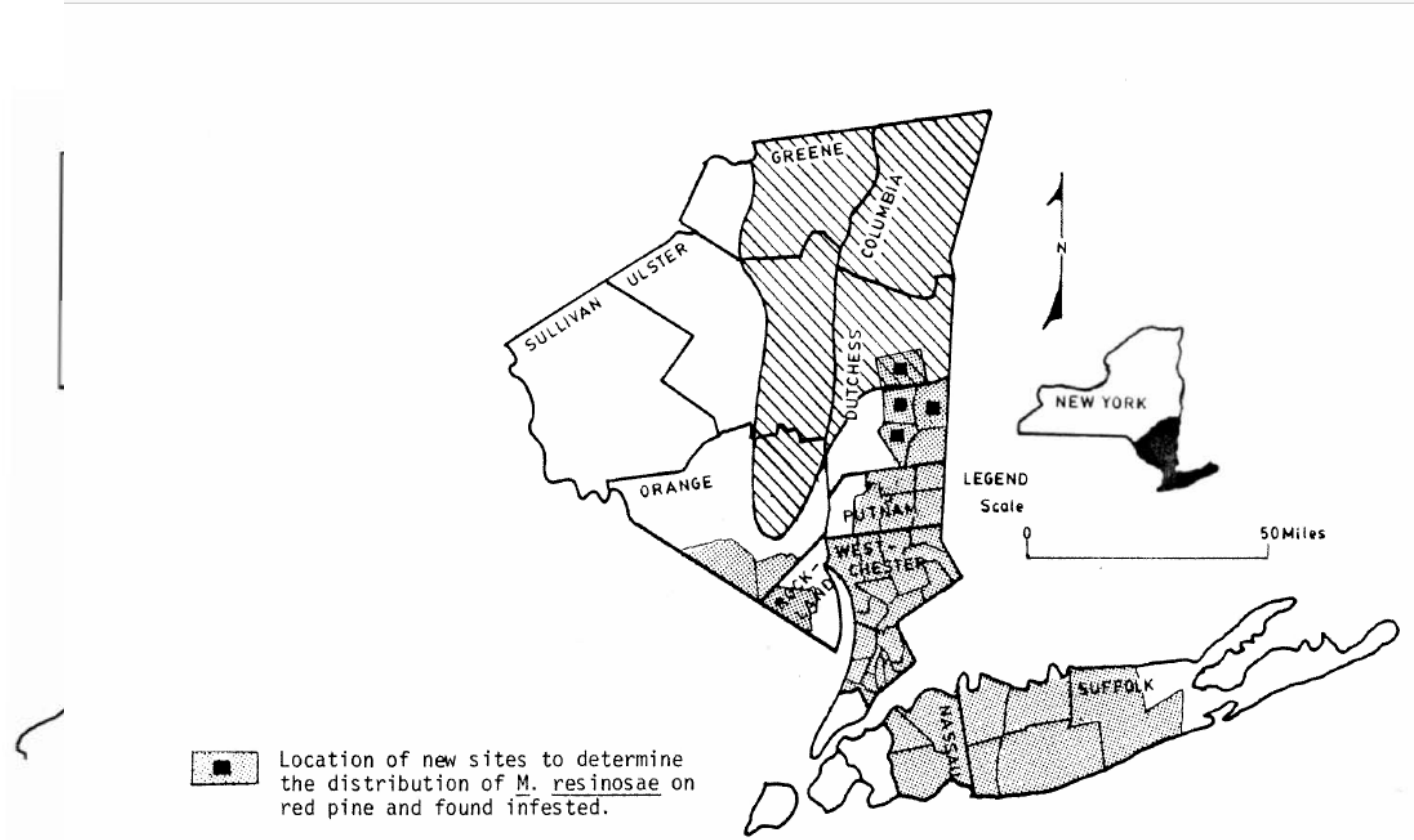
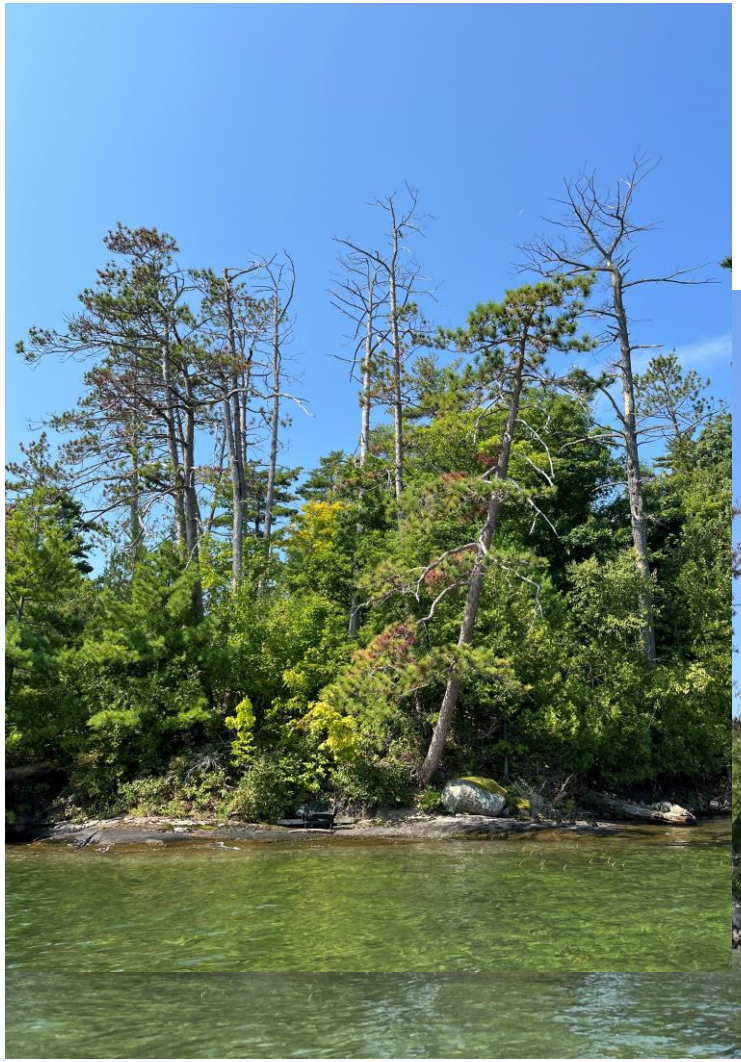
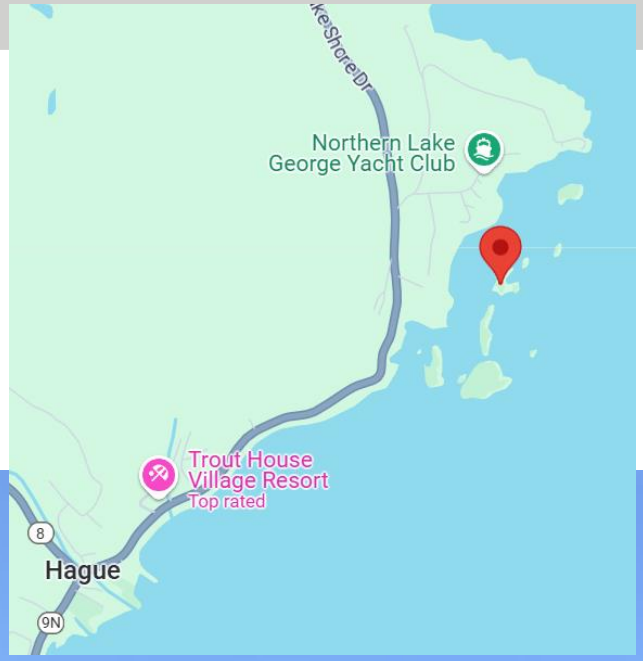


Figure 5.--1985 Distribution of M. resinosae in New York

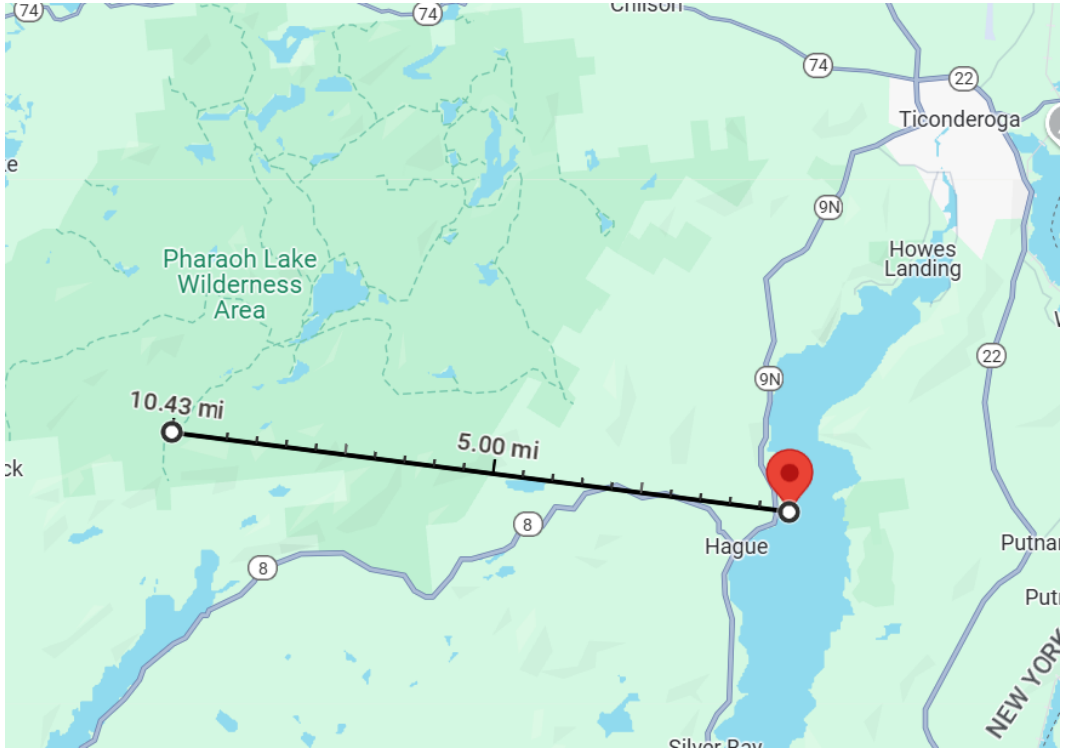
Red pine Surveys 2020/2021

Hague, Lake George





Pharaoh Lake Wilderness Area



Red Pine Scale Survey Plots

Site:_____ Plot #:_____ Waypoint (GPS):_____

Surveyor Initials:_____ Date:_____ **8m Plots**

Spp.	DBH	Alive / Dead	LCR %	CT %	Canopy Class	Snag Class	Flagging Class	RPS Y/N/U	Comments / Regen.
					U OT I CD D				
					U OT I CD D				
					U OT I CD D				
					U OT I CD D				
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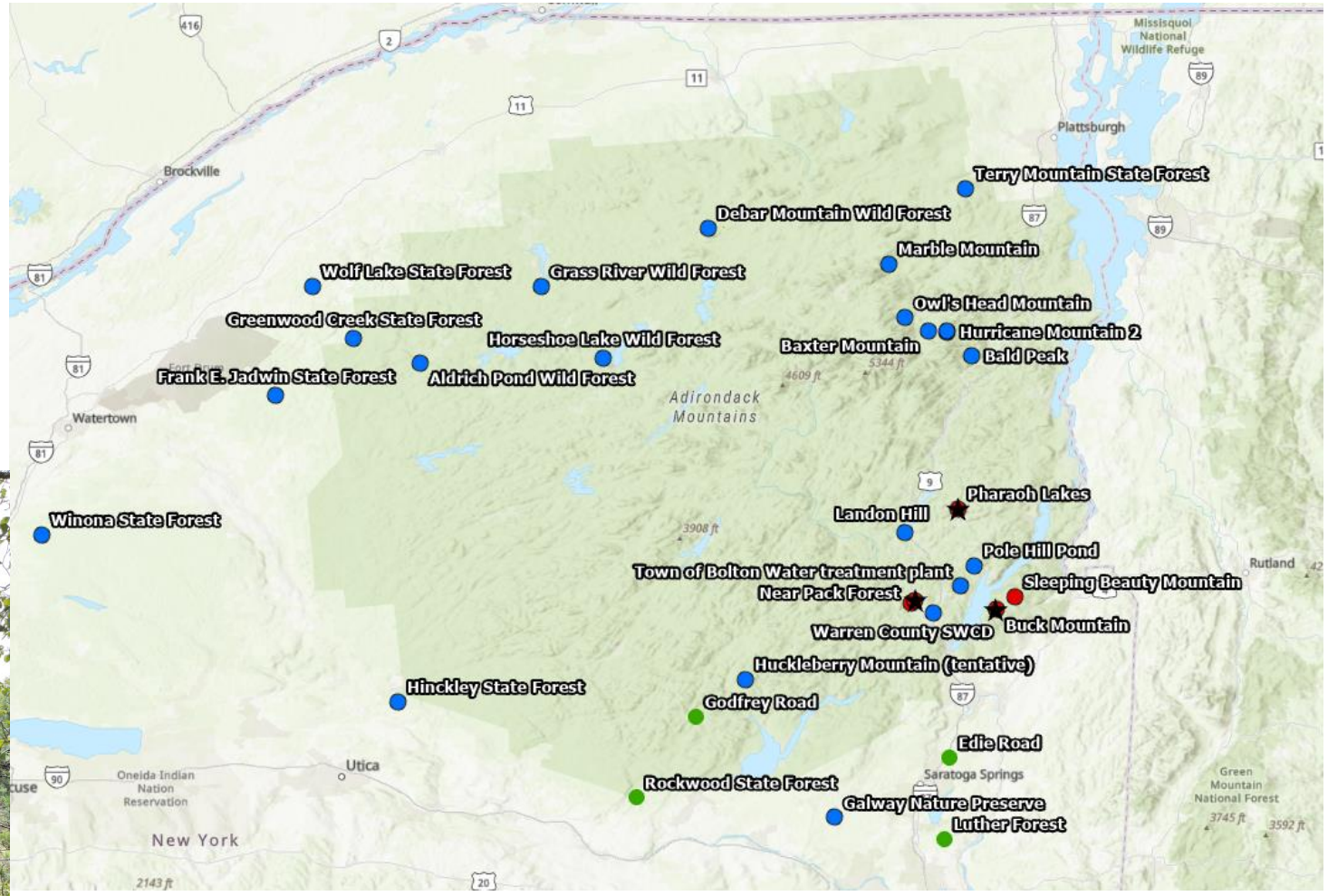

Buck Mountain 2025


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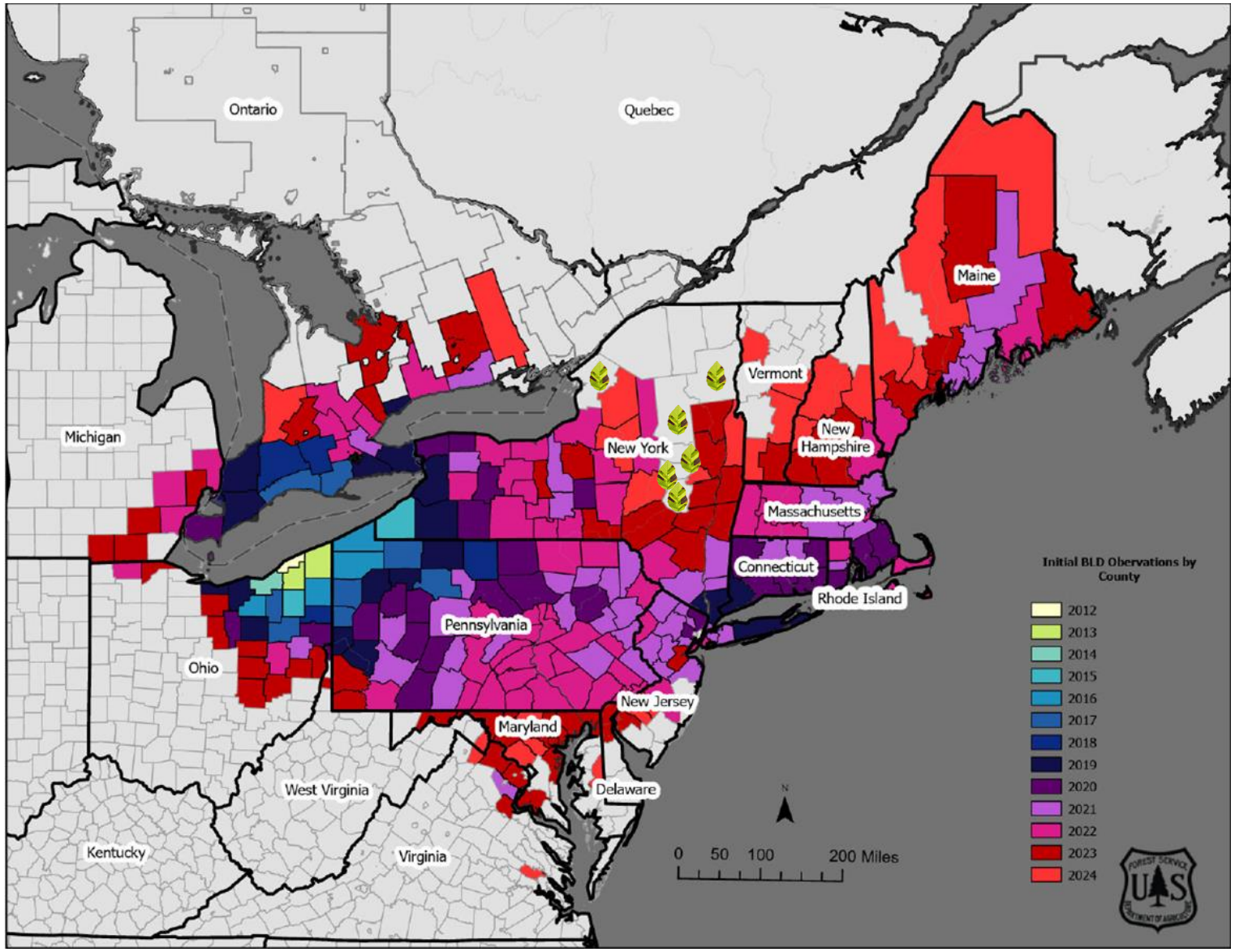
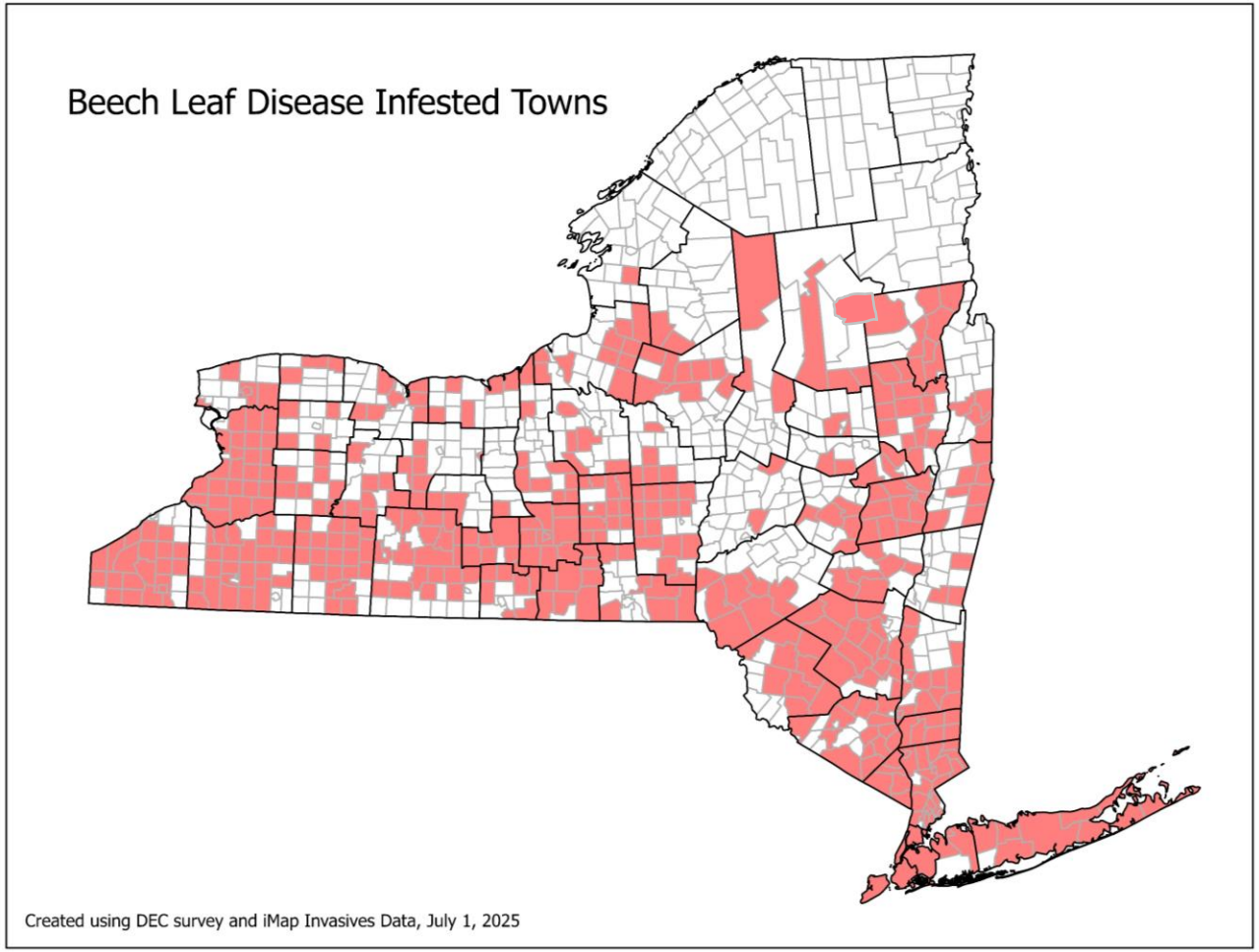
Beech leaf disease

Distribution

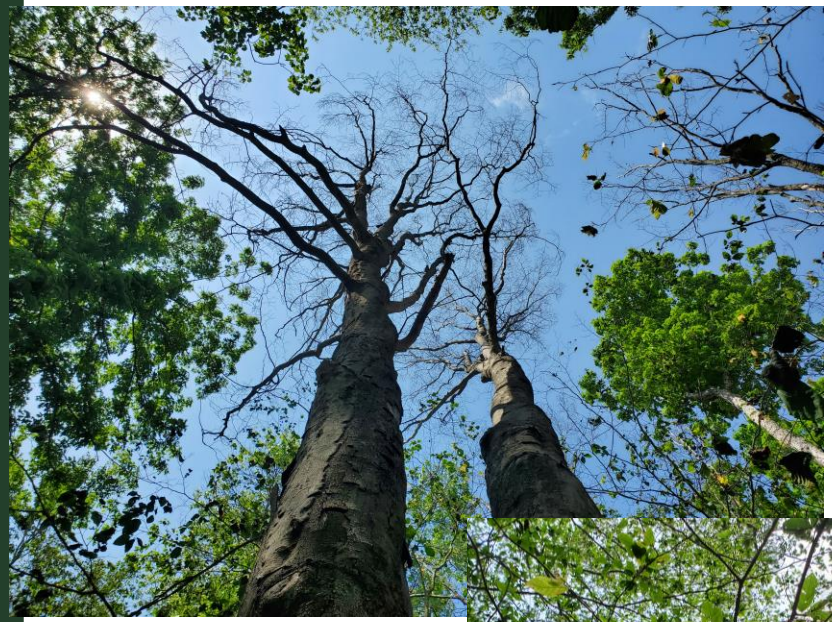


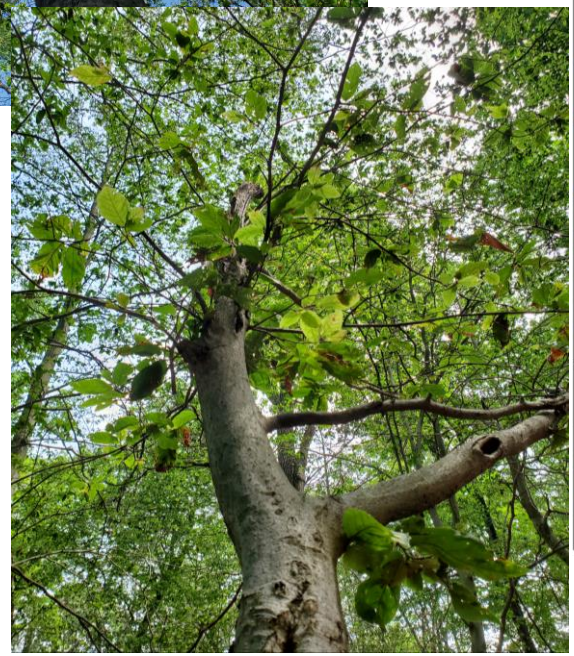
Surveys

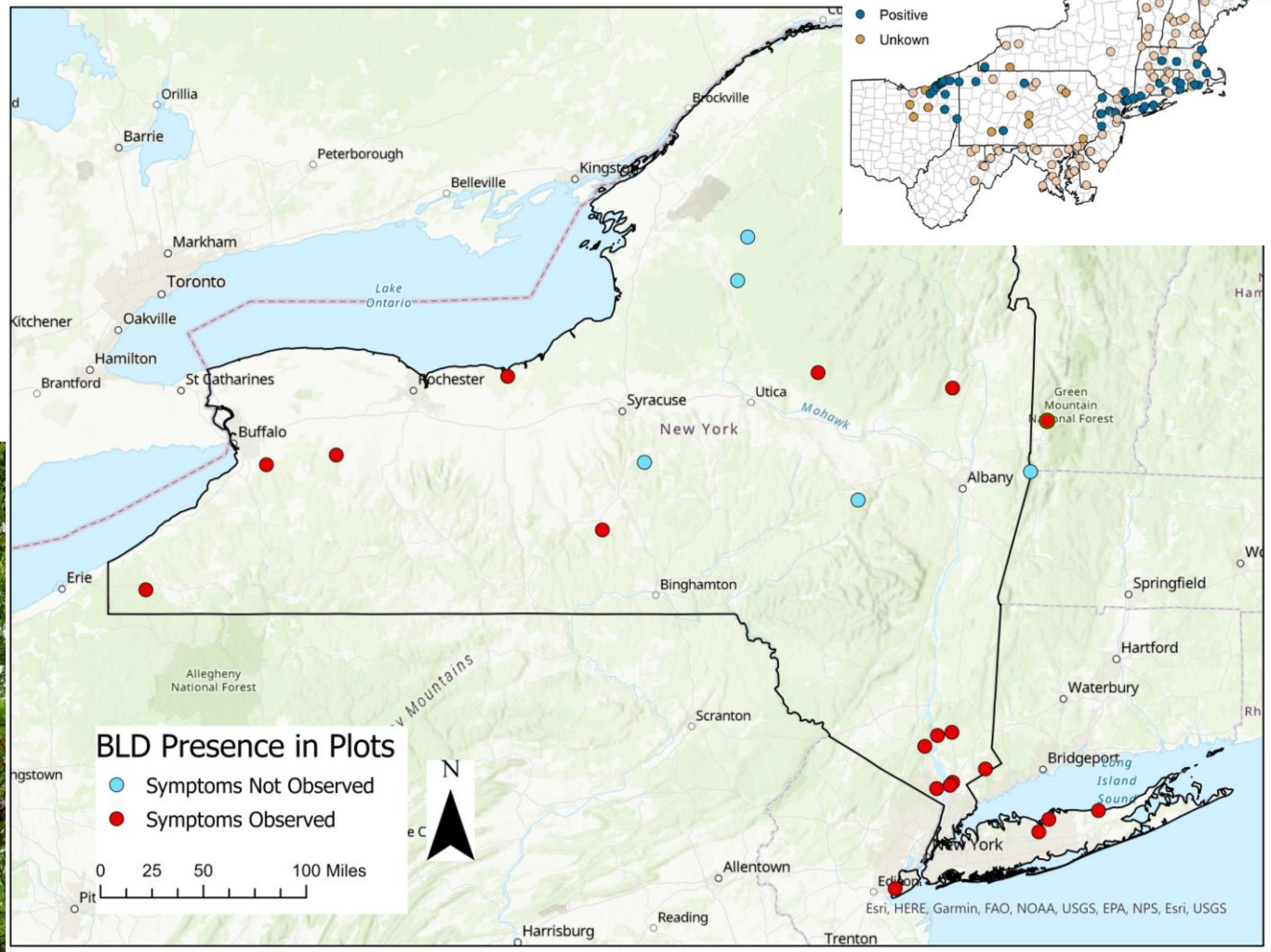


- DEC and Parks staff surveyed over 126,000 beech trees from 2020-2025
- Focusing most of survey efforts on uninfected counties
- Surveyed over 9,000 beech trees in 2025 so far
  - 45% of surveys were positive

Plot Monitoring







Map courtesy of Cameron McIntire, USFS

Silviculture

- 9 sites across NY, with varying levels of BLD infestation
- Canopy thinning, understory removal, and control
- Pretreatment data collected, treatments implemented, collecting Year 0 data now

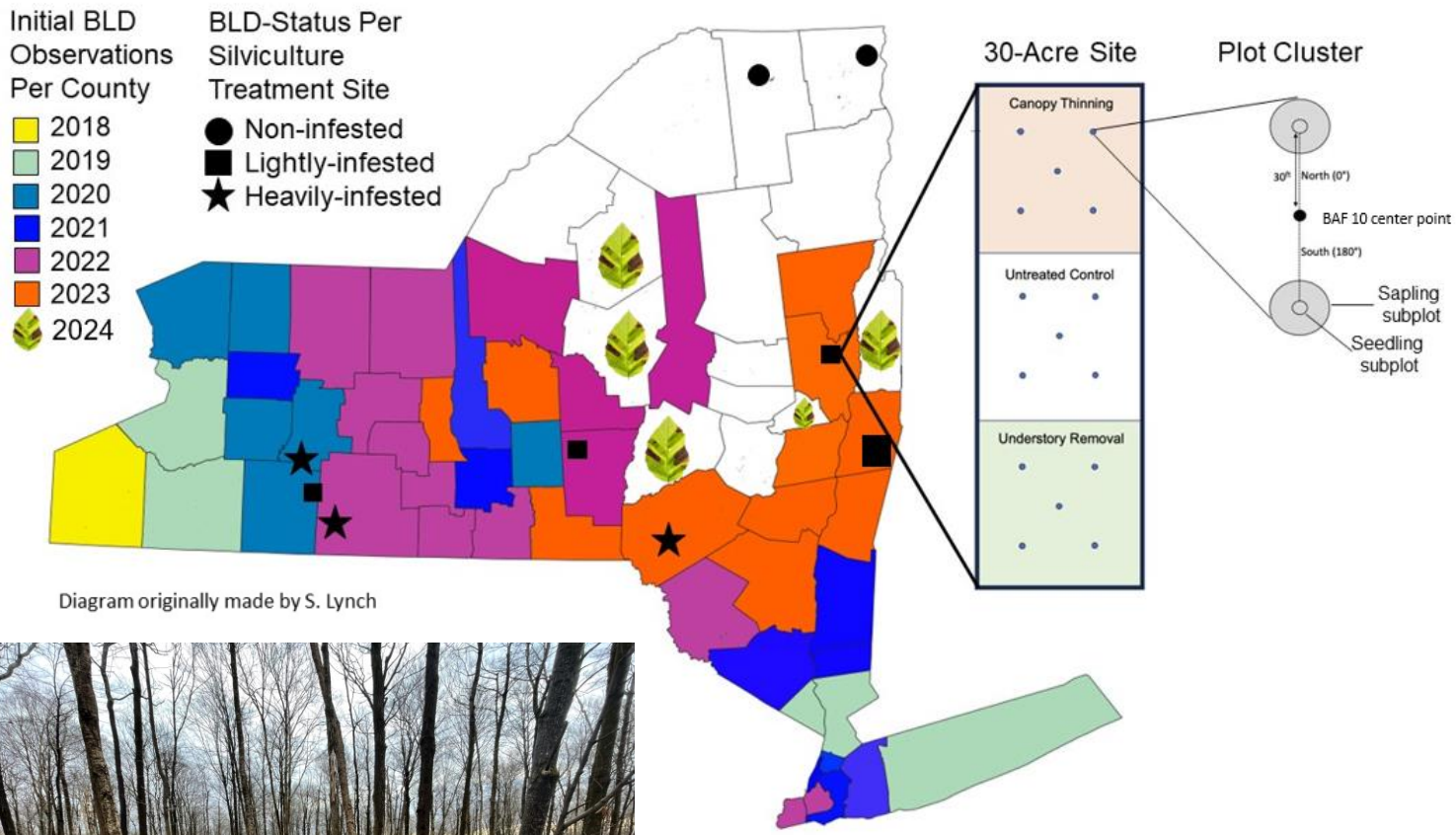


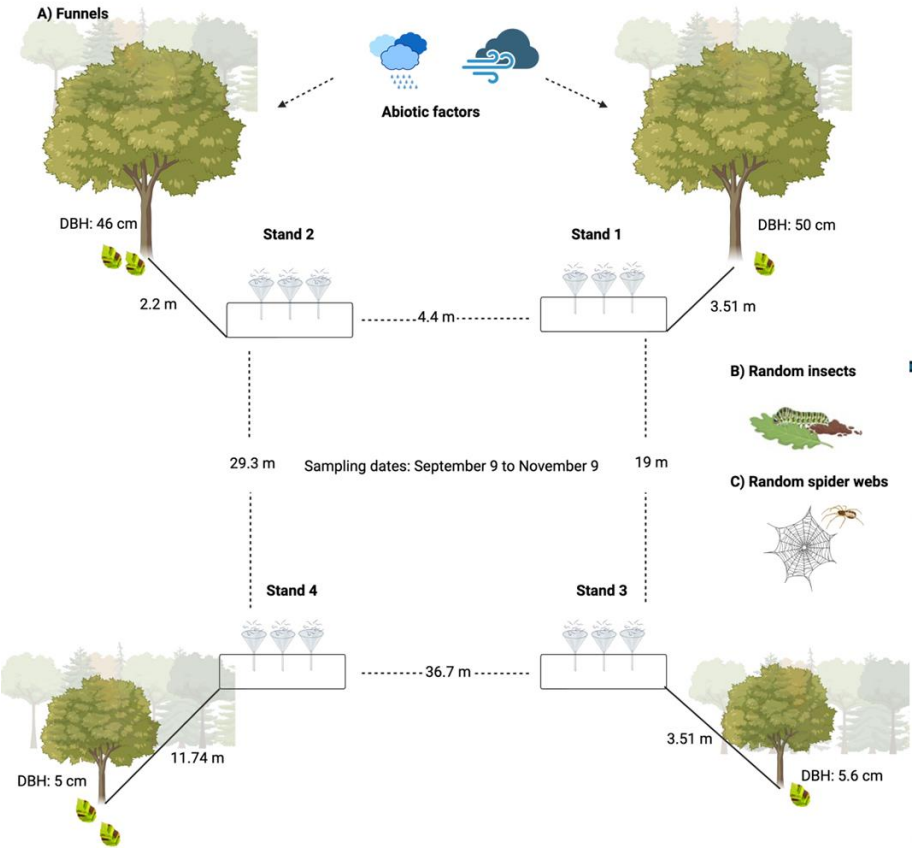
Diagram originally made by S. Lynch

New Vector Research

Wind and Rain as potential vectors of BLD

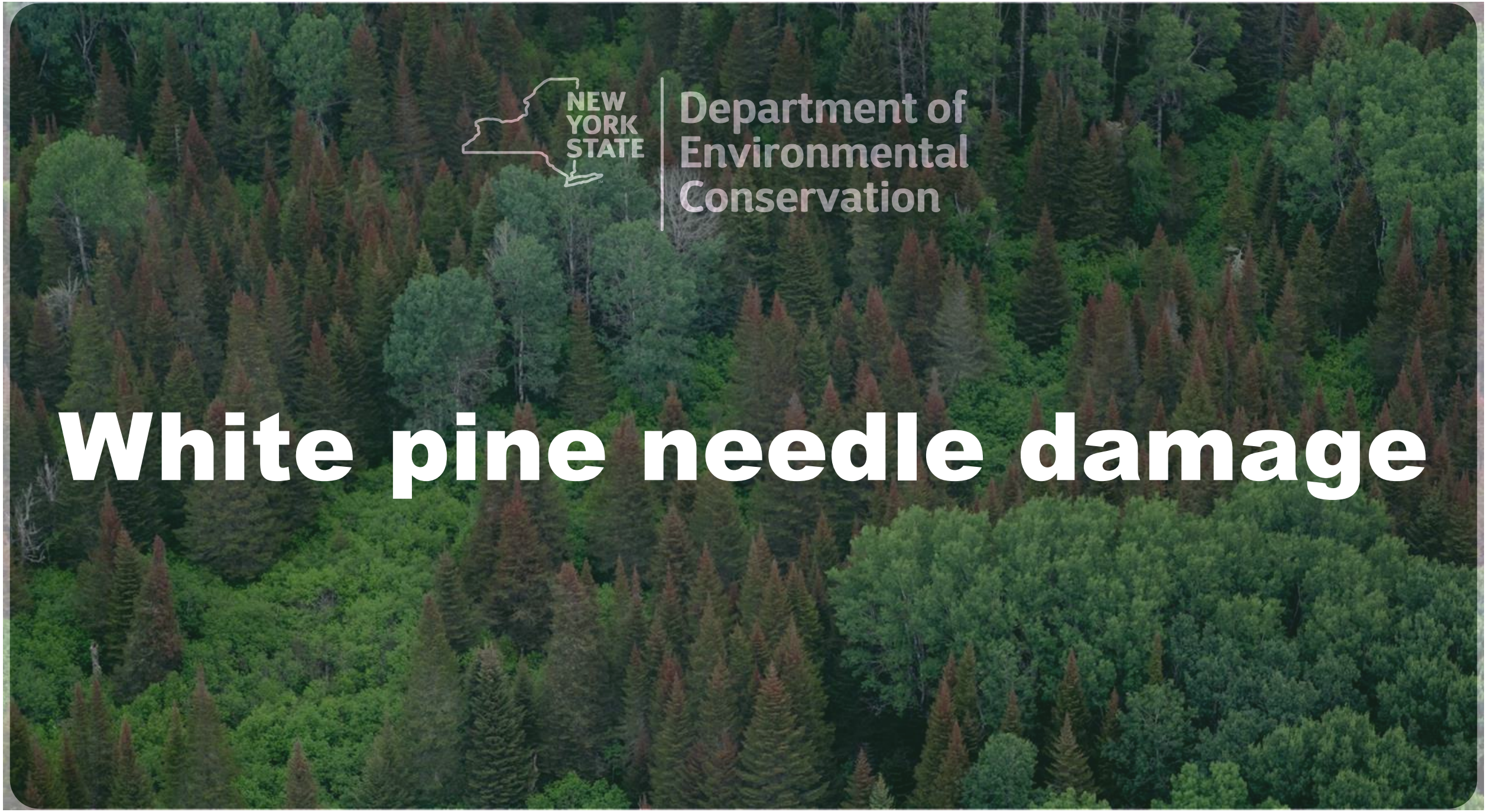
- Humidity, wind speed and precipitation all affect dispersal
- Nematodes captured 11.74m (38.5 ft) from nearest infected tree
- Also found Lcm in caterpillar frass and on spider webs

BLD nematode has also been found on and in birds, and on mites



Goraya M, Kantor C, Vieira P, Martin D, Kantor M (2024) Deciphering the vectors: Unveiling the local dispersal of *Litylenchus crenatae* ssp. *mccannii* in the American beech (*Fagus grandifolia*) forest ecosystem. PLoS ONE 19(11): e0311830. https://doi.org/10.1371/journal.pone.0311830

Parkinson, Spencer Rock, "Investigating Birds As Dispersal Vectors Of *Litylenchus crenatae* subsp. *mccannii* (Anguinidae), The Nematode Associated With Beech Leaf Disease" (2024). Graduate Theses, Dissertations, and Problem Reports. 12359. https://researchrepository.wvu.edu/etd/12359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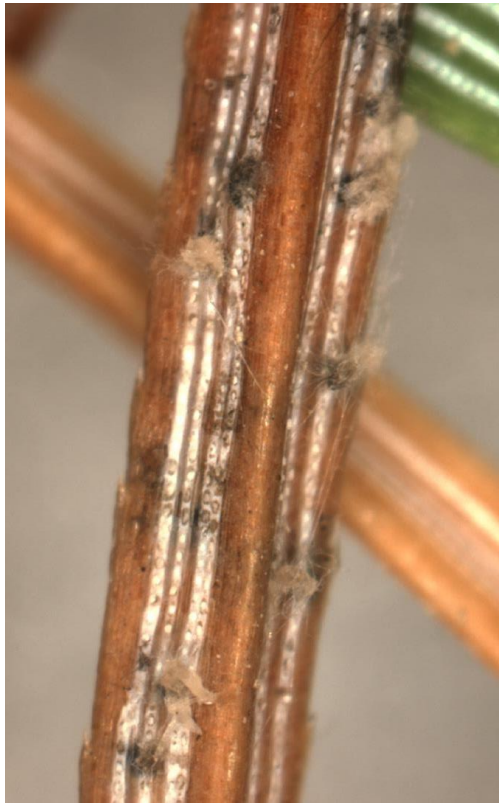
White pine needle damage

White Pine Needle Damage

Lecanosticta acicola, Septorioides strobi, Bifusella linearis, Lophophacidium dooksii



PC: Nick Brazee, UMass

PC: Sharon Douglas, CAES

White Pine Needle Damage

- Last year was the worst many in the northeast have seen
- Working with the USFS to estimate total acres damaged using satellite imagery and change detection
- Disease is encouraged by dry falls and wet springs
- Infected needles show symptoms the following year

https://dec.ny.gov/nature/forests-trees/forest-health/white-pine-decline

Low density management at Boyhaven

- 160 sq. ft to 30 TPA

Plot	Blow down (# stems/plot)	Regeneration (# stems/plot)
1	0	116
2	0	63
3	0	198
4	0	214
5	0	149
6	0	411
7	0	218
8	0	4
9	0	646

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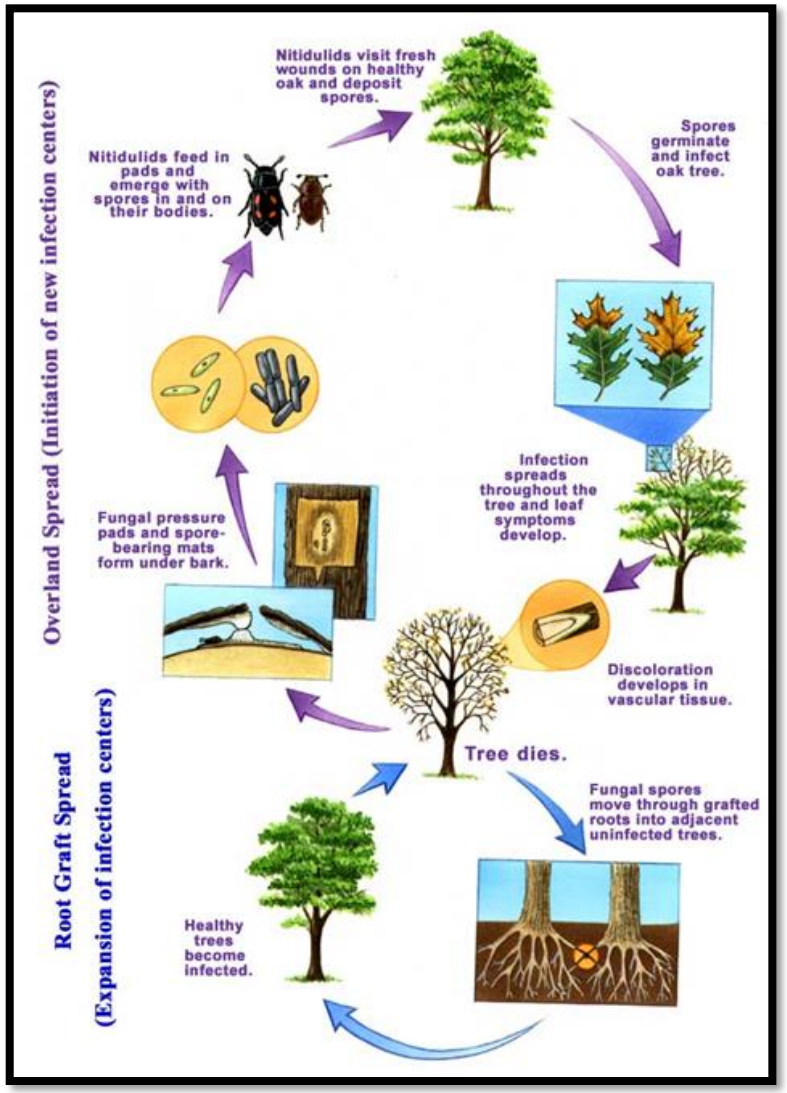
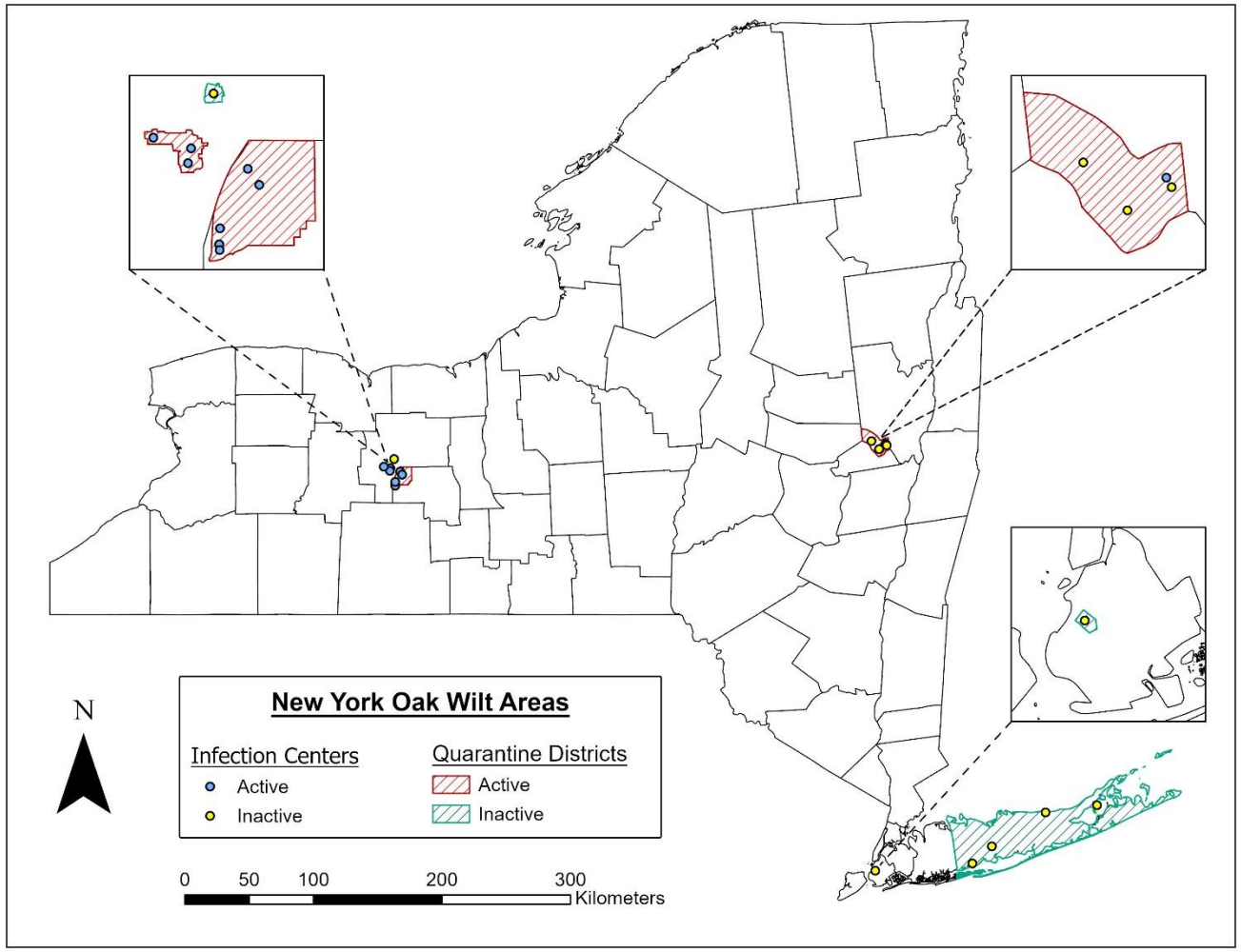
Oak wilt


Overland Spread (Initiation of new infection centers)
Nitidulids visit fresh wounds on healthy oak and deposit spores.
Spores germinate and infect oak tree.
Infection spreads throughout the tree and leaf symptoms develop.
Discoloration develops in vascular tissue.
Tree dies.
Fungal spores move through grafted roots into adjacent uninfected trees.
Healthy trees become infected.
Root Graft Spread
(Expansion of infection centers)
Fungal pressure pads and spore-bearing mats form under bark.
Nitidulids feed in pads and emerge with spores in and on their bodies.

Oak Wilt Quarantines and Management

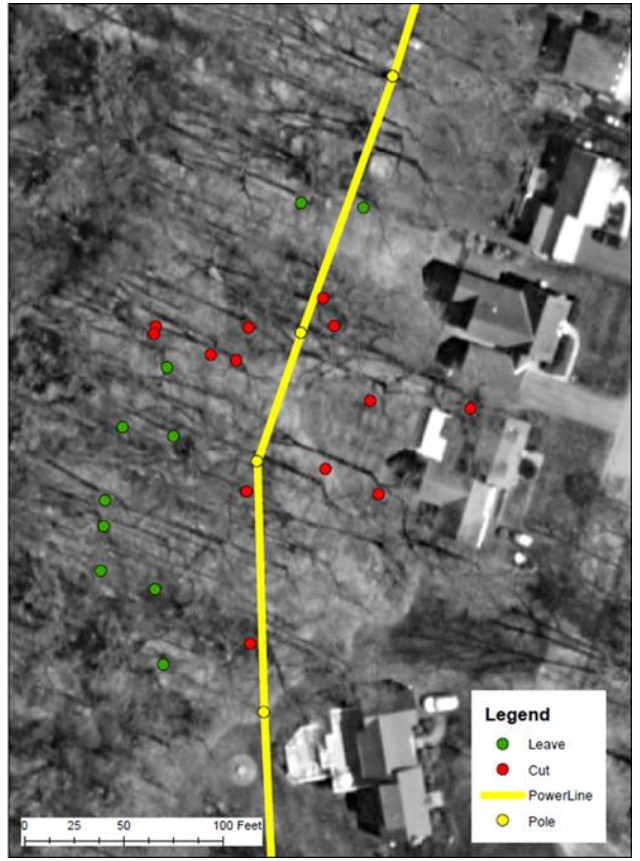


150 foot buffer

Bruhn et. al root graft model

Next-nearest red oaks

Infected trees only

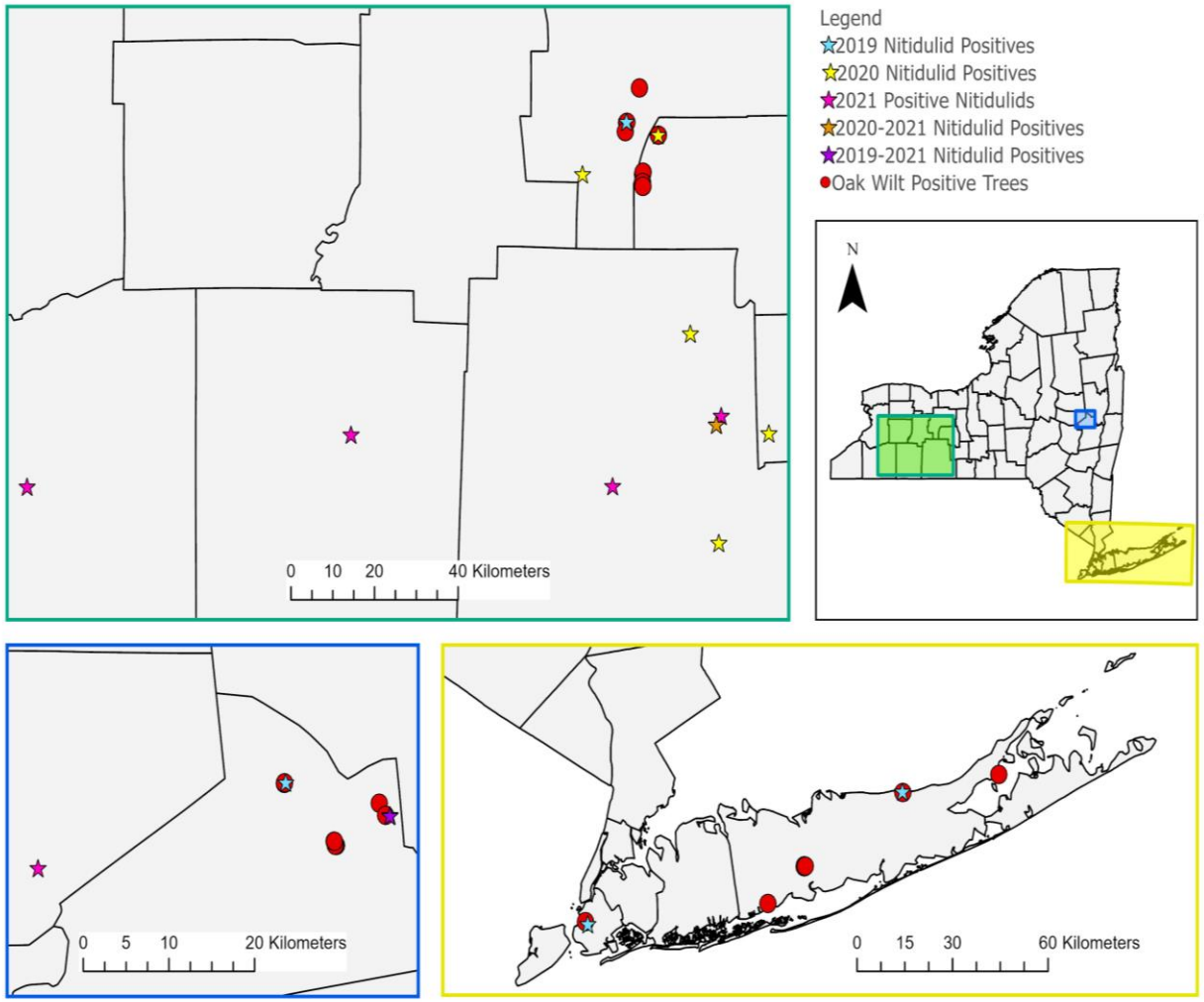


ORIGINAL ARTICLE

Forest Pathology WILEY

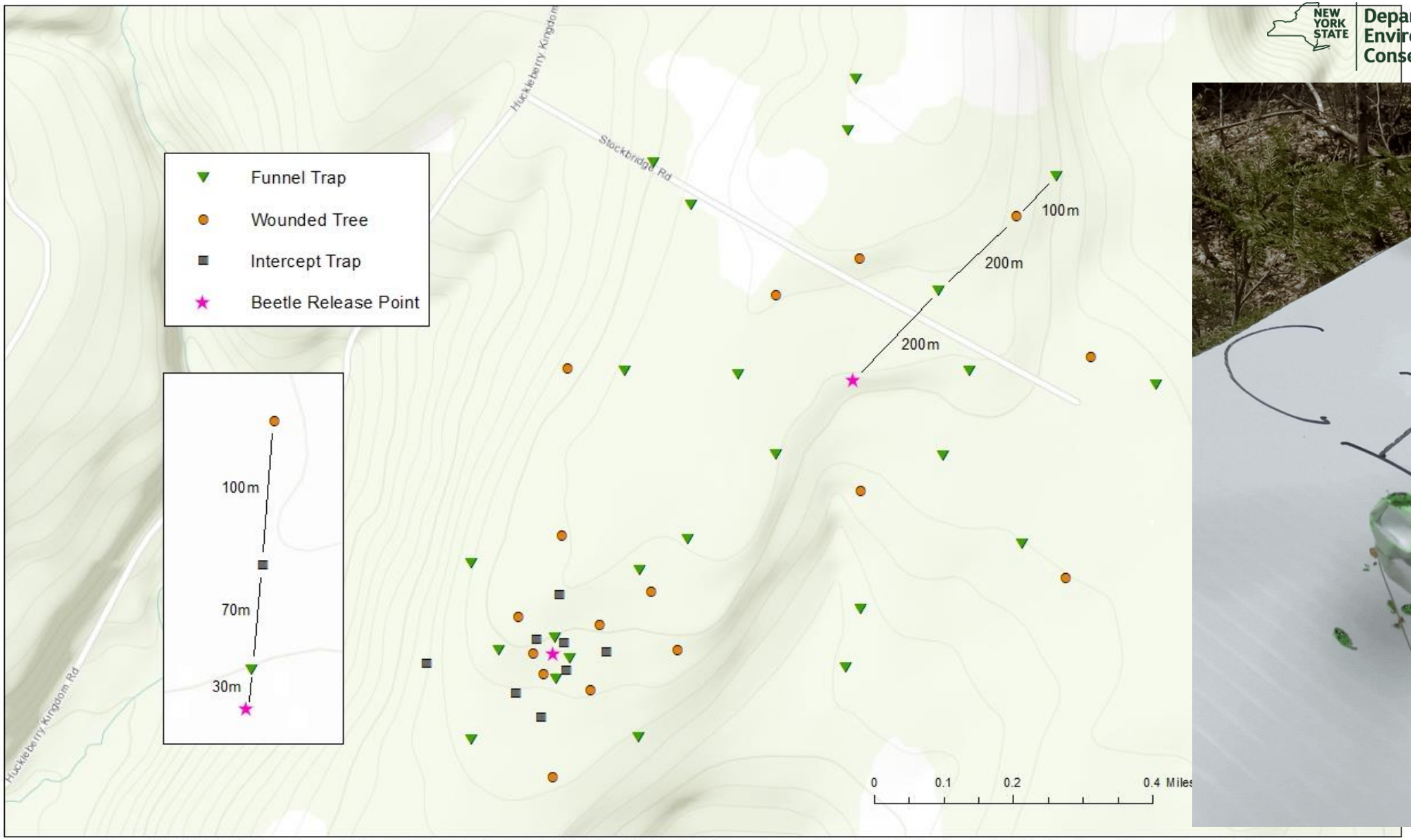
Early detection of the oak wilt fungus (*Bretziella fagacearum*) using trapped nitidulid beetle vectors

Kelsey McLaughlin[1] | Karen Snover-Clift[2] | Liam Somers[1] | Jessica Cancelliere[1] | Robert Cole[3]



Month	Risk	Pruning	Timbering	Firewood Movement
Apr-July	High	NOT recommended, immediately cover wounds with paint	NOT recommended, immediately cover wounds with paint	NOT permitted
Aug-Sept	Low	NOT recommended, immediately cover wounds with paint	Can be done, should still look to minimize oak wounding	Requires DEC permit
Oct-Mar	Very Low	Recommended, no need to cover wounds	Recommended	Requires DEC permit

Burnt-Rossman Hills State Forest



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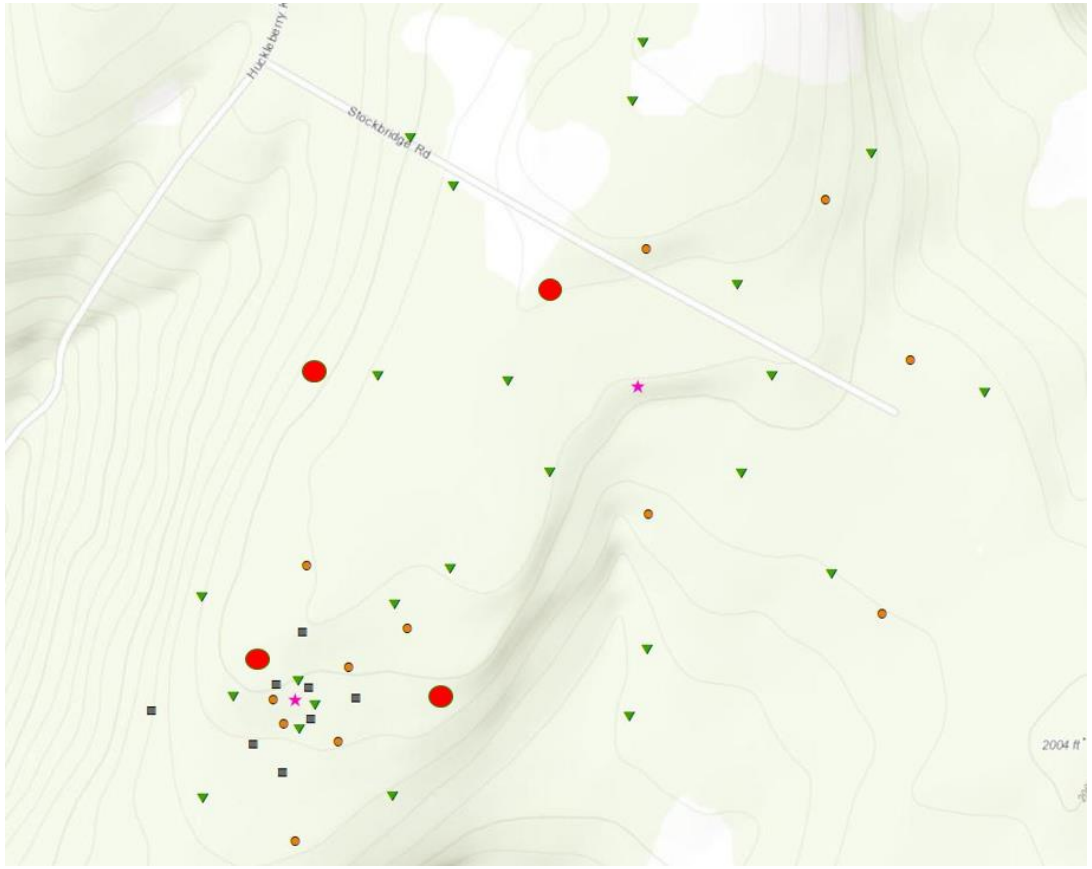
Wound Results

- Only species to visit wounds: *Epuraea corticina*
- Caught 4 individuals, none with powder

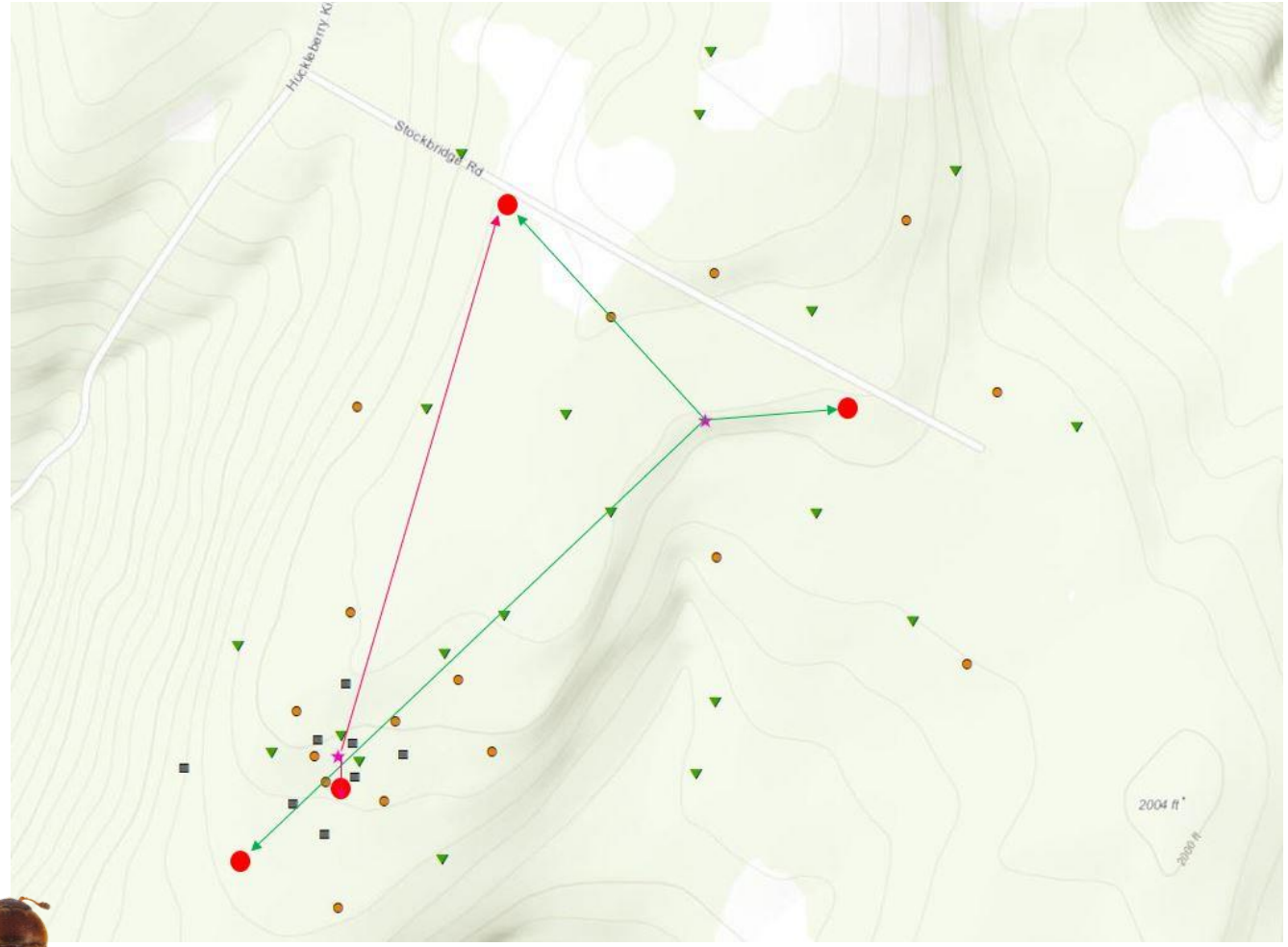


Cease & Juzwik, 2001
In Minnesota, *Epuraea corticina* was one of the most abundant species visiting spore mats…

Preliminary Flight Distance Results

Collected Beetles					
Species	none	big wound	small wound	big live	small live
Carpophilus brachypterus	5				
Carpophilus corticinus	50				
Caplothorax lugubris	2				
Caplothorax sayi	58				3
Colopterus semitectus	3				
Colopterus truncatus	591			3	3
Epuraea corticina	2				
Epuraea planulata	1				
Glischrochilus fasciatus	1				
Glischrochilus sanguinolentus	158			1	
Total:	**871**	**0**	**0**	**4**	**6**

Trap #	Caplothorax sayi	Colopterus truncatus	Glischrochilus sanguinolentus
1908	45 m	45 m	
1085		200 m	
1909		408 m | 793 m	408 m
1055		895.2 m	
Max Distance traveled:	**0.03 mi**	**0.56 mi**	**0.25 mi**

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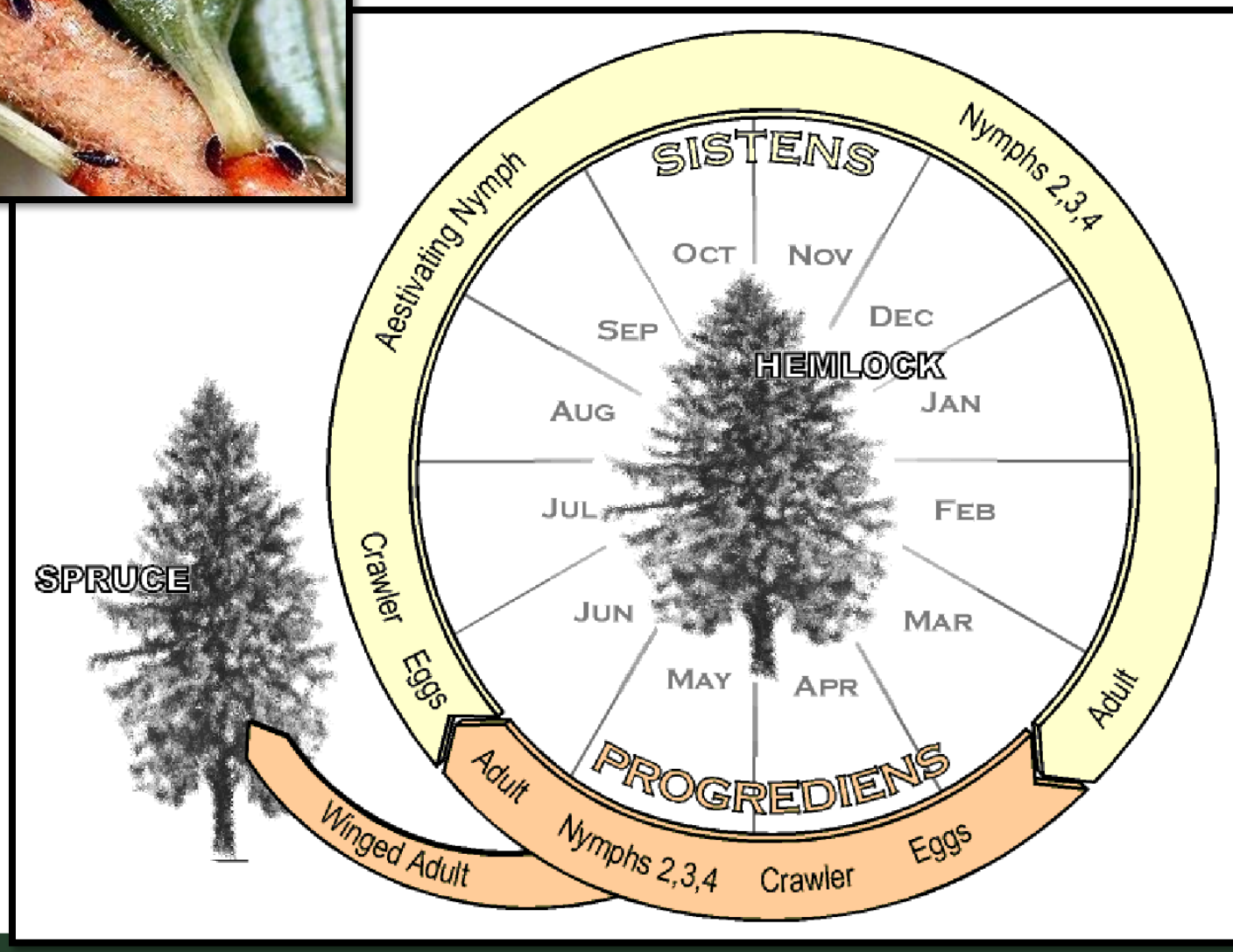
Hemlock woolly adelgid

Life Cycle

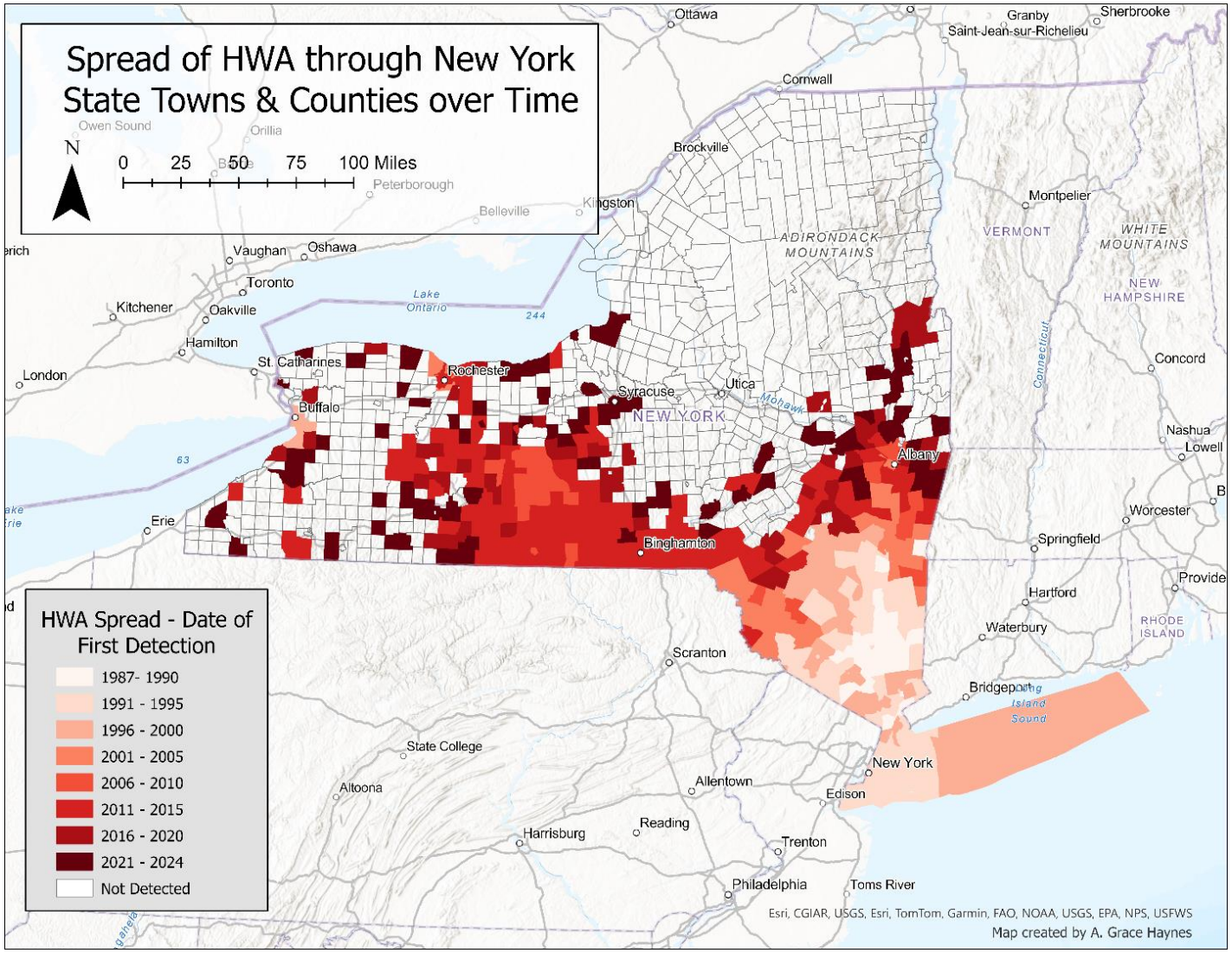

SISTENS
PROGREDIENS
HEMLOCK
SPRUCE
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Aestivating Nymph
Nymphs 2,3,4
Adult
Eggs
Crawler
Winged Adult
Adult
Nymphs 2,3,4
Crawler
Eggs

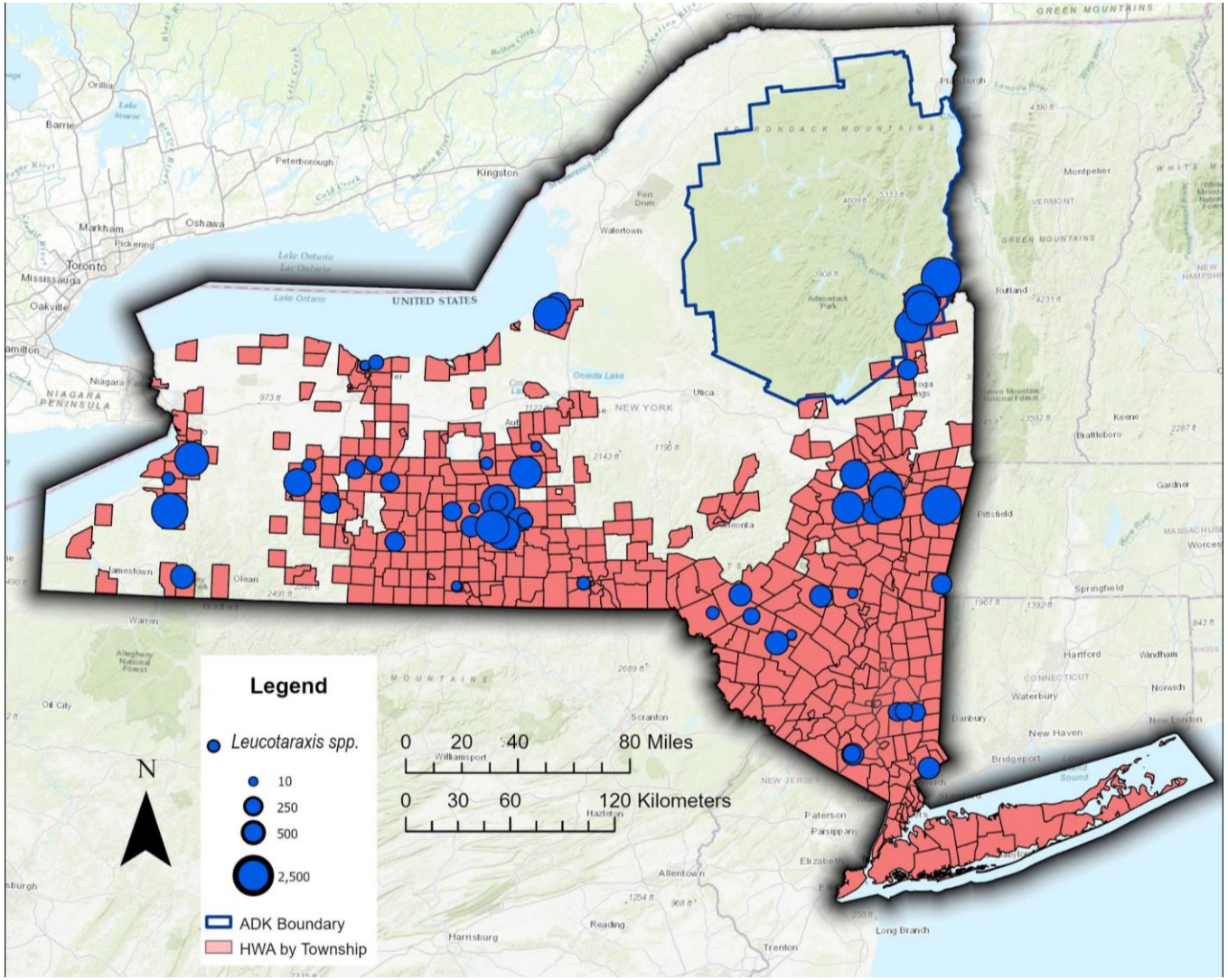

crawler
UGA5018073

Hemlock woolly adelgid

HWA Survey and monitoring

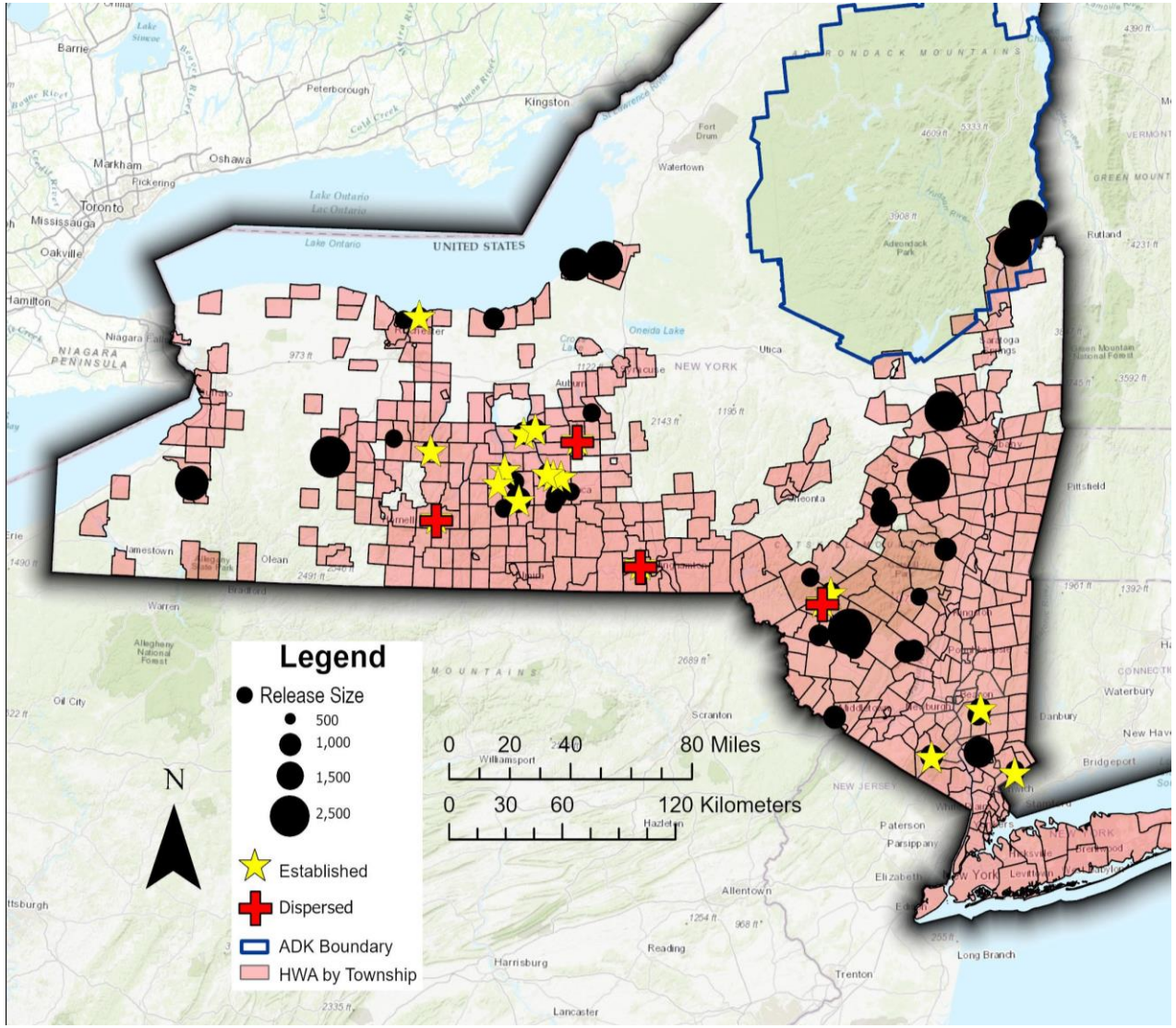
- An infestation was confirmed in Essex County near Lake Champlain in July 2025. At the time of this report delimitation surveys of the area are ongoing.
- In late winter and spring of 2025, 97 sites were evaluated for hemlock woolly adelgid winter mortality.
  - Average mortality across all sites was 74.7%, with a low of 13.8% and high of 99.9%. See table 1 for comprehensive site data





Total *Leucotaraxis* spp. released from 2015 through 2024 = **100,272**

55+ Unique Sites

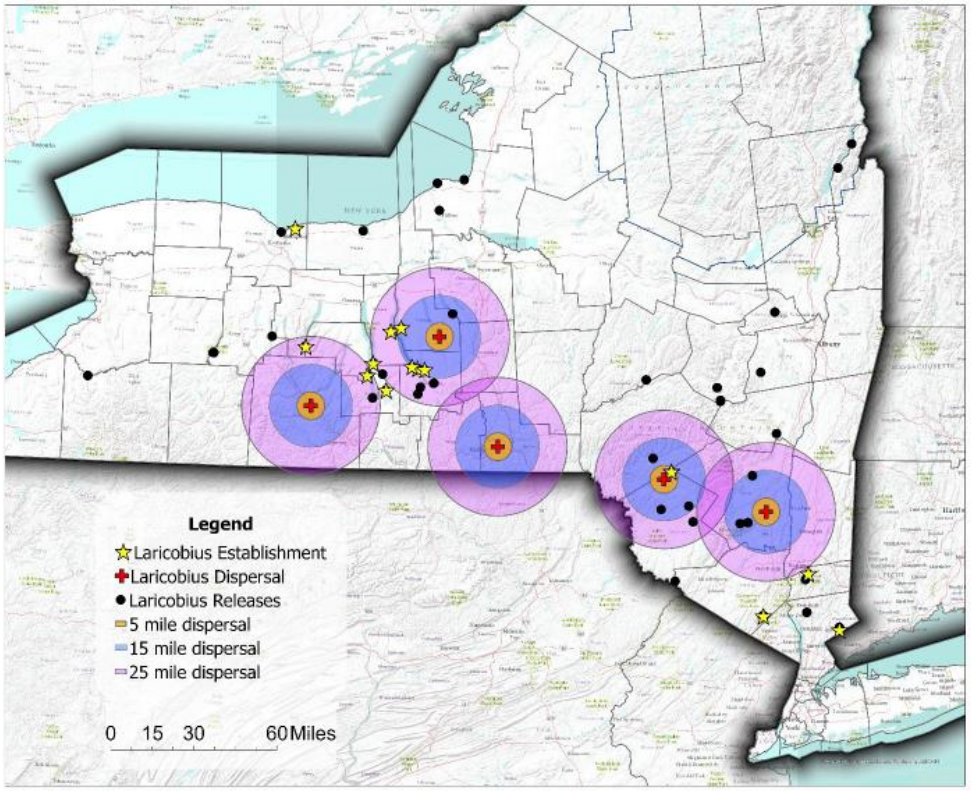


Total *Laricobius* spp. released from 2008 through 2025 = **63,770 at 47** Sites

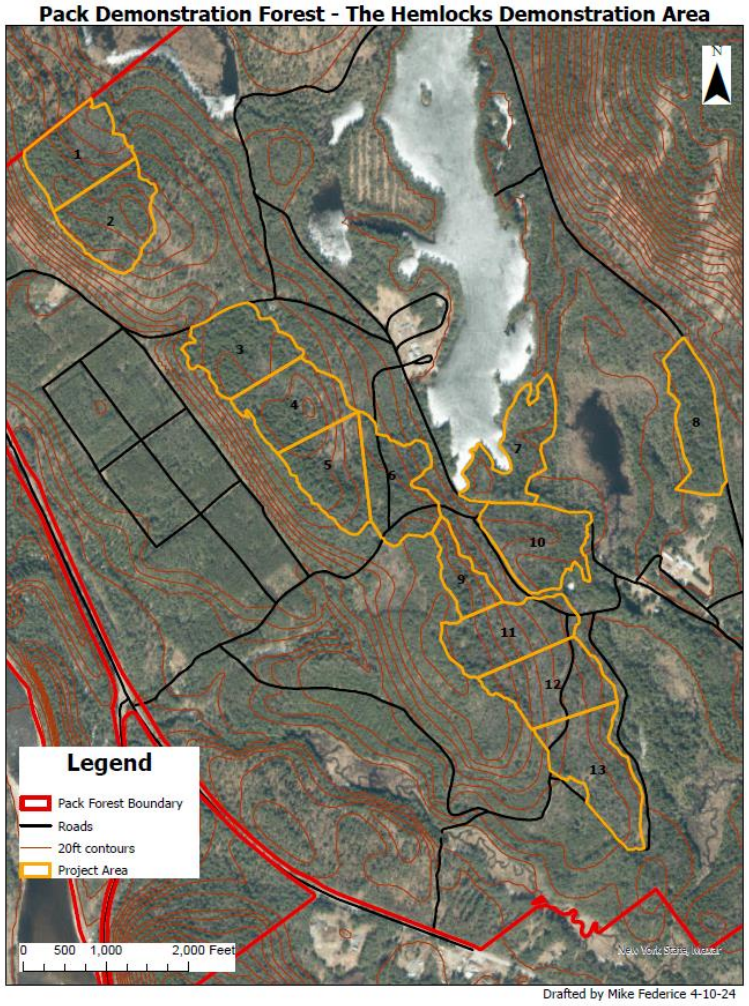
Establishment at **19+** sites:

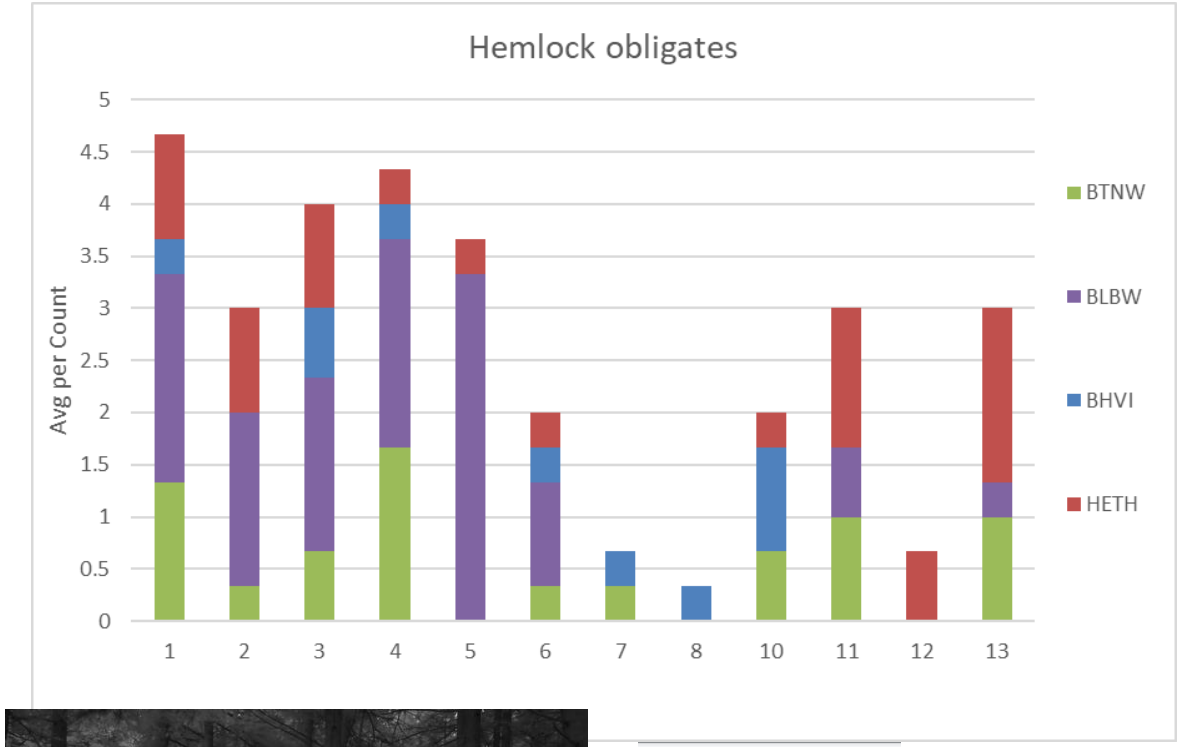
L. nigrinus: 19 sites

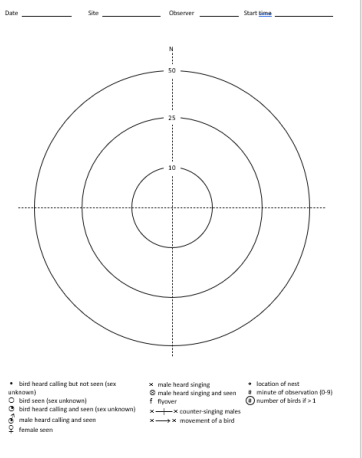
L. osakensis: 1 site


Legend
Laricobius Establishment
Laricobius Dispersal
Laricobius Releases
5 mile dispersal
15 mile dispersal
25 mile dispersal
0 15 30 60 Miles

Hemlock Woolly Adelgid and Pack Forest





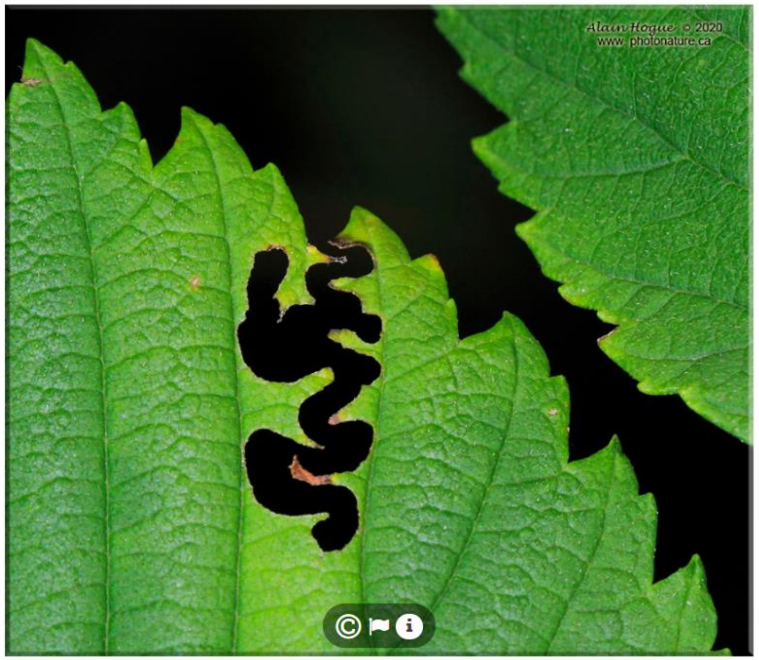



NEW YORK STATE
Department of Environmental Conservation
Elm zigzag sawfly

Elm Zigzag Sawfly

- Native to China and Japan
- First NA detection Qubec, Canada 2020, iNaturalist
- Suspicious bugguide.net submissions in 2018

Aproceros leucopoda Niveau de recherche



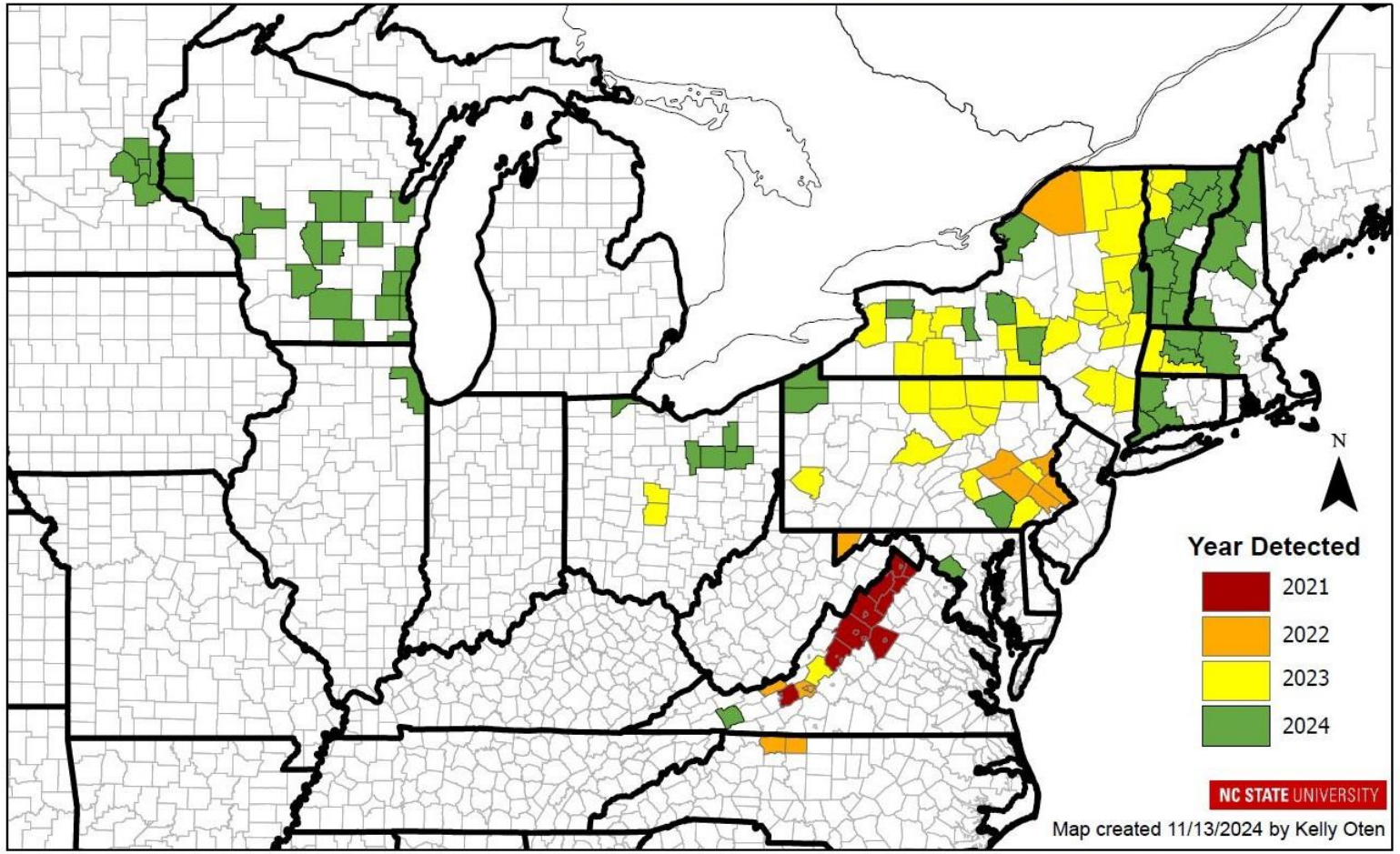
Threat

- Potential to cause severe defoliation
- Outcompetes native species reliant on elm
- Up to 6 generations a year
- Could further exacerbate the decline of elm along with Dutch elm disease
  - Defoliation rates of 74-90%, and complete defoliation in some trees previously impacted by Dutch elm disease (www.invasivespeciescentre.ca)

Kelly Oten, North Carolina Forest Service

North Carolina Forest Service

Elm zigzag sawfly (*Aproceros leucopoda*) detections in the United States



The elm zigzag sawfly is an invasive defoliating pest of trees in the Ulmaceae family. Native to Asia, it was detected in Canada in 2020 and in Virginia in 2021. USDA-APHIS is the federal identifier that confirms all county-level detections for the elm zigzag sawfly. This map includes all APHIS confirmations in addition to detections pending APHIS confirmation to better inform the known range of this invasive insect. Thank you to the following contributors for state records: Eric Day (VA), Lawrence Barringer (PA), Jess Cancelliere and Liam Somers (NY), Tom Macy (OH), Felicia Hubacz (MA), Heather Disque (MD), Josh Halman (VT), Angie Ambourn (MN), Michael Hillstrom (WI), and Nathan Siegert (USFS).

Life Cycle - Eggs

- 7 – 49 eggs along the serrated margin
- 0.8 mm – 1.0 mm long, 0.5 mm wide
- 4 – 8 days

Melissa Fierke, SUNY ESF

Larvae

- 1.8mm – 11mm long
- Black band across eye
- Black “T” marks on 2nd & 3rd pair of legs
- 6 larval instars
- 15 – 18 days

Melissa Fierke, SUNY ESF

Hölling, D. (2017) waldwissen.net

Pupae

- Loosely woven cocoons
- Usually underside of leaf
- 7 days

Melissa Fierke, SUNY ESF

Danail Doychev,
inspection.canada.ca/

Adult

- 6mm – 7mm long
- Yellow legs, dark tarsi
- Smoky brown wings
- White patch on bottom of thorax
- Can fly up to 56 miles a year
- 1 – 6 days

Gyorgy Csoka, Hungary Forest Research Institute, Bugwood.org

SUNY-ESF Partnership

- Melissa Fierke, PhD
- Nick Durinzi
- EZS Predators and natural Population controls

Melissa Fierke, SUNY ESF

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