



HWA Management

Planning for Hemlock Woolly Adelgid

In Partnership With:



**INVASIVE SPECIES
MANAGEMENT**
SAINT LAWRENCE
EASTERN LAKE ONTARIO



NEW YORK
STATE OF
OPPORTUNITY

**Department of
Environmental
Conservation**





Hemlock Trees

Foundation Species

An aerial photograph of a forest landscape. A river flows through the center of the image, surrounded by dense green trees. On the left side, there is a large area of dead, greyish-brown trees, contrasting with the healthy green forest on the right. The background shows rolling hills covered in forest under a clear sky.

Losing hemlocks

Pisgah National Forest

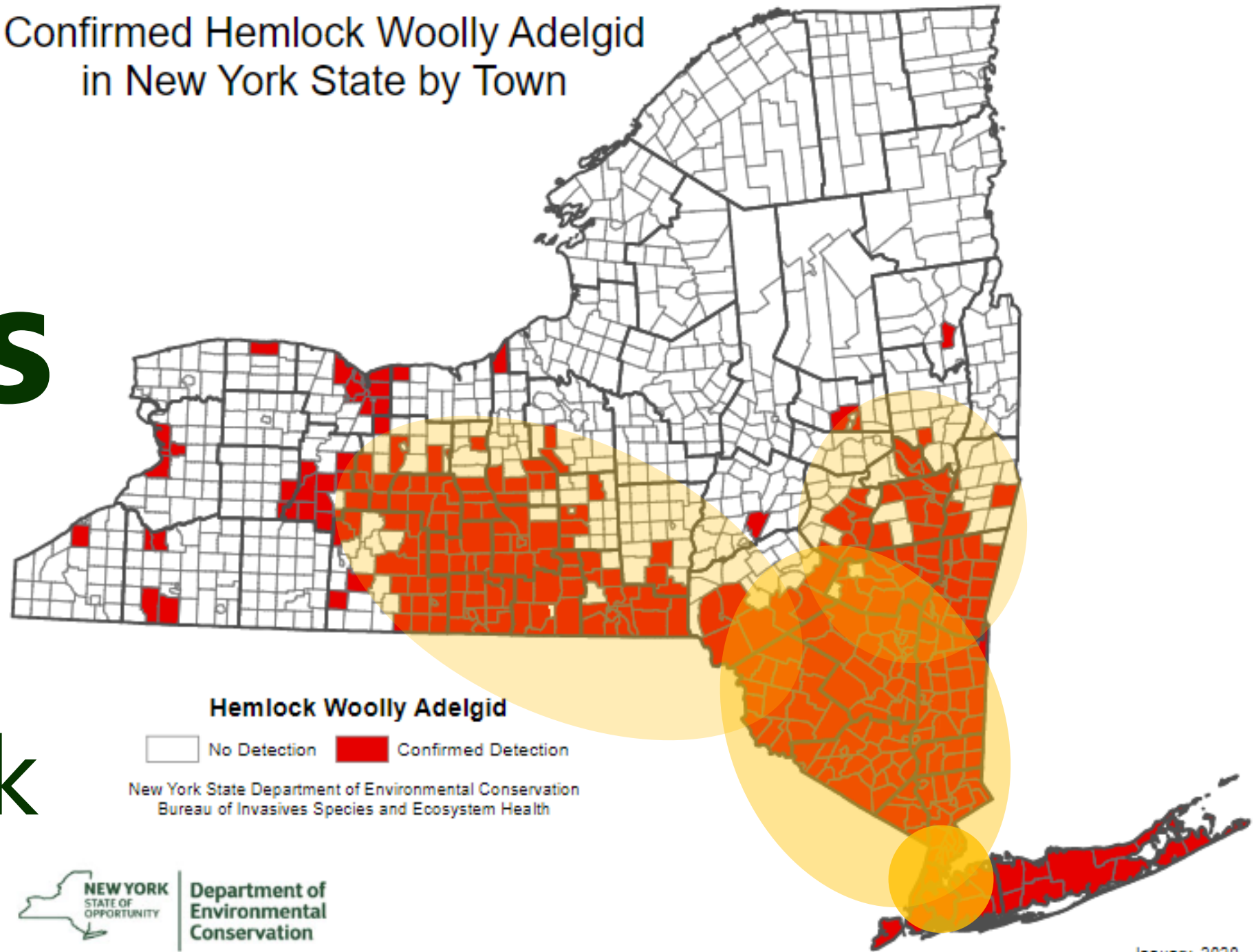
Photo: Steve Norman

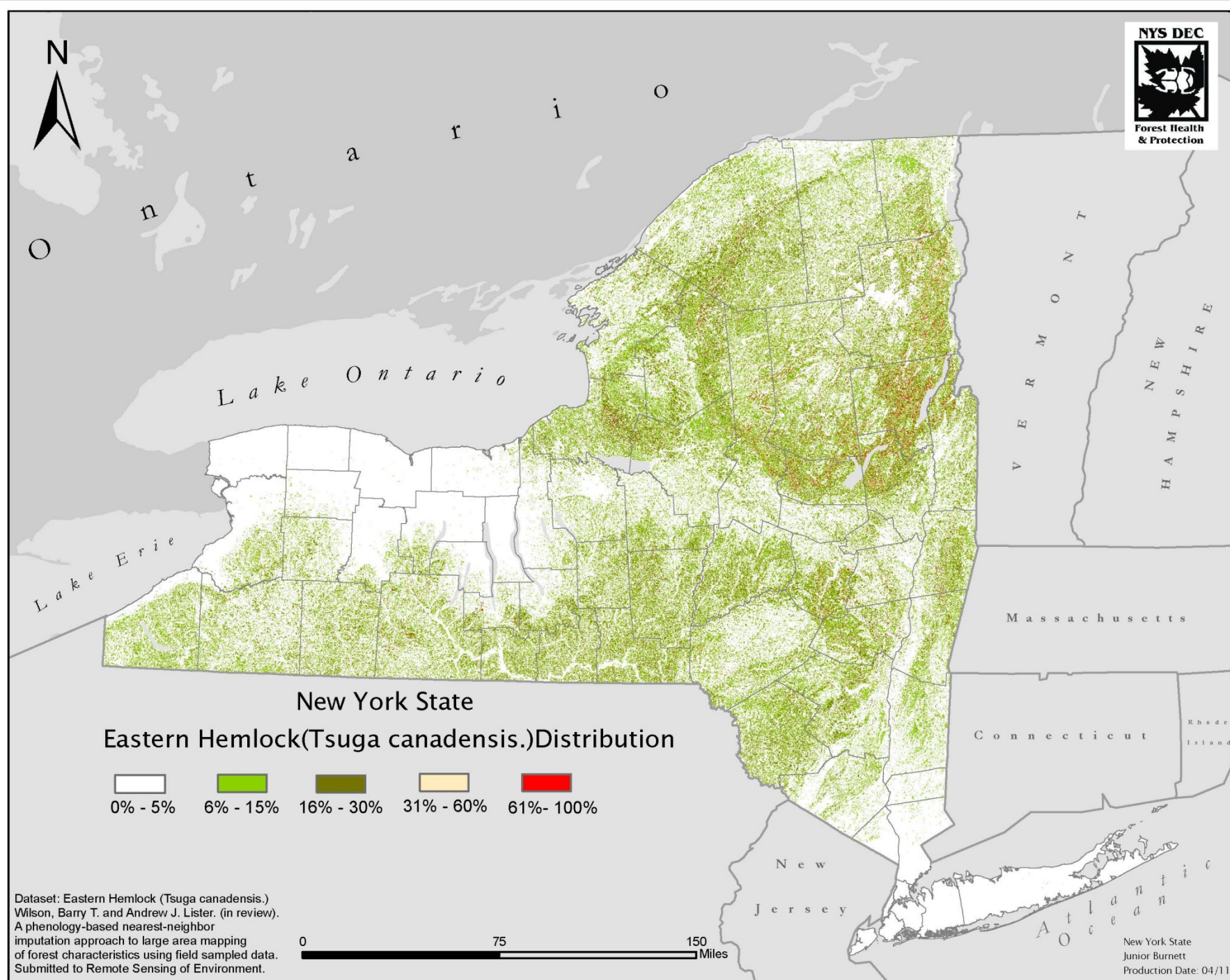
Appears as
**white, waxy,
woolly
masses** on
hemlock twigs

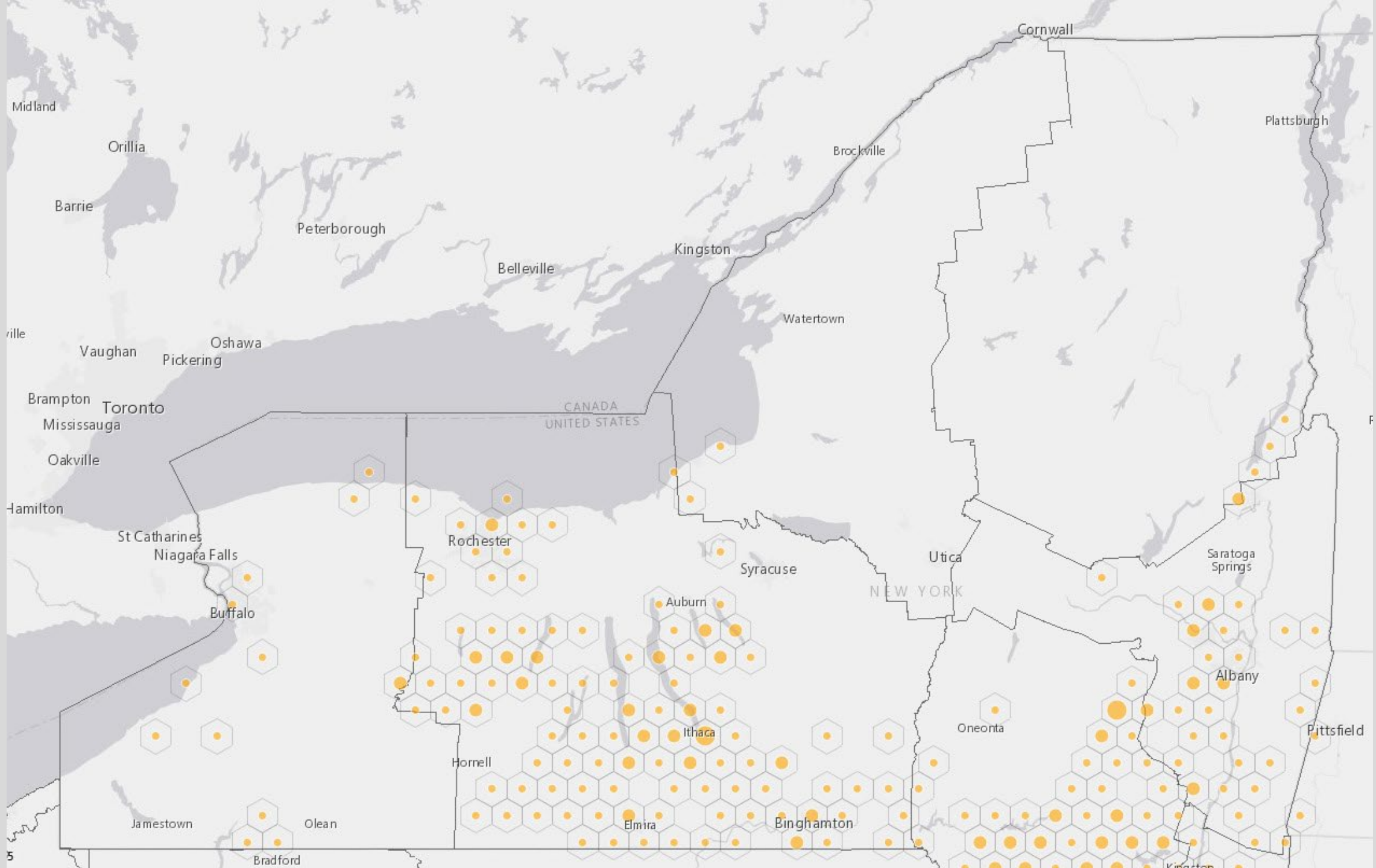


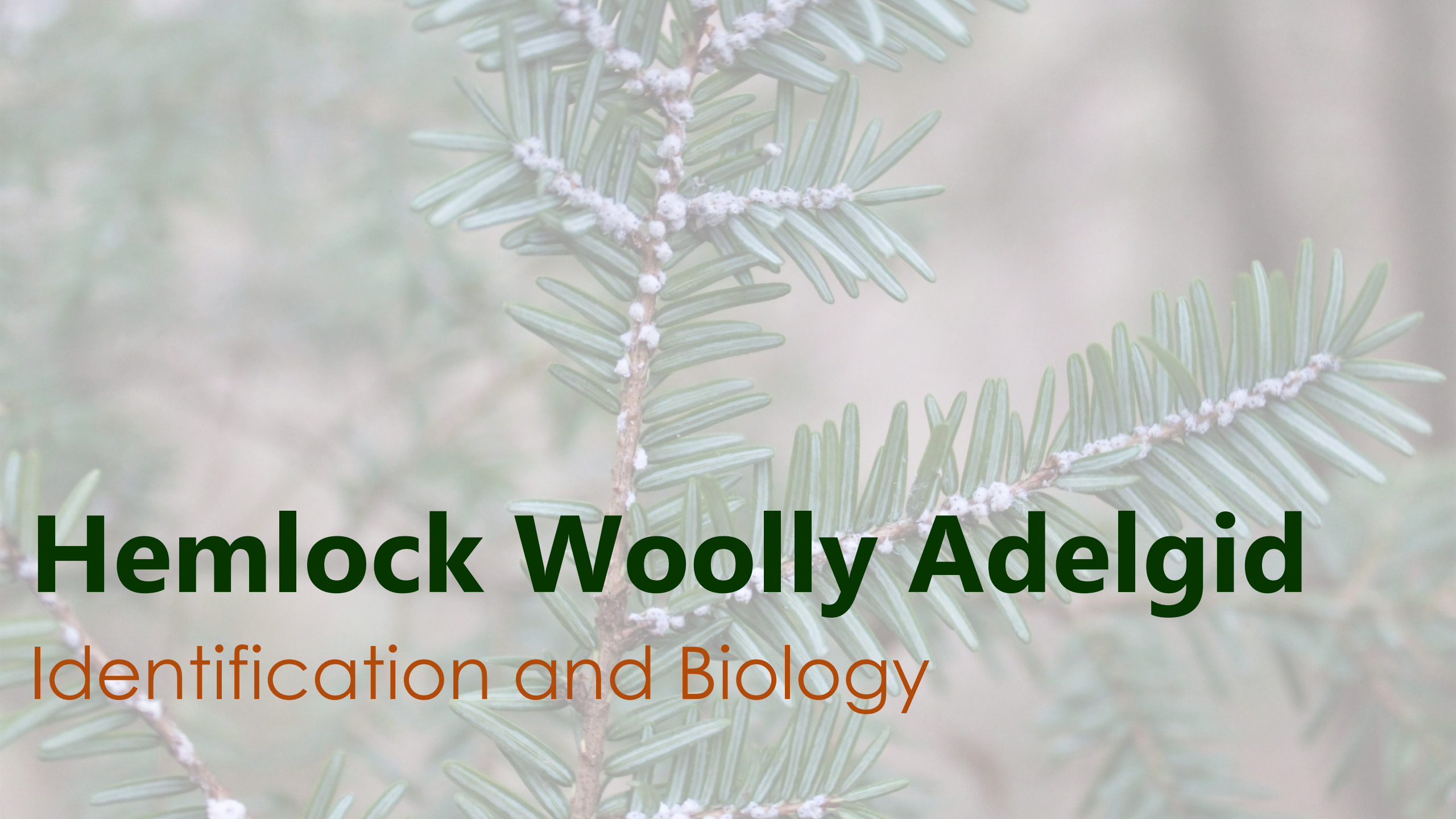
Confirmed Hemlock Woolly Adelgid in New York State by Town

1980s
HWA
enters
New York







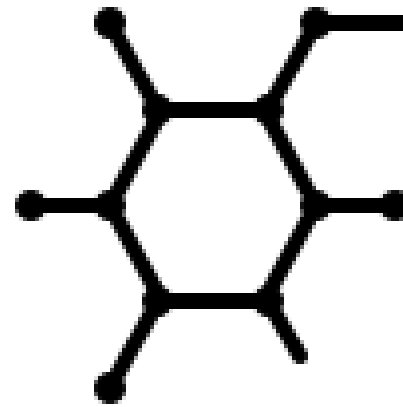


Hemlock Woolly Adelgid

Identification and Biology

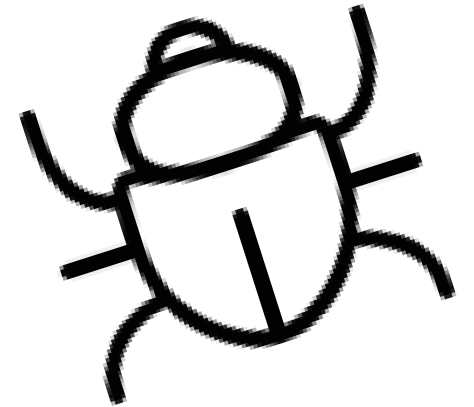


HWA Management



Chemical

Biological





Best Management Practice

Biological Control



Long-term



Landscape-scale

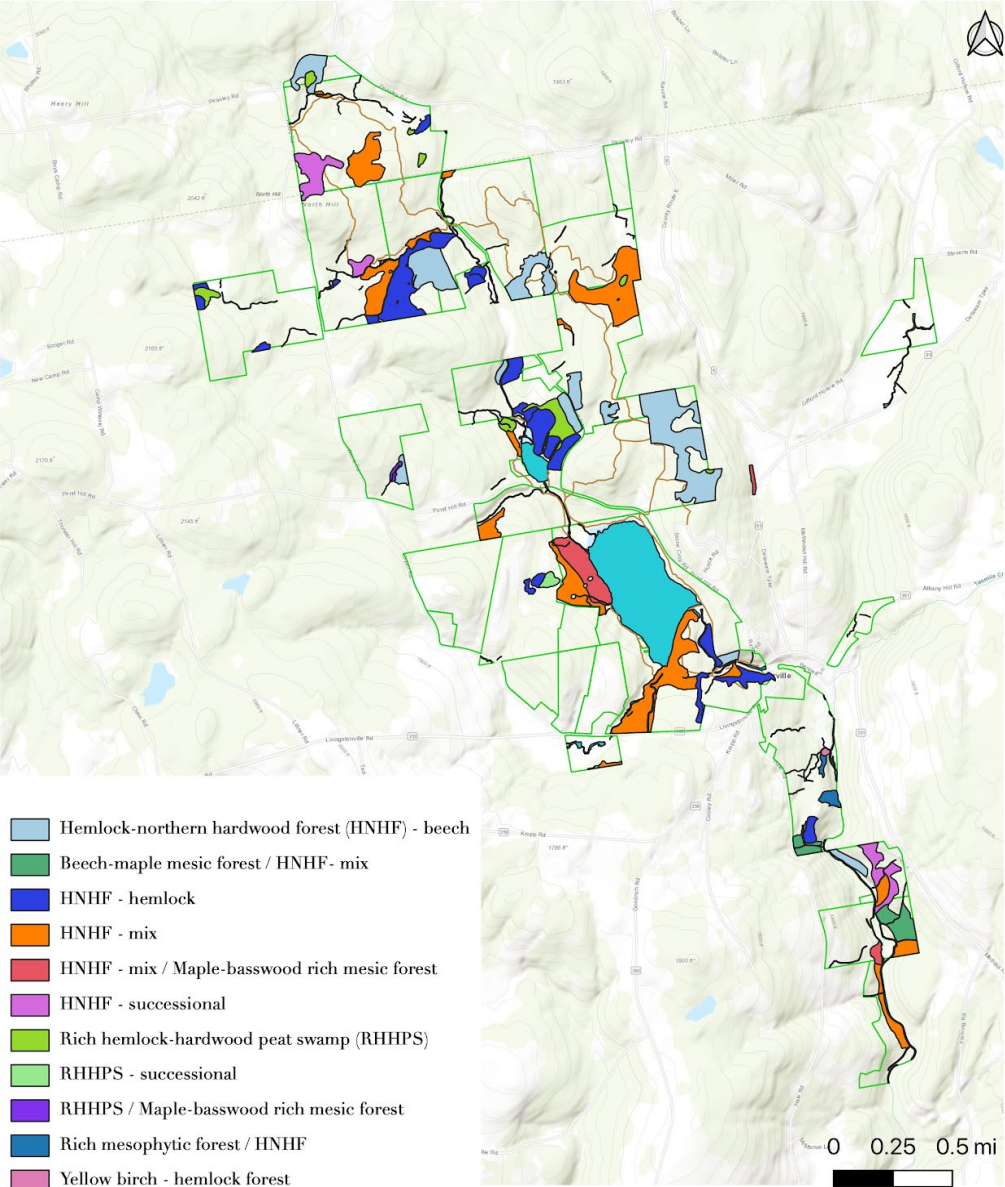
Research still in progress



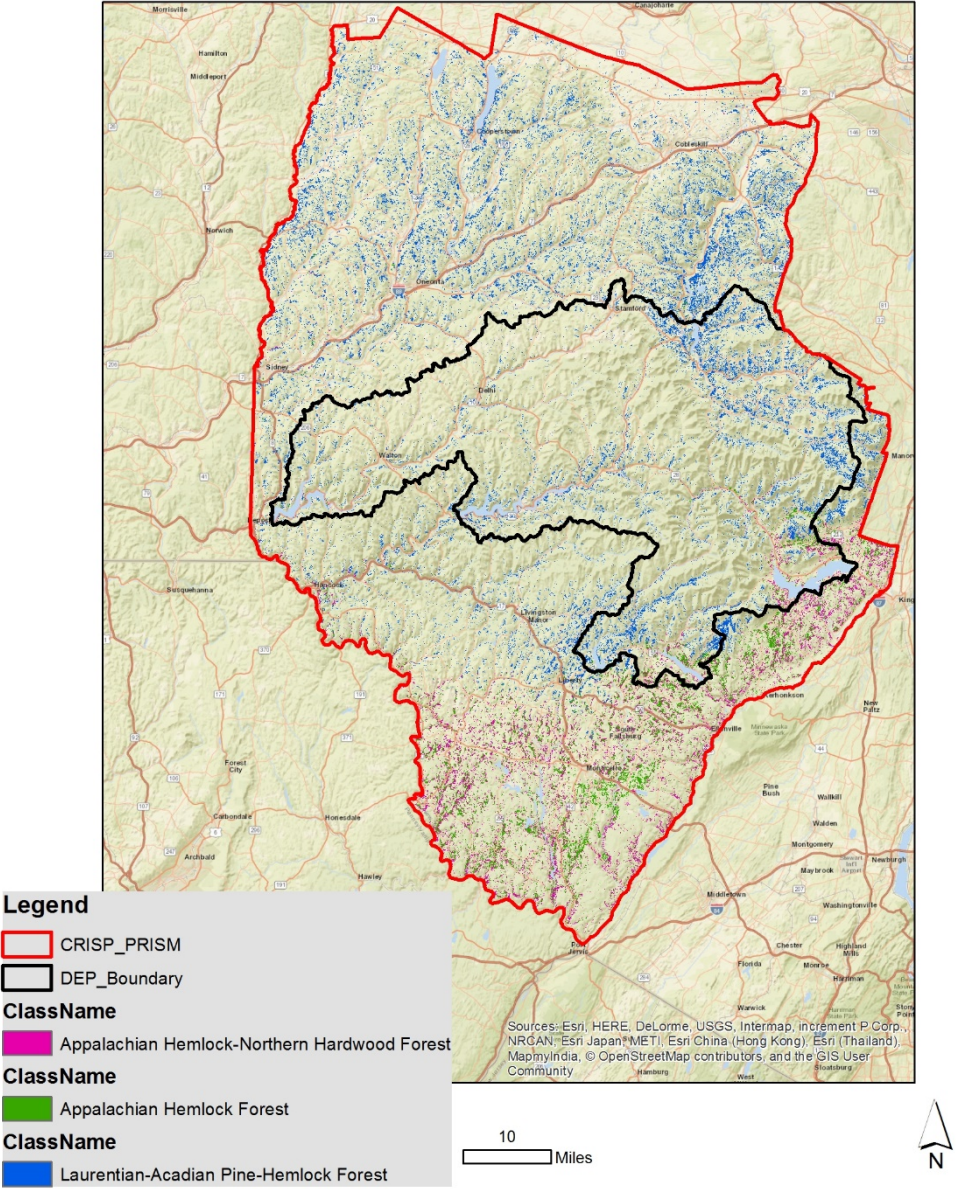
Management Planning:

Which trees to save?

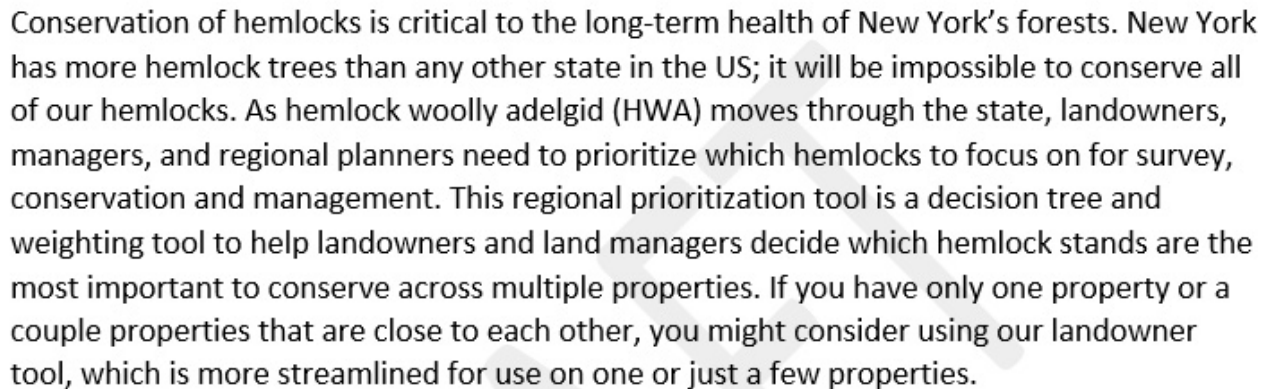
Hemlock Habitats on the Huyck Preserve



Landfire data in Catskills PRISM



Regional Prioritization of Hemlocks

[illegible]

Initial Decision Tree

- Leading edge/isolated infestations: **Treat**
- Old growth remnant: **Treat**
- Likely to be removed: **Don't treat**
- All other stands: **Rank**



How to Use Tool

- Find stands (first-pass ranking)
- Survey
- Prioritize
- Plan survey and prepare for management



What To Consider

Stand Traits

- Current stand health, size, density, isolation
- Environmental stress
- Proximity to water
- Genetic diversity

Aquatic Ecosystem Value

Terrestrial Ecosystem Value

Cultural Value

Sustainability



Photo: Kate O'Connor

What To Consider

Stand Traits

- Current stand health, size, density, isolation
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Aquatic Ecosystem Value

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Sustainability



Photo: Kate O'Connor

What To Consider

Stand Traits

Aquatic Ecosystem Value

- Coldwater fish - upland snow in headwater catchment
- Provide direct shade to water
- At-risk water quality
- Stream flashiness
- Drinking water

Terrestrial Ecosystem Value

Cultural Value

Sustainability



What To Consider

Stand Traits

Aquatic Ecosystem Value

Terrestrial Ecosystem Value

- Primary forest
- Ecosystem rarity
- Rare species
- High quality habitat
- Hemlock-dependent species
- **Steep slopes**

Cultural Value

Sustainability



Photo: Mashall Lefebvre, NYSHI

What To Consider

Stand Traits

Aquatic Ecosystem Value

Terrestrial Ecosystem Value

Cultural Value

- Political viability
- Hazard trees
- Natural/cultural resource
- Use/outreach potential

Sustainability



What To Consider

Stand Traits

Aquatic Ecosystem Value

Terrestrial Ecosystem Value

Cultural Value

Sustainability

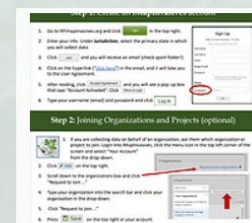
- Protection/investment risk
- Treatment feasibility
- **Climate resilience**
- Deer pressure



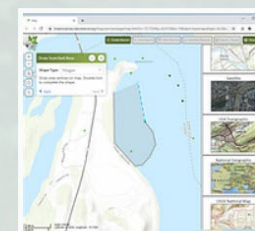
Data Management Options

- iMap Forest Pest Survey 1-2-3
- ESRI Collector
- iMap Invasives Survey Tool

Would you like to get started with iMapInvasives or learn more about advanced data entry on your own? We've created several help documents and tutorials to get you started using iMapInvasives. More resources coming soon!



Pre-training
Homework



Creating a record
online



Creating a record using
the mobile app



iMap Network Help
Docs

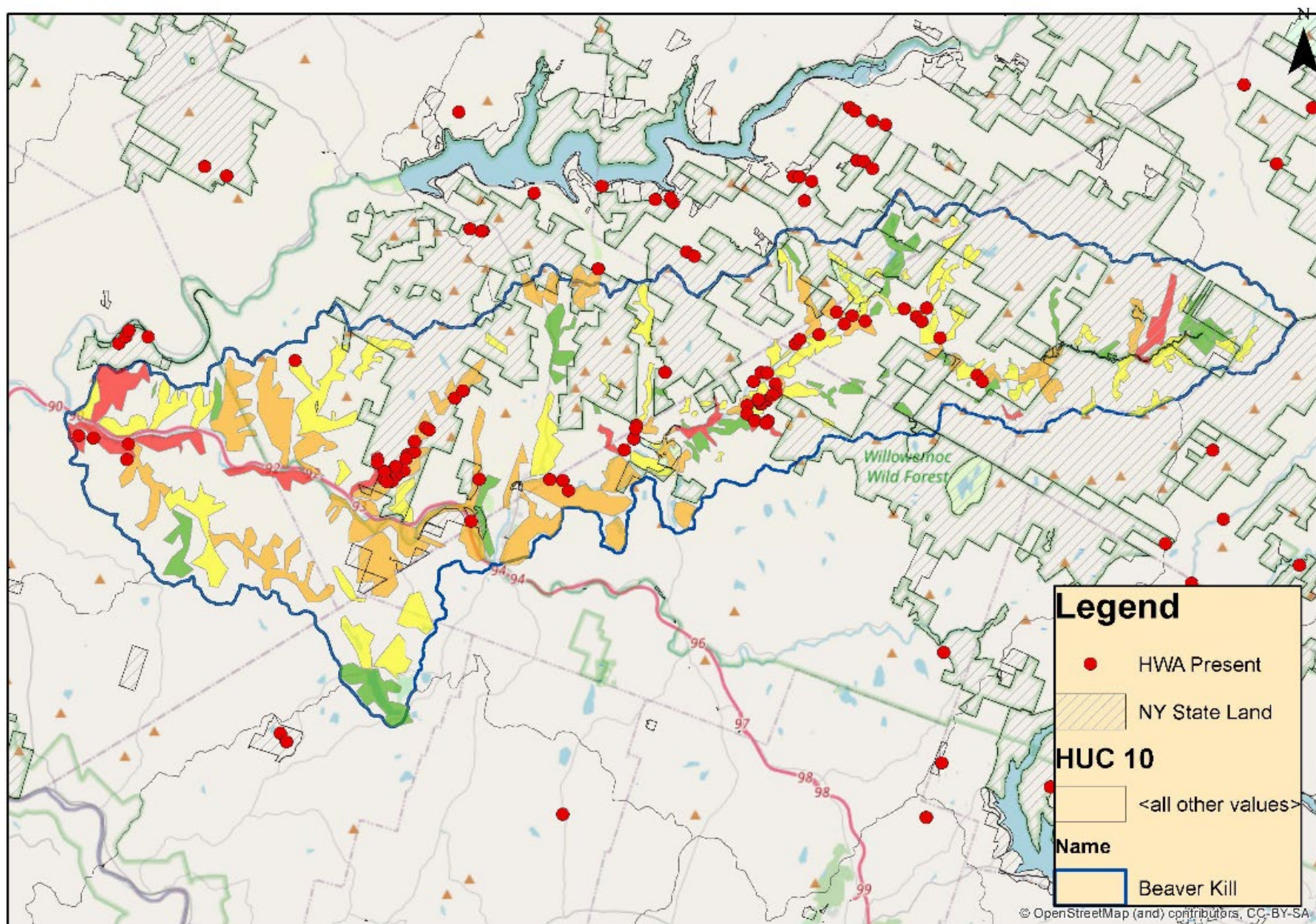


Reporting Water
Chestnut Pulls in
iMap

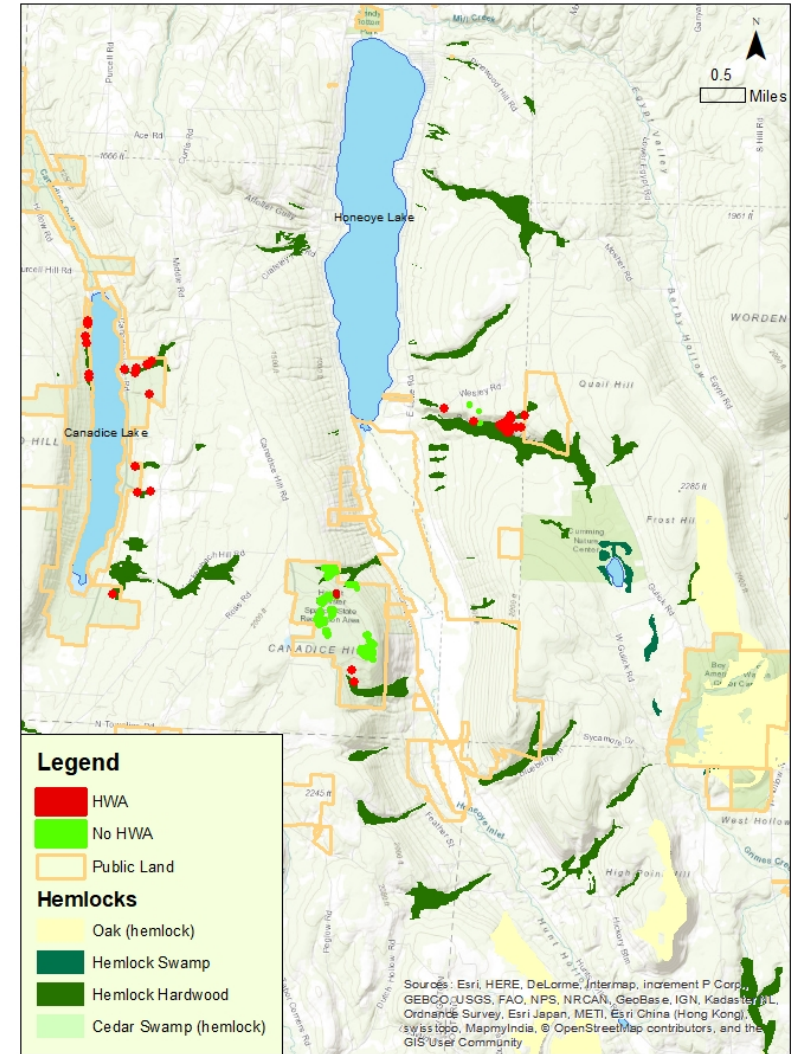
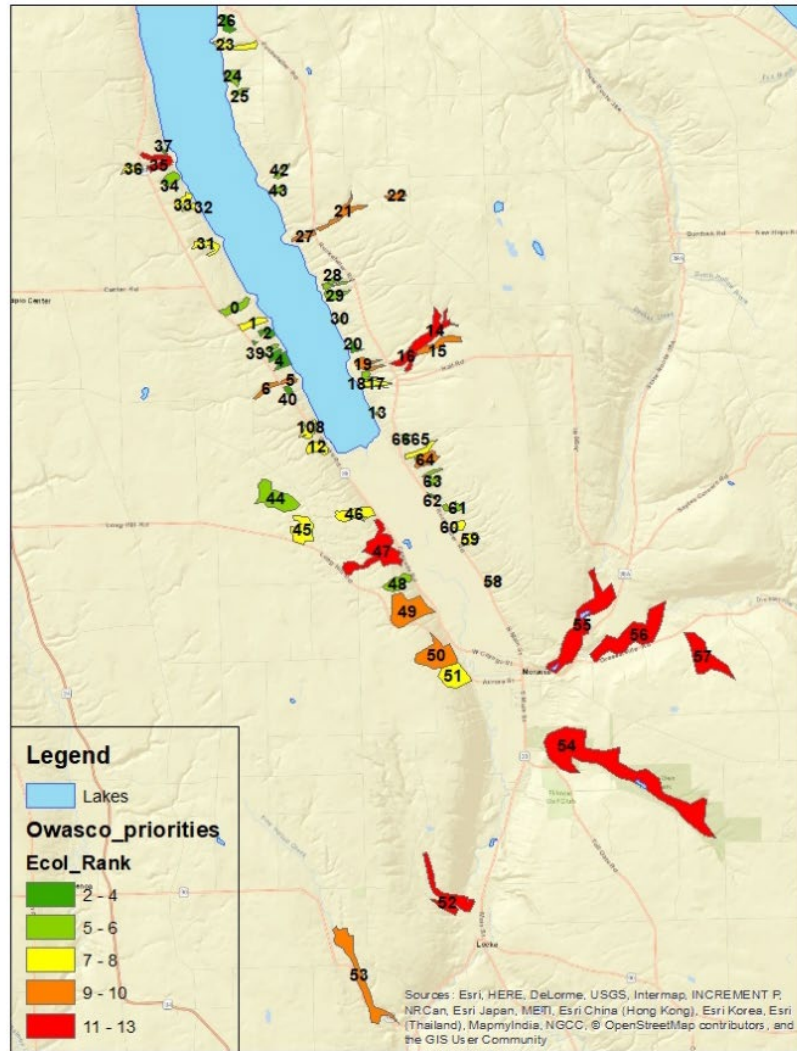


iMap Survey123
Form

Example: Beaverkill Watershed



Watershed Management





Reporting HWA Infestations

NYiMapInvasives

www.nyimapinvasives.org



- **Online interface**
- **Presence/absence**
- **Survey 1-2-3**



NYSHI's Hemlock Hunters project



Thank You!

Visit us online:

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