

Regional Forest Health Review: 23 November 2018

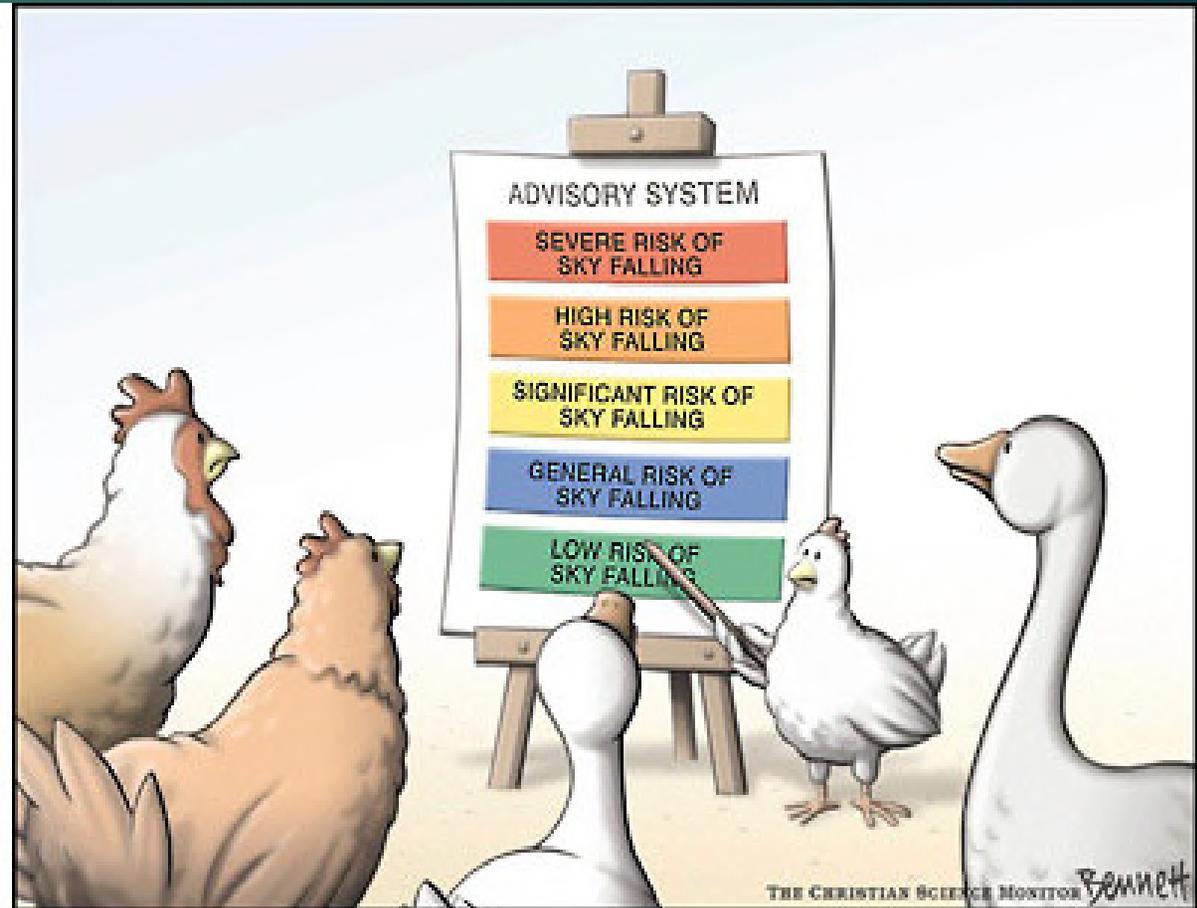
A St. Lawrence County, NY Perspective

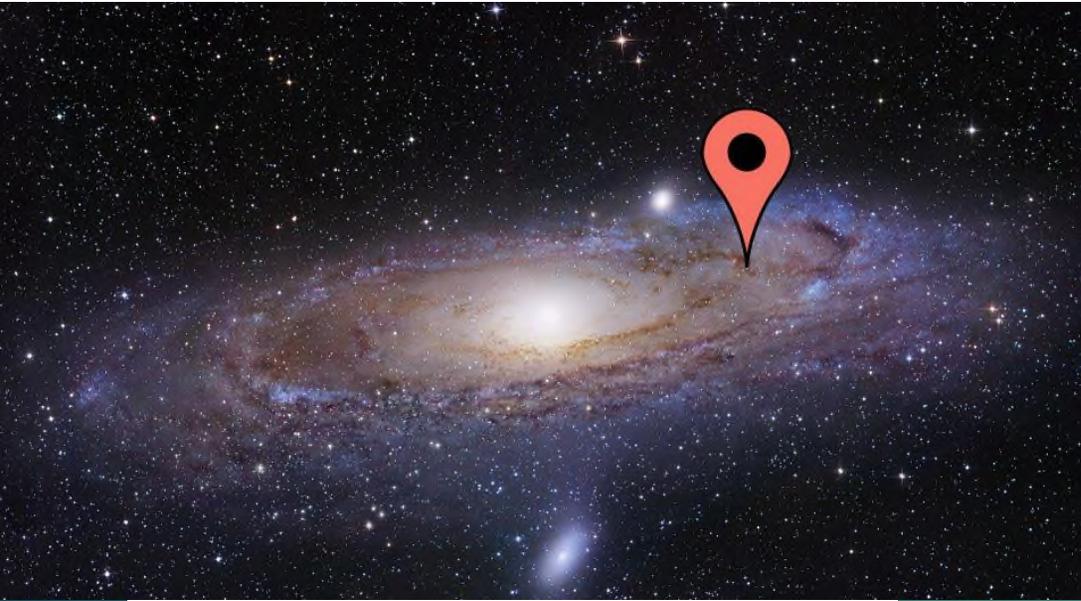
Paul Hetzler

Cornell Cooperative Extension
of St. Lawrence County

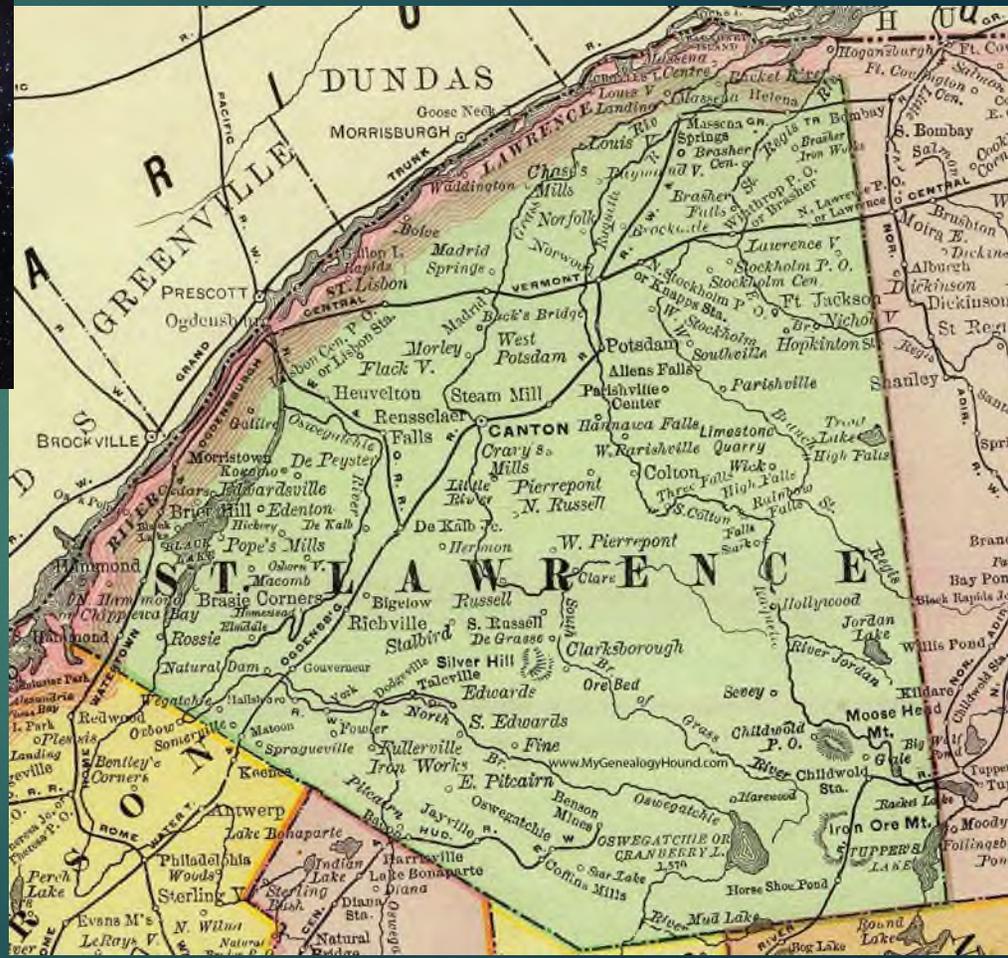
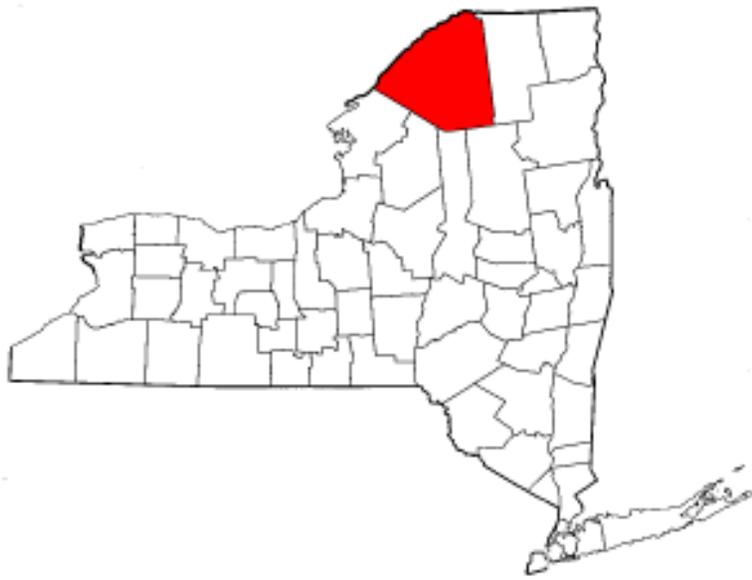
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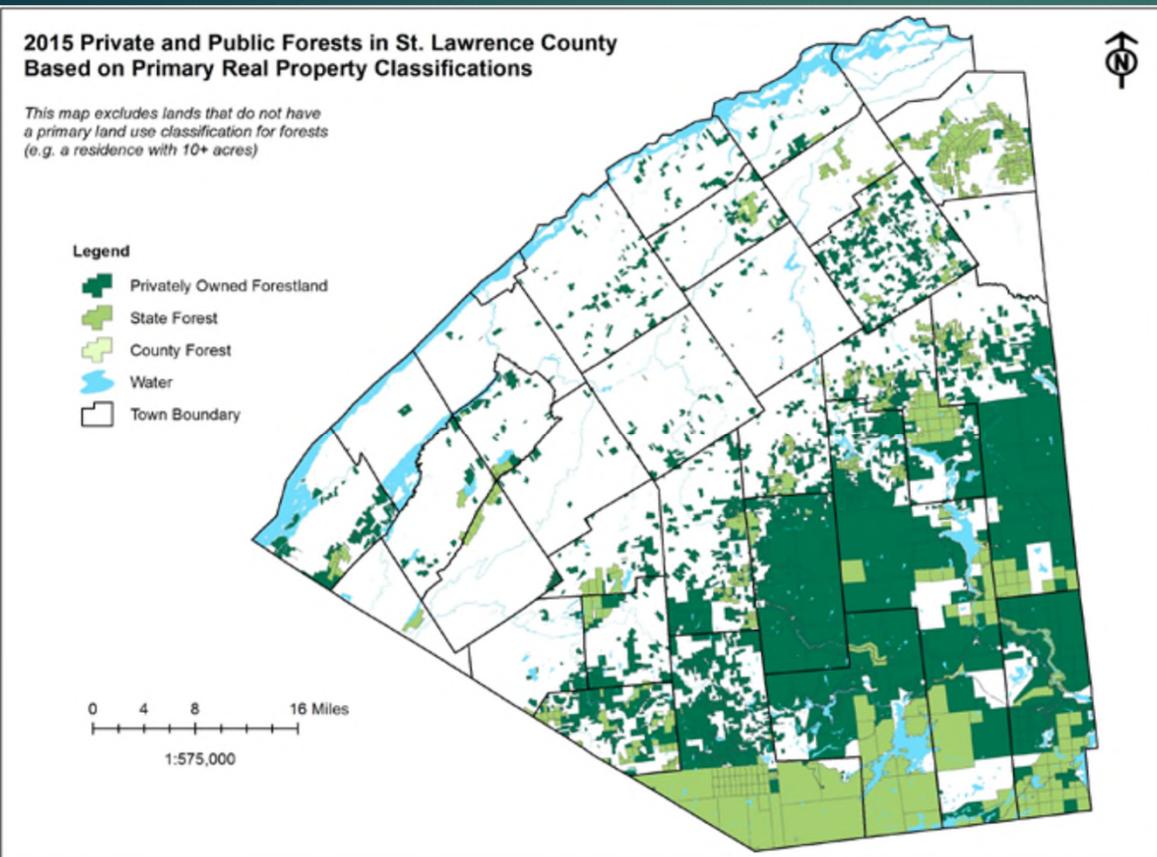




Where we are...



What we are:
7,306 Square Kilometres
109,000 somewhat square people...



About 40% forested

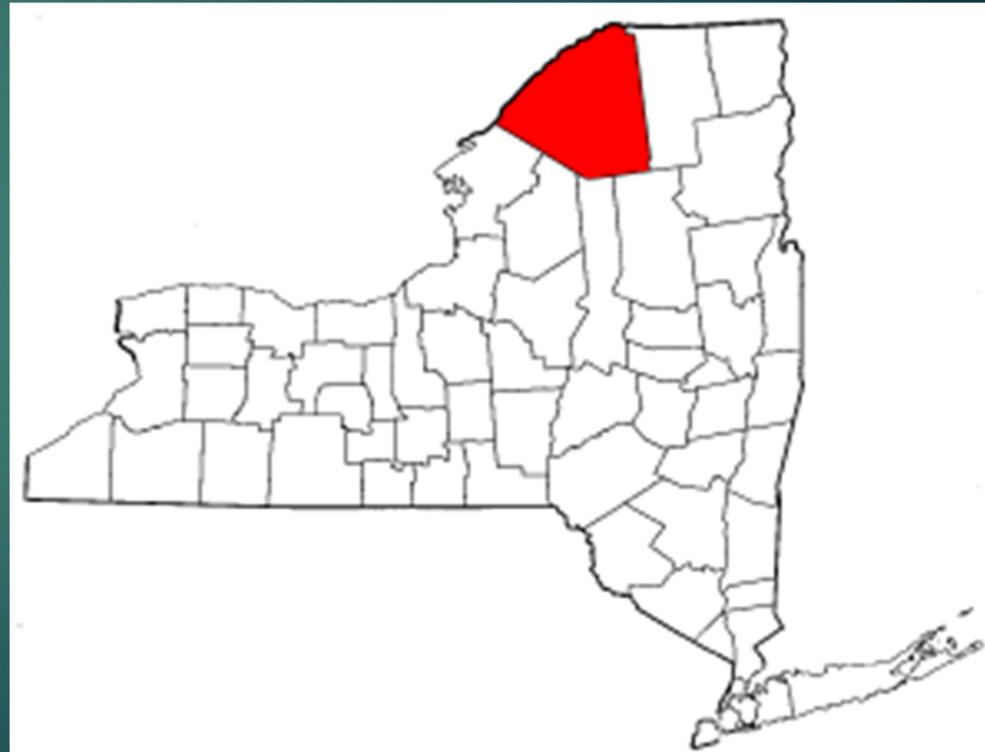
- 67% Private Land
- 32% NYS Land
- 1% SL County Land

Maple-Beech-Birch
is most common forest type

We're # 1

NYS Has more invasive forest pests than any other jurisdiction in North America...

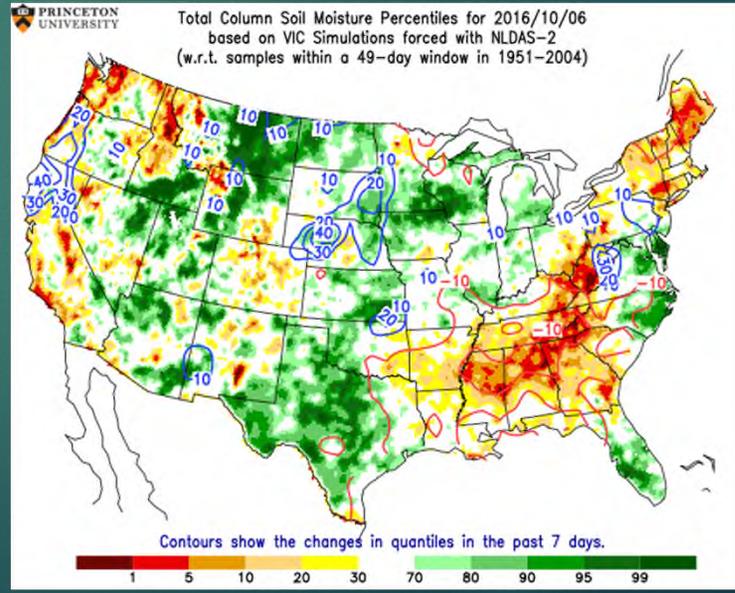
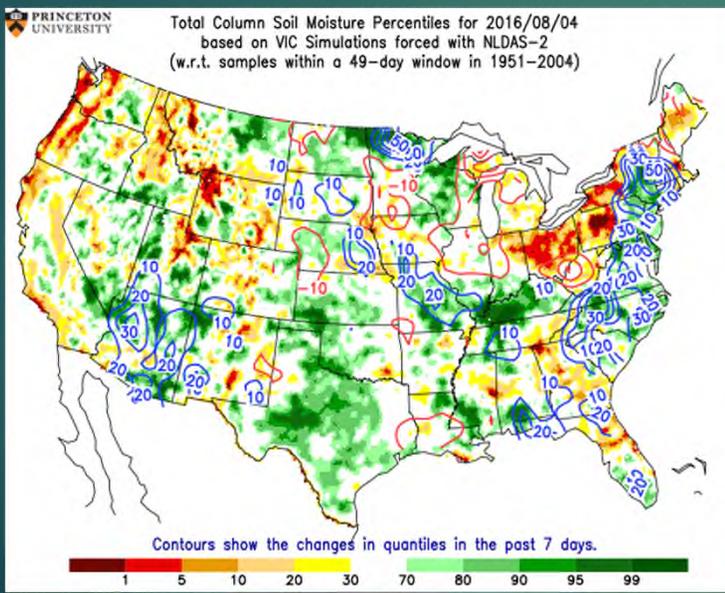
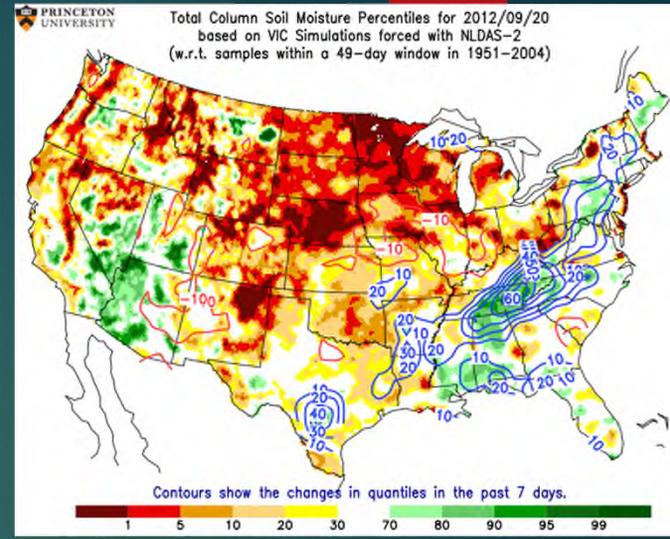
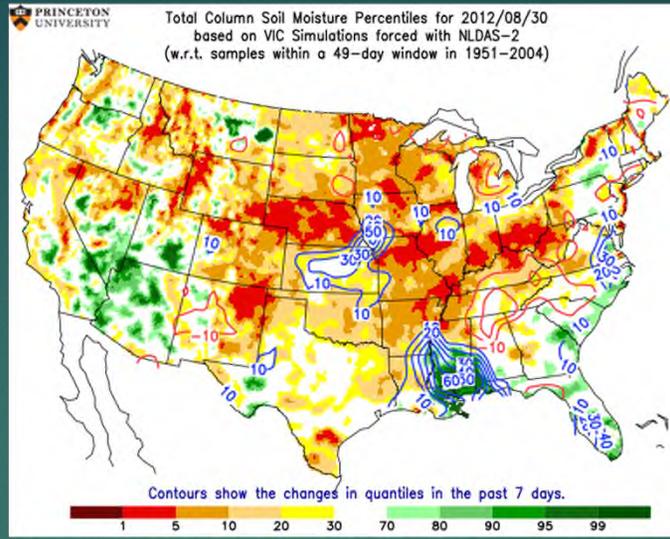
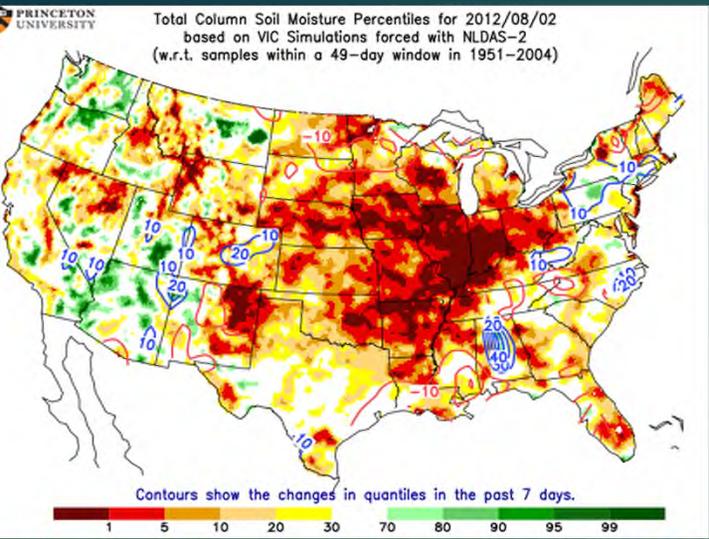
So I apologize in advance...



Species at Risk: **Hard Times for Hard Maples** **Enter Sandman**—2012 and 2016 Droughts



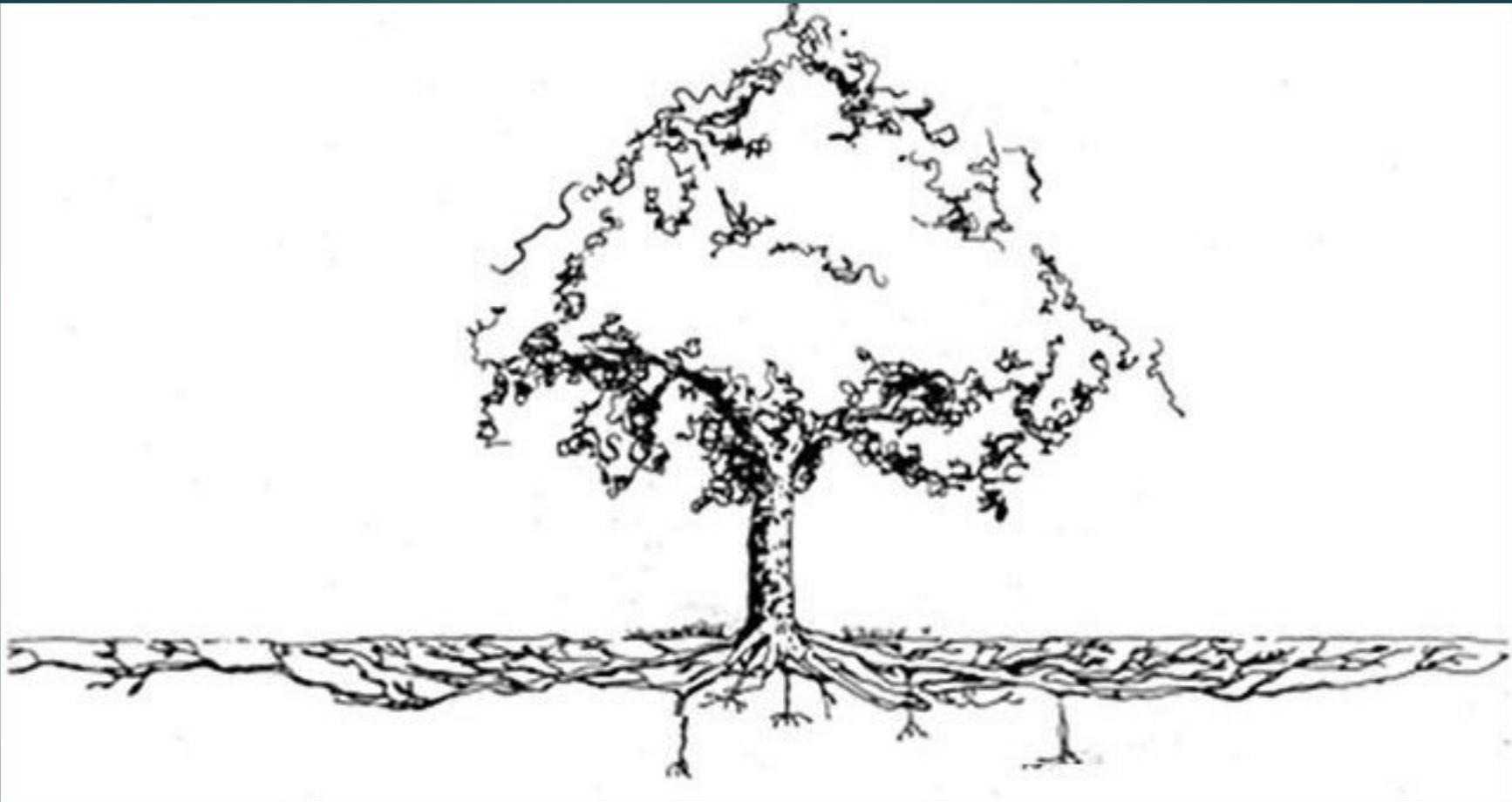
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Tree Responses to Drought

- ▶ **Root death**
- ▶ Release of stored reserves to replace tissues
- ▶ Less resistant to disease, decay (CODIT reaction)
- ▶ **Distress crop production in extreme cases**
- ▶ 2-3 year recovery period (Hudler)
- ▶ Lower sugar levels, wood production
- ▶ Altered chemical signature attracts other forest pests

Shallow & Fragile: 90% in top 25 cm.; 98% in top 45 cm.



Mystery Bleeding Canker, Summer 2013



Stress leads to helicopters.

Distress Crops in 2013, 2017 (Not “Mast Years”)



And, helicopters cause stress...



SUNY-ESF Study *Bishop et al, 21 October 2015, Ecosphere*

“The last few decades have brought warmer and wetter conditions, typically good for plant growth. Meanwhile, there have been big strides in reducing acid rain, which is especially damaging to sugar maple. Given these changes, we would expect these trees to be thriving, but they are not.”

“Outside of studies of red spruce in the 1970s, I have never seen anything quite like this. Most tree-ring studies of canopy trees in the region do not show a decline like what we see in these sugar maple. Combined with evidence of reduced natural regeneration of sugar maple in the region, it is a concern.”

More Hard Times for Hard Maples



2017 & 2018 Forest Tent-Cat & Eastern Tent-Cat Infestations

- 225,000 Acres across NNY
- Localized

How Many Caterpillars?

“During outbreaks, caterpillar biomass **greatly exceeds the collective biomass of all other animals in the forest.** Dr. Jens Roland, University of Alberta, estimated the biomass (total weight) of FTC per square kilometer of forest during the peak of an outbreak to be **equivalent to that of 657 caribou.**” Terence Fitzgerald, *The Tent Caterpillars*, 1995, Cornell Univ. Press



Cat Tents: Research indicates they are not related to tent-cats...



2017: Christmas in July

According to the NYSDEC, in excess of **200,000 acres** of FTC-defoliated maples in NNY **DID NOT REFOLIATE**. The forest looked like winter from June through October. Minus the snow...



29 July 2017



Better late than never?

October, 2017: leaf-out noted on South-facing slopes



Note proliferation of adventitious buds & terminal bud-scar spacing...Buds were mush—frozen while still succulent.

Producer reported 20% mortality across all size-classes of crop trees in 2018.



From
uninfested
tree



Maple Leafcutter

Paraclemensia acerifoliella

Ongoing infestation since 2014
Native
Not a “major” pest
Adds to chronic stress

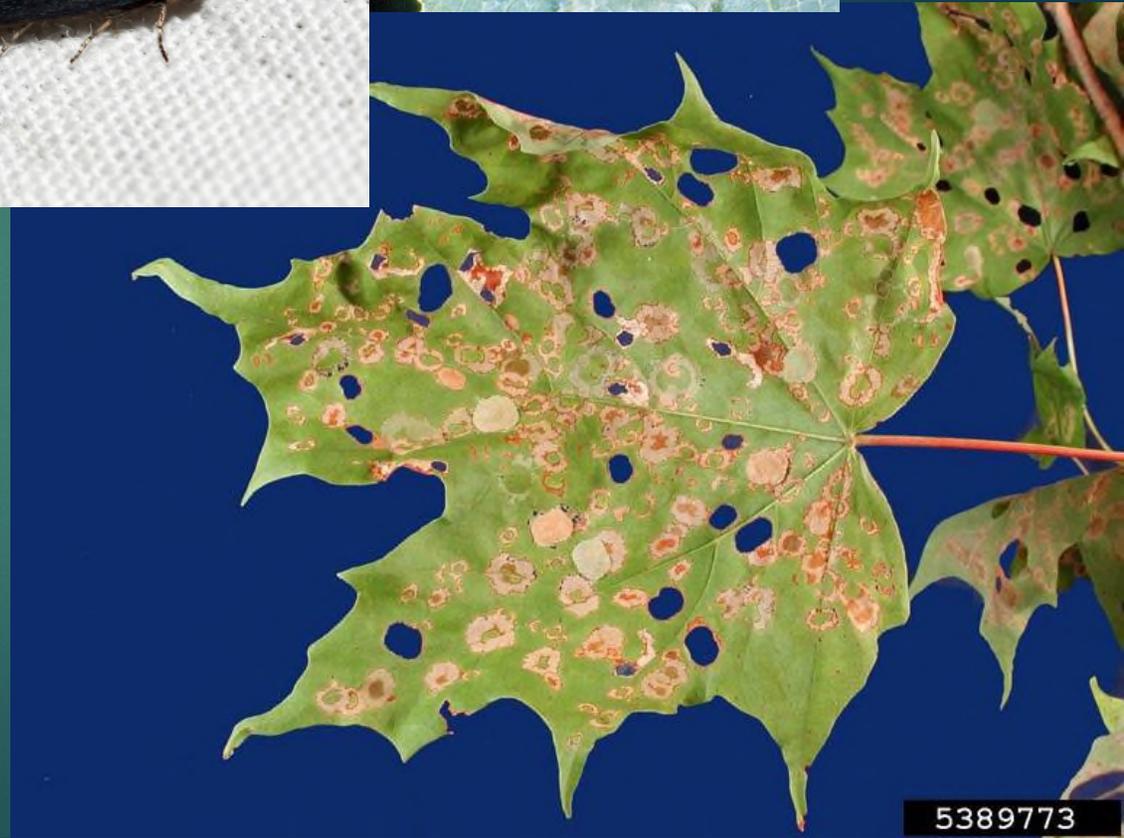




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Anecdotal stress indices:



**Most sugar maples did not
produce anthocyanins in 2018**



Widespread reports
of poor/ nonexistent
tap-hole closure this
year and last.





Too close for comfort:

Spotted Chinese
Lanterns = Good.



**Spotted
Chinese
Lanternfly =
Bad.**



2018: **Five** specimens found in NYS!
Monroe, Yates, Dutchess, Rockland Counties

SLF is planthopper (Hemiptera), commuter, overwhelms tree





SLF may or may not require *Ailanthus* for successful reproduction...fingers crossed!

Host Range Study (>30 species total)

Everyone loves maple! Unfortunately.

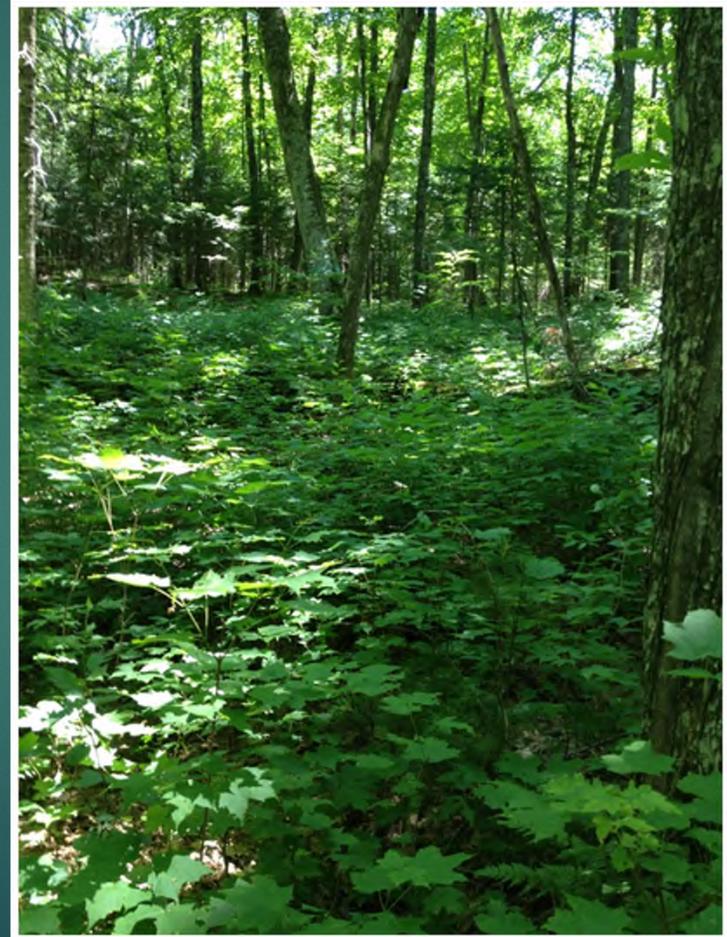
Species	<i>n</i>	Mean SLF/Tree
<i>A. platanoides</i>	4	46.5
<i>A. saccharum</i>	15	16.667
<i>Ailanthus</i>	69	80.145
<i>B. lenta</i>	14	77.857
<i>F. americana</i>	9	34.778
<i>J. nigra</i>	2	44.5
<i>L. tulipifera</i>	11	31.091
<i>N. sylvatica</i>	4	81

Table 2. Average number of SLF present per tree for eight non-*Ailanthus* tree species.



New finding:

Forest managers should ask themselves if they have worms...



Jumping worms in the genus *Amyntas*
have reached northern forest ecosystems.
2013-Wisconsin
2016-Québec
2018-St. Lawrence County





Amynthas spp.
Jumping Worm, Crazy Worm, Snake Worm, Alabama Jumper

Characteristics

- Darker in color – appearing almost gray
- Glossy smooth skin
- Light milky white clitellum smooth to the body
- Very active, thrashing and jumping
- Moves like a snake
- Sheds its tail when handled
- Parthenogenic – asexual reproduction so it only takes one worm to start a family.

Fun Fact: They're Toxic.

- Snake-worms are able to kill off all other species of earthworms. The mechanism is not known.
- Birds, reptiles, amphibians and other predators will spit out Amynths, or at least not eat a second helping.

Jumping-Worm Research in Québec:

Jean-David Moore, ing.f., M. Sc.

Chercheur scientifique

Direction de la recherche forestière

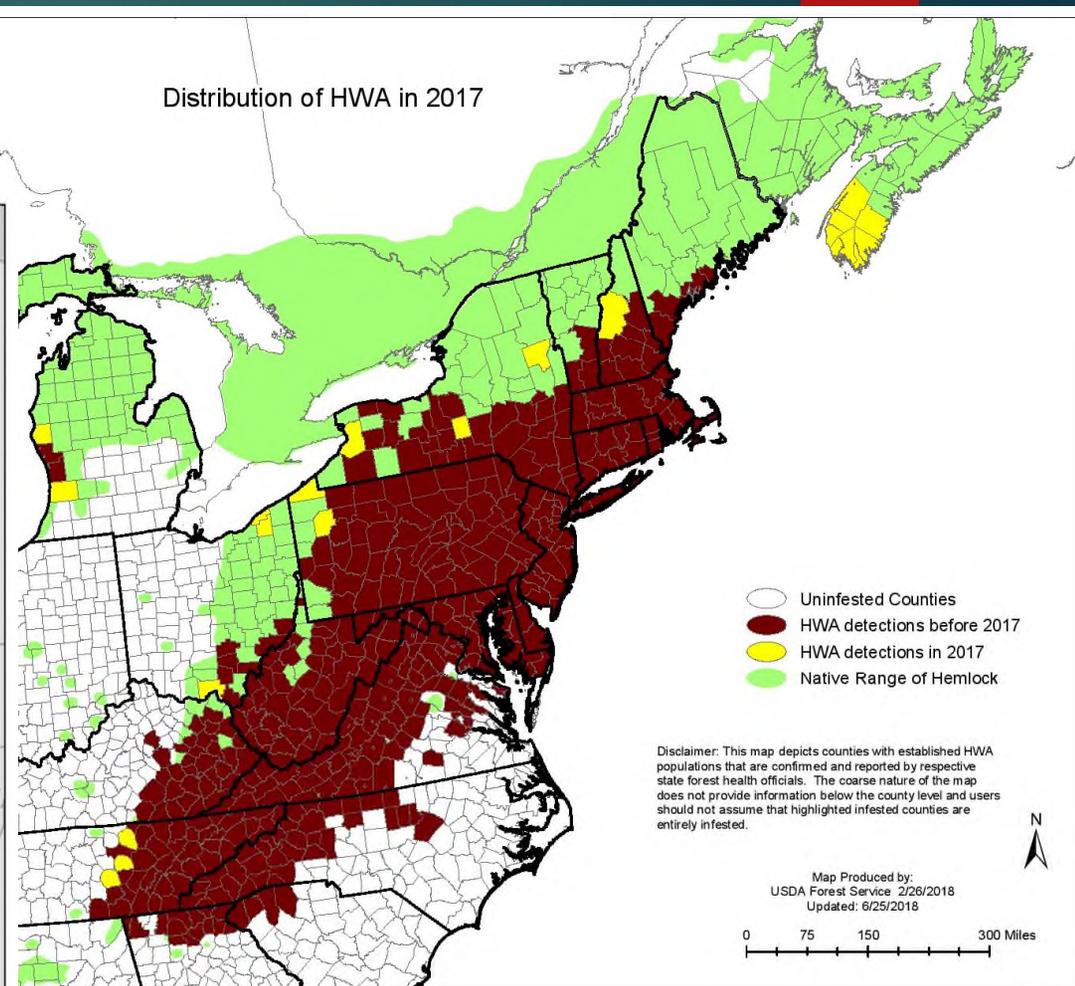
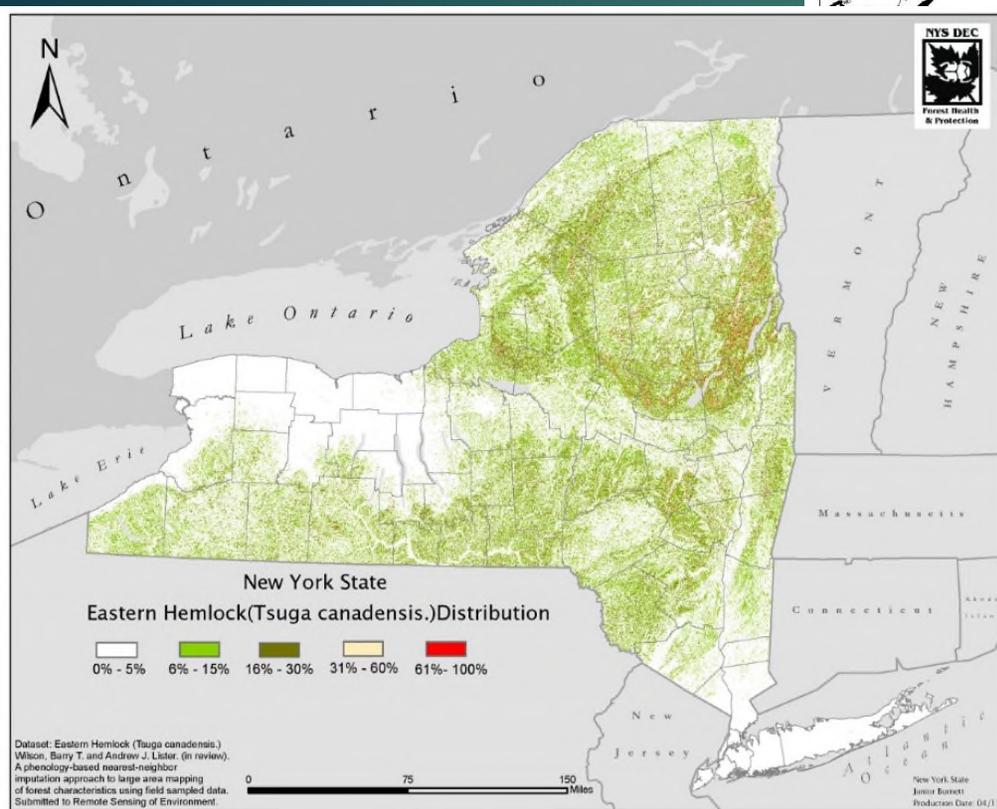
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Hemlock Woolly Adelgid



Hemlock Woolly Adelgid New York State 1987



0 25 50 100 Miles

New York State Department of Environmental Conservation
Division of Lands and Forests, Forest Health Unit





St. Lawrence County Extension and The Hemlock Institute will hold a Hemlock Woolly Adelgid training in mid-January, date TBA. The class will focus on biocontrols, and will include a hands-on HWA monitoring component. We will send out an announcement as soon as plans are confirmed.

If you see signs & symptoms of HWA, report the sightings to:

- The Canadian Food Inspection Agency (CFIA)
www.inspection.gc.ca/pests
- The Invading Species Hotline 1-800-563-7711
- Report it on EDDMapS
Ontario *<https://www.eddmaps.org/ontario/>*
- For more information on HWA, visit:
<http://forestinvasives.ca/>

Emerald Ash Borer

St. Lawrence County convened EAB Task Force in January 2015.

St. Regis Mohawk Foresters trapped a single EAB in August 2016.

Volunteers trapped a single EAB adult in August 2017 near Hammond, opposite Mallorytown ON.

Volunteers found >50 EAB larvae in trap (sentinel) tree in December 2017 near Massena, opposite Guindon Park/ Riverdale ON.

Volunteers trapped EAB adults in 3 more SL County locations in July and August 2018. One specimen was a distance from the seaway. This year's sentinel trees have yet to be checked.

EAB infestation on southern Jefferson County border confirmed 2018.

EAB Biological Control Program

- Introduce predators from native range of a pest
- Long range and sustainable
- Four specialized wasps (parasitoids) introduced to North America



Larval Parasitoids



Spathius agrili



Spathius galinae



Tetrastichus planipennis

Egg Parasitoid



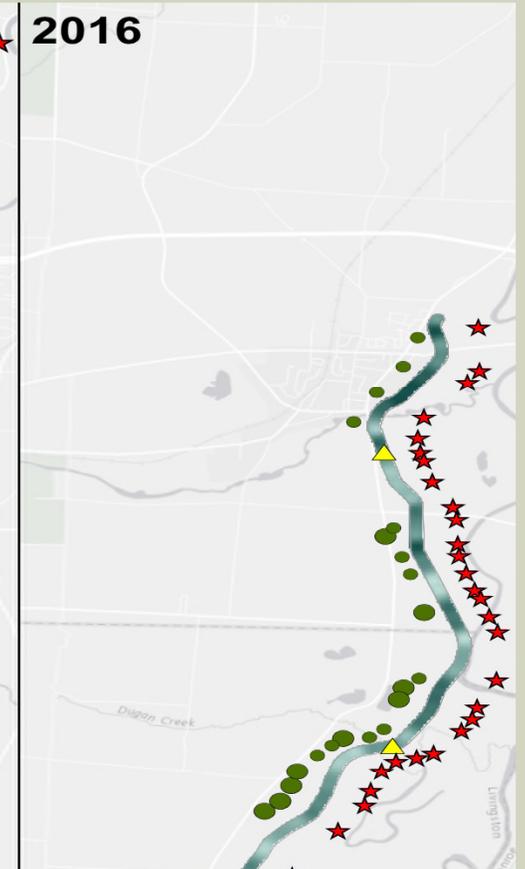
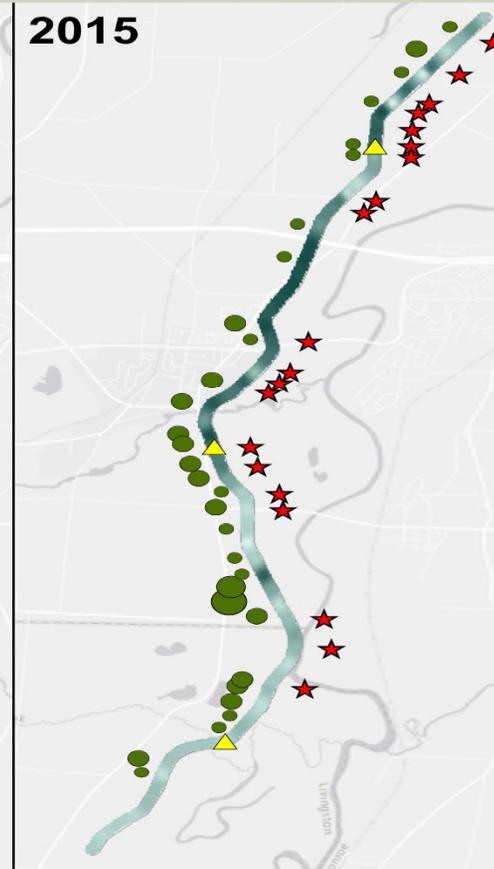
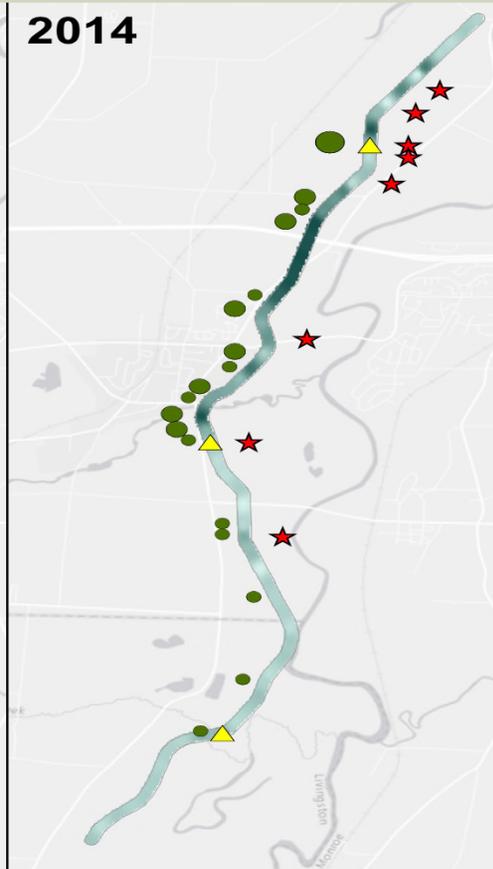
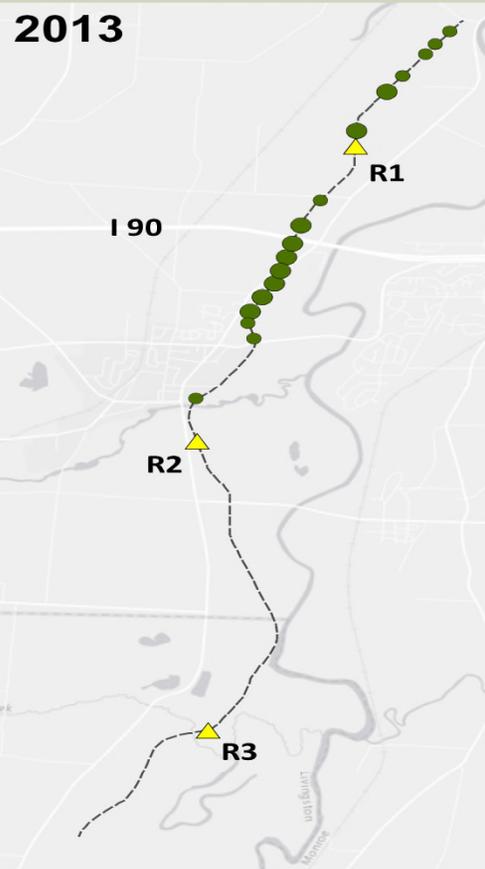
Oobius agrili

2013

2014

2015

2016



EAB Caught

- 1
- 2 - 10
- 11 - 20
- 21 - 35

- ★ *T. planipennisi*
- ▲ Parasitoid Release

EAB Infestation Rating



N

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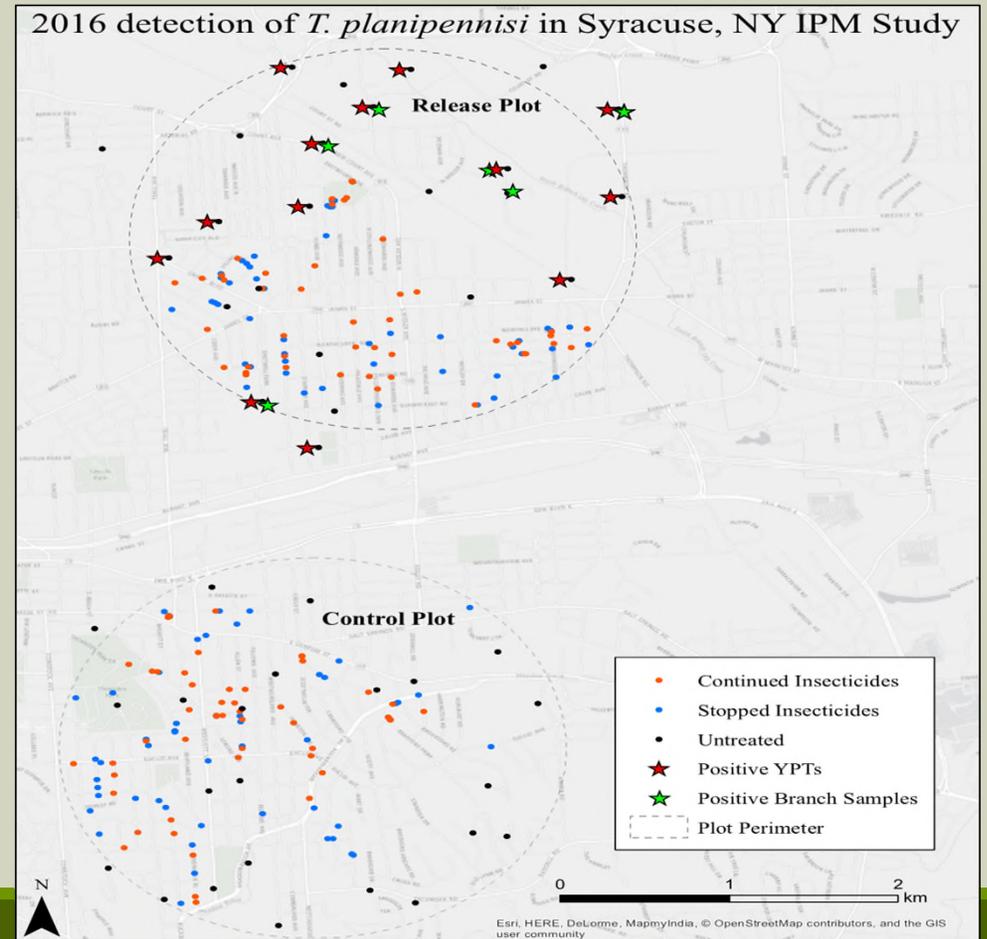


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Biological Control and Insecticide Use



Tetrastichus planipennis



Other Bad Meteorological News:

- ▶ Conifer needlecast has become an apparent primary cause of mortality –all species, white pine seems worst-hit.
- ▶ Balsam woolly adelgid has become a primary pest
- ▶ 2018—new oak wilt outbreak in Canadaigua, NY

Other strategies:

Wear
hardhats
at all
times.



THE SKY IS FALLING!!!

THE SKY IS FALLING!!!

