

Beech Leaf Disease*

* and a few other items

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Beech Leaf Disease

A new disease
for Connecticut

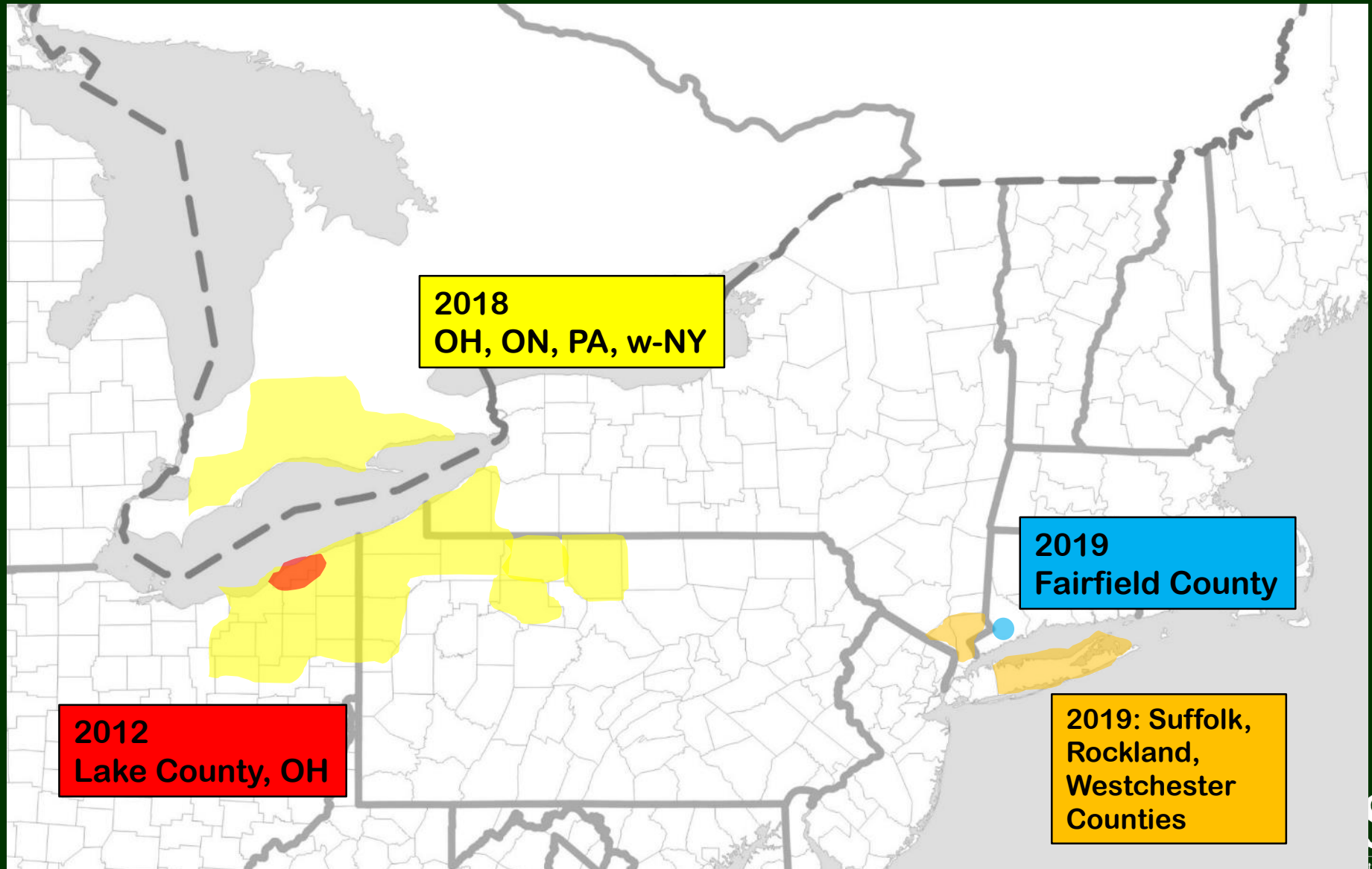


Beech Leaf Disease

- Lake County, Ohio, 2012
- 2018:
 - 24 OH counties
 - 8 western PA counties
 - Western NY
 - Southern ON
- 2019:
 - CT
 - Fairfield County
 - New York
 - Westchester County
 - Rockland County
 - Suffolk County



BLD Distribution



Beech Leaf Gall

- Japan: Beech leaf gall
- Observed in 2004 on Honshu Island, Japan
- Associated with “leaf gall nematode”
- *Litylenchus crenatae* (Kanzaki et al. 2019)
- Found only on Japanese beech (*F. crenata*)
 - Not ornamental American or European beeches growing nearby



Photo: Kanzaki et al.

Beech Leaf Disease

North America

- American and European beeches
 - Symptoms not found on Japanese beeches growing nearby in Holden Arboretum (OH)
- 2019: nematodes = *Litylenchus crenatae* subsp. *mccannii*
 - Morphology
 - DNA sequencing
 - Japanese: *L. crenatae* subsp. *crenatae*



Photos: J. LaMondia

Beech Leaf Disease

Disease Progression

Late season:

- Banding thickens, hardens

Subsequent seasons:

- Aborted bud development
- Thinning of canopy
- Mortality in 2-5 yrs in diseased saplings



Beech Leaf Disease

Transmission

Little is known

Foliar (Anguinid) nematodes:

- Local movement in water film
- Long distance on insects, mites, birds
- Beech nuts?
- Overwinters in buds?



Beech Leaf Disease

2020:

- Continue surveys:
 - Revisit last year's positive sites
 - Scout new sites to track spread
- BOLO Alerts to arborists and foresters

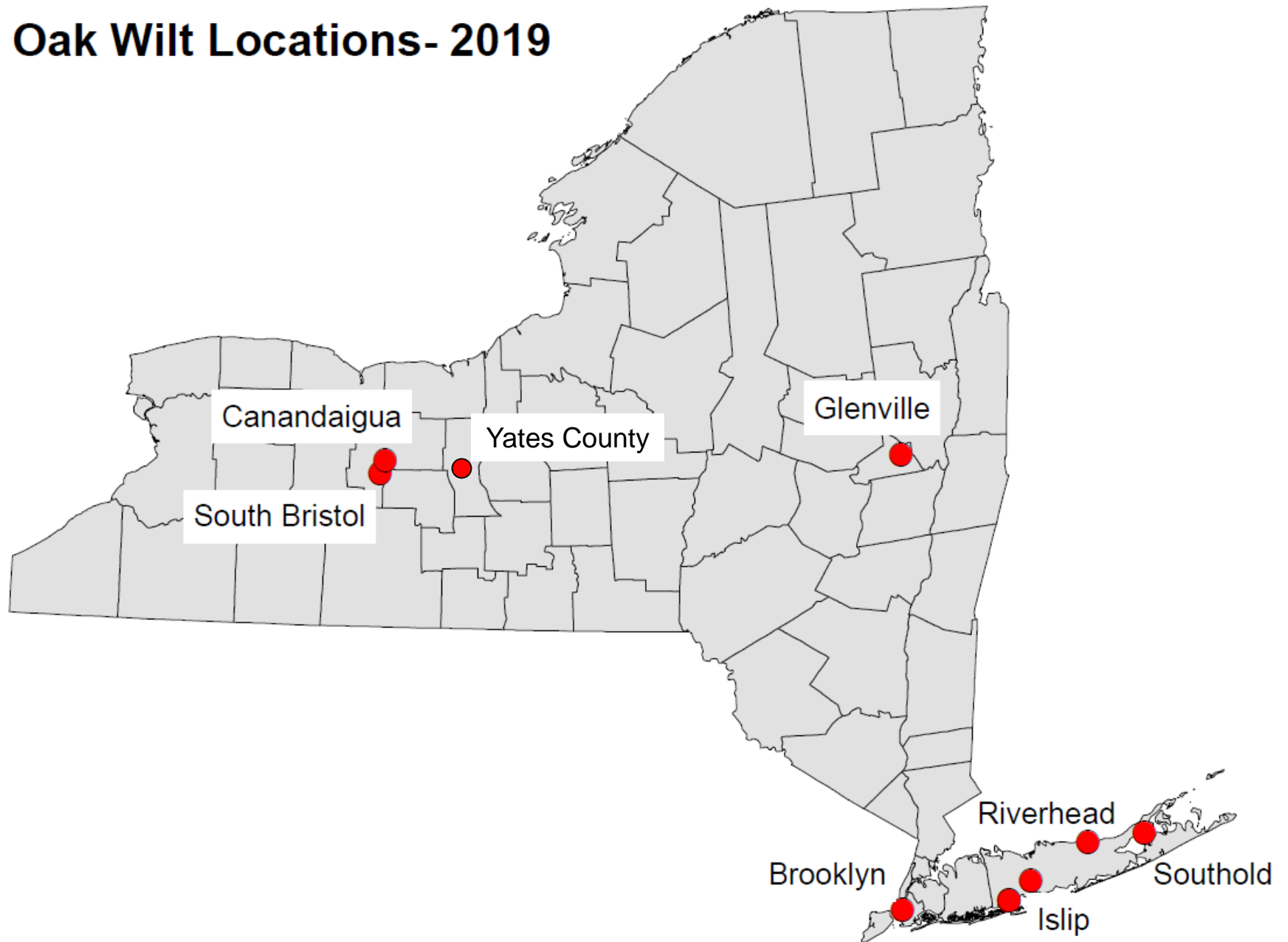


Oak Wilt

- First identified in Wisconsin in 1944
- Now in 21 states
- Vascular Wilt
- Aggressive disease caused by *Bretziella fagacearum*
 - Ascomycete fungus;
 - Formerly known as *Ceratocystis fagacearum*
 - Systemic, xylem-limited;
 - Spreads rapidly through vessels;
 - Disrupts water transport.



Oak Wilt Locations- 2019



Oak Wilt: Hosts

All oaks are susceptible

- Red Oak Group: most susceptible
- White Oak Group: less susceptible than red
- Other hosts
 - Chestnut
 - Chinkapin
 - Tanoak
 - Some apple varieties

Oak Wilt: Red Oak Group

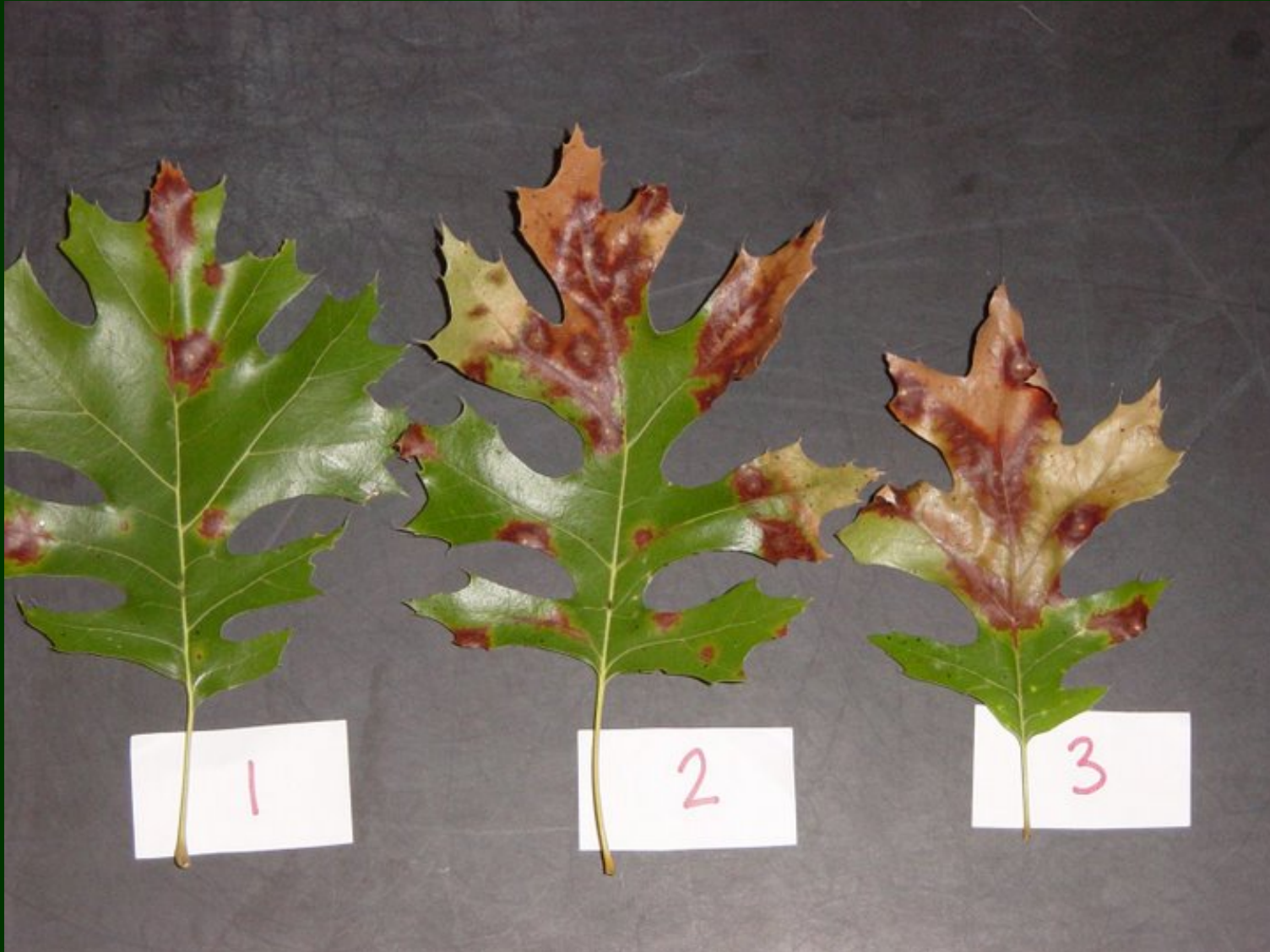
- Rapid leaf discoloration
 - beginning early summer
 - Browning along tips and margins
- Wilt and defoliation
 - From top of tree and downward
 - Defoliation within 3-4 wks of symptom onset
 - Typically while still partially green

Oak Wilt: Red Oak Group

- Twigs and branches
 - Brown streaks in sapwood
 - Outermost annual ring completely brown
- Fungal mats under bark; erupts following spring
- Death of tree: within 6 months
 - As little as 3 weeks after infection

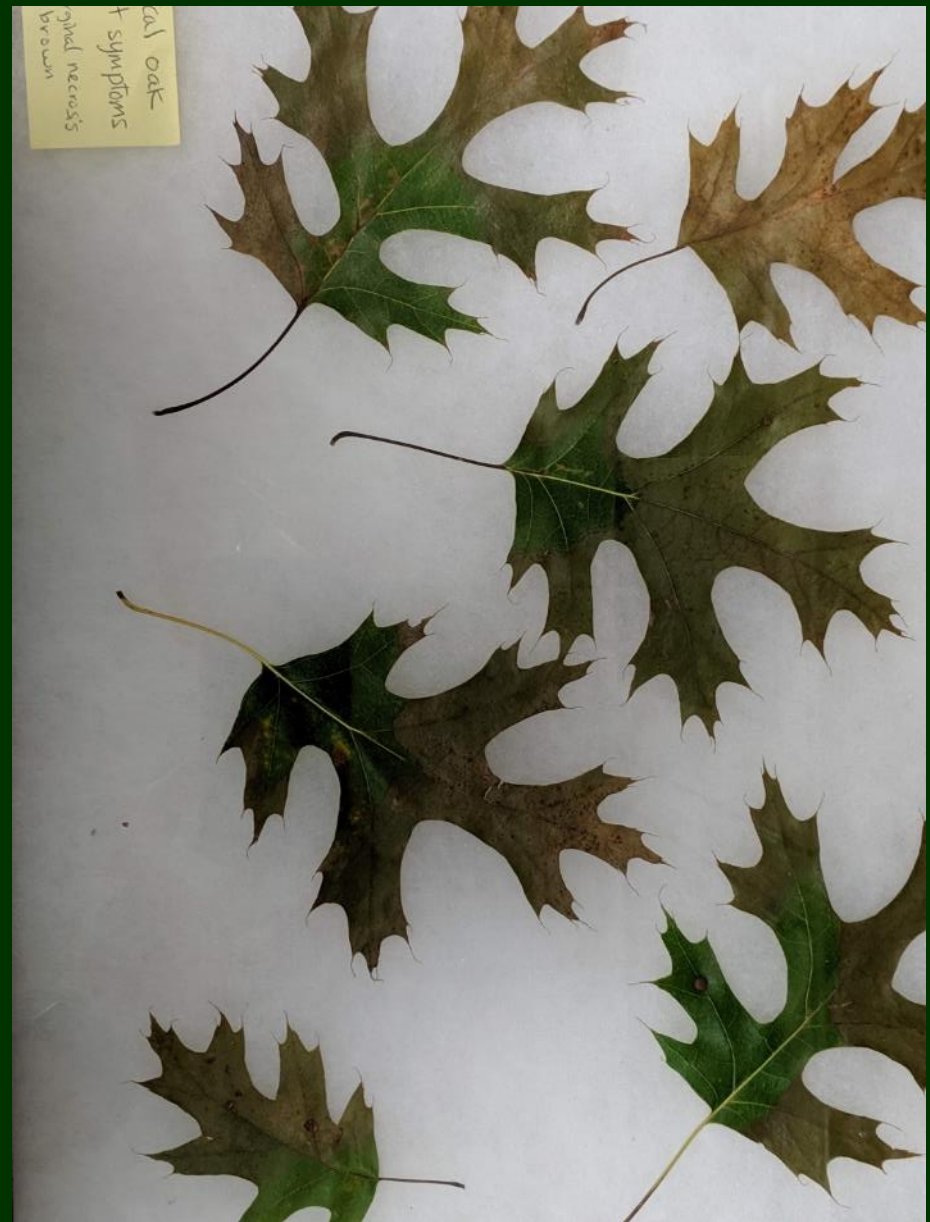
Leaves turn brown/bronze

From margins inwards, from tip to base



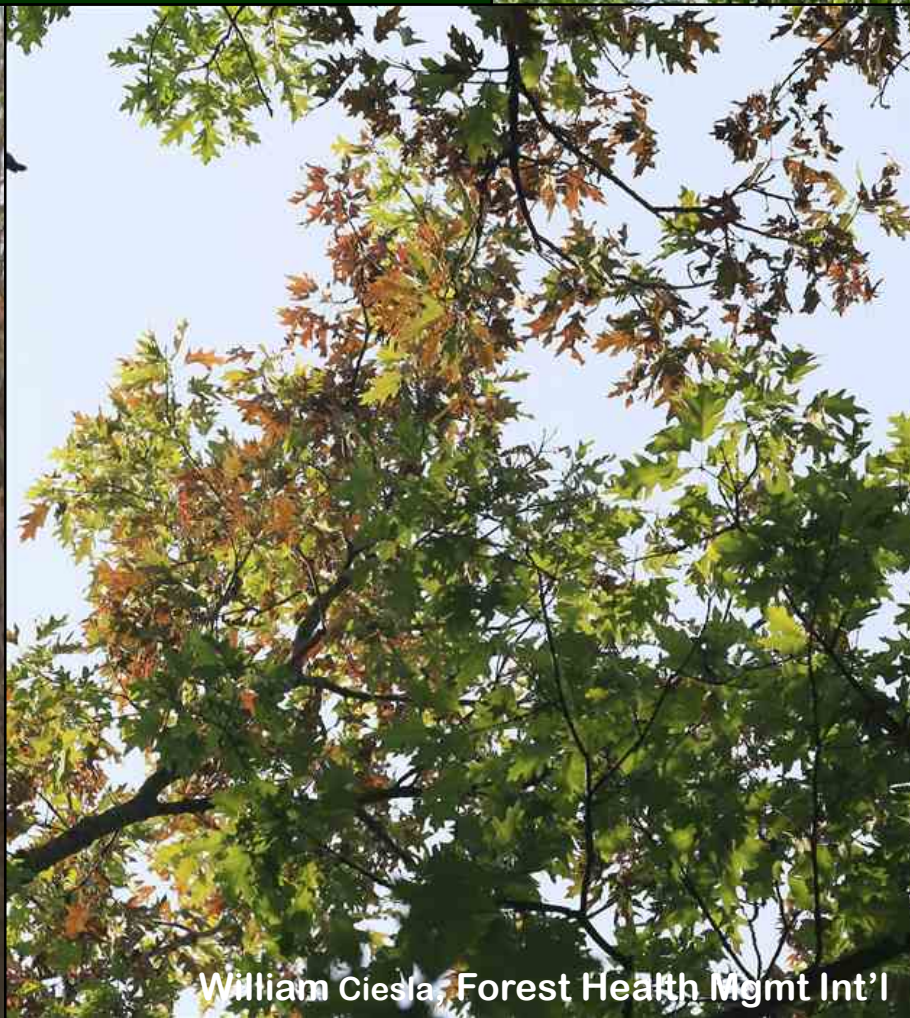
Leaves turn brown/bronze

From margins inwards,
from tip to base





Karen Schiely, Akron Beacon Journal



William Ciesla, Forest Health Mgmt Int'l

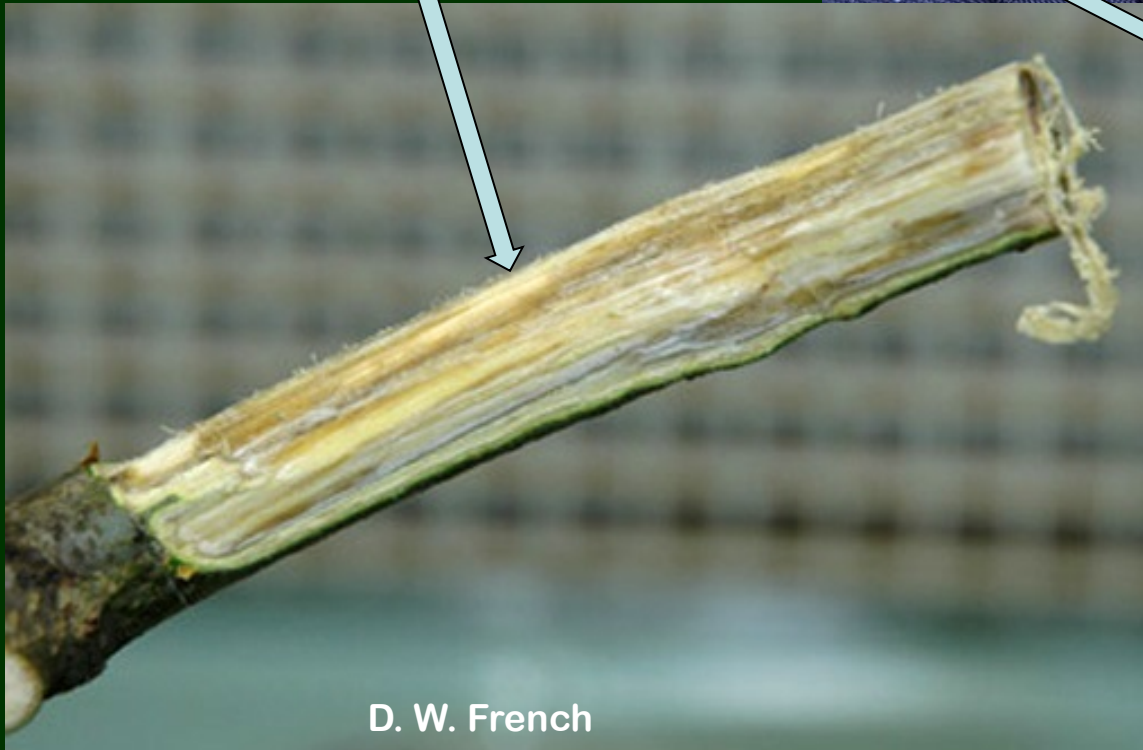
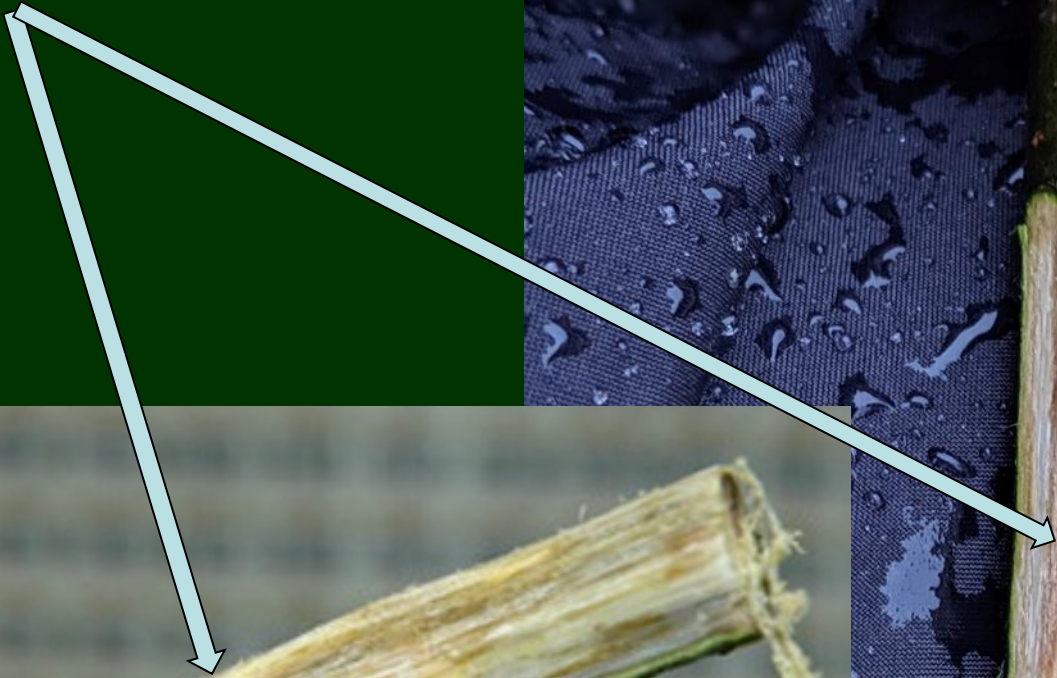


ISU Plant Disease Clinic



UGA0758073

Streaking in sapwood



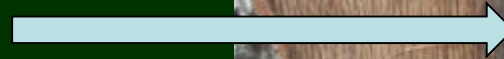
D. W. French

Oak Wilt: White Oak Group

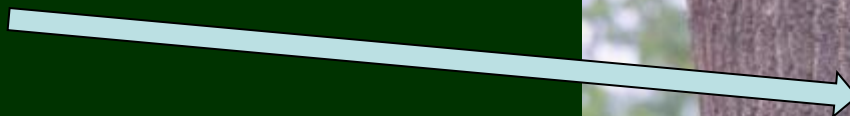
- Slower leaf discoloration (relative to red oaks)
- Wilt scattered throughout crown
- Leaves curl and remain attached
- Wood in cross-section
 - Outer ring of vessels sometimes discolored
- White oaks can remain alive for years with oak wilt

Oak Wilt: Signs

Fungal mats under bark



Bark split from fungal mat
pressure pads



(mostly in red oaks)

Oak Wilt: Signs

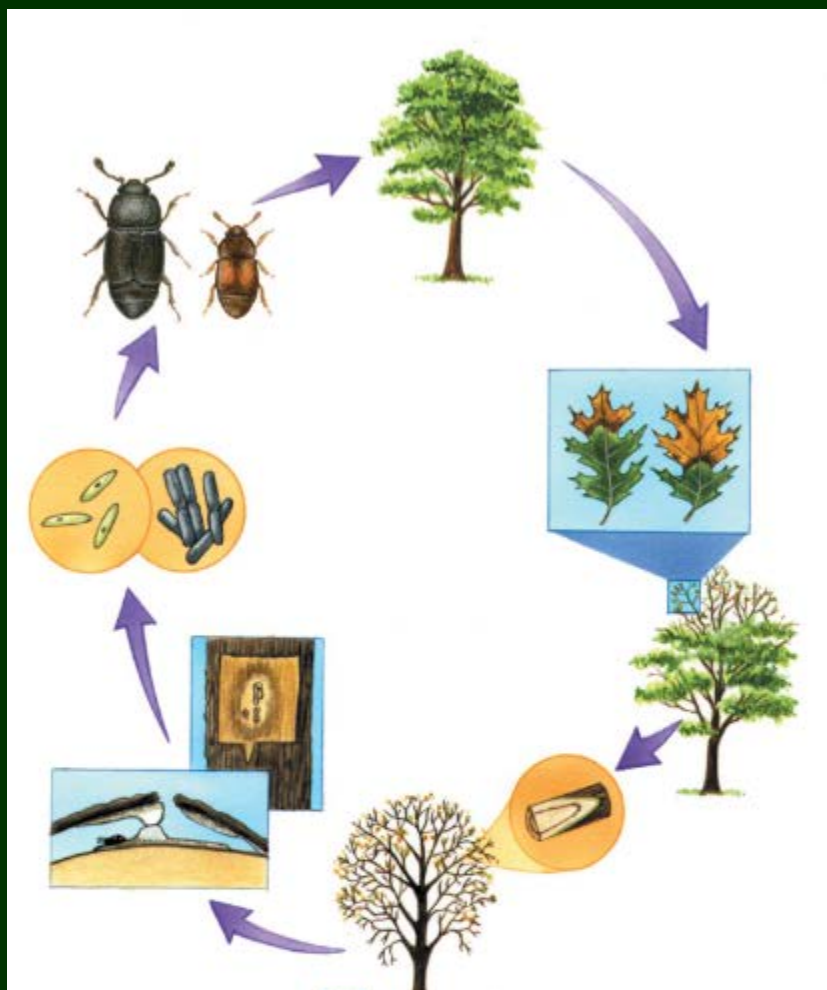
Bretziella (Ceratocystis) fagacearum
fruiting bodies



Oak Wilt: Signs

Nitidulid beetles with fungal mat





Long Distance Spread:

Nitidulids carry spores from spore mats on infected trees to wounds on healthy trees

Local Spread:

Root grafts between healthy and infected trees

Oak Wilt: Diagnostics

- Oak Wilt symptoms can be confused with other stresses and diseases
- Positive identification requires laboratory testing
- CAES:
 - Workshop on diagnostics via webinar (June 2019) and field trip to MN and WI (August 2019)
 - Lab is set up for molecular (PCR) testing to confirm infection by *B. fagacearum*
 - Fact sheets and outreach to educate tree care professionals
 - Symptoms and signs
 - Sample acquisition and handling

Oak Wilt: Diagnostics

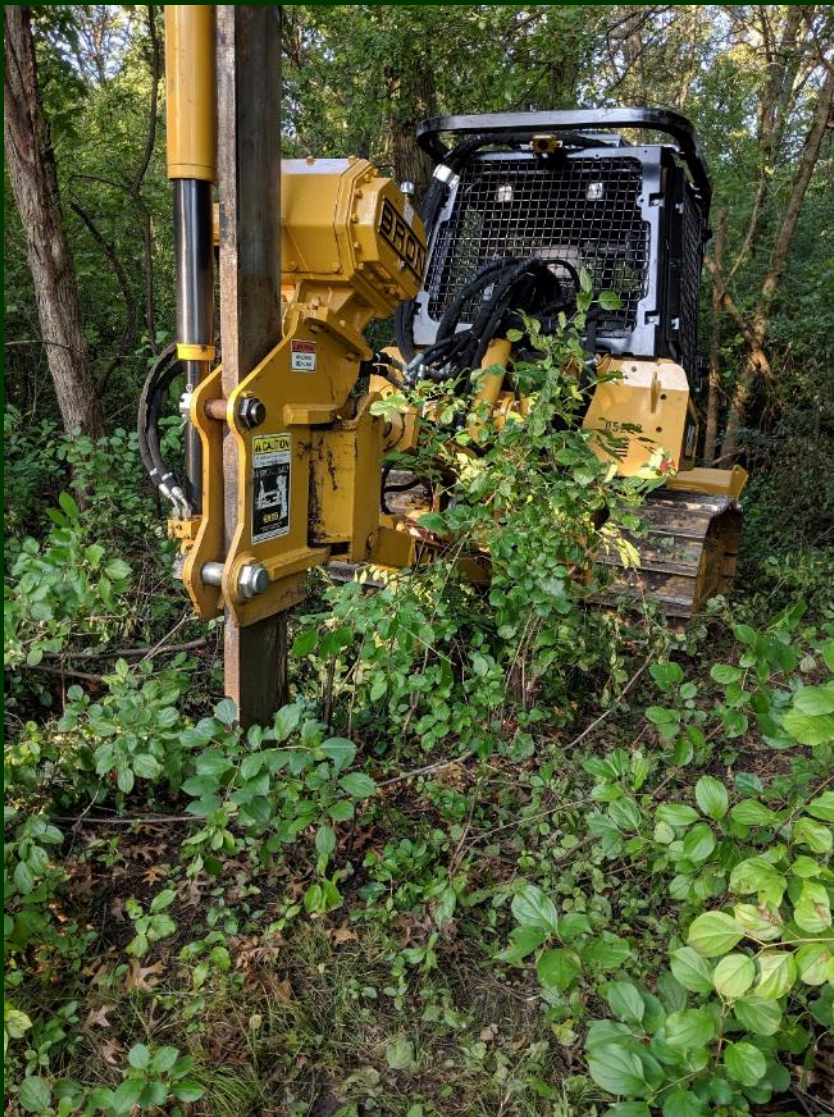
- Quality of sample is critical!
- Recently wilted branches with some partially green leaves still attached
- Branches $\frac{1}{4}$ - 1 inch diameter
 - ideally (but not necessarily) with discolored vascular tissue

Oak Wilt: Management

- Remove diseased trees ASAP
 - Not federally regulated
 - Will require state involvement
- Disrupt potential root grafts
 - Trenching / vibratory plow
- Prune only from November through March
 - Discourages nitidulid beetles
 - Cover all wounds with paint to discourage insect visitations
- Chemical: Propiconazole (Alamo)
 - Protective (white oaks), not curative

Oak Wilt: Management

Vibratory Plow



Oak Wilt: Management

Vibratory Plow





UConn campus, Storrs, CT

March 16

Workshop: *Creating a **CT State Partnership Committee** to direct **FEMC** work*

2:40 to 4:20 pm

<https://ctcnr.weebly.com/>

Connecticut Conference on Natural Resources

- Workshop:
- **F**orest **E**cosystem **M**onitoring **C**ooperative (**FEMC**) of the Northeastern U.S.
- Forming the Connecticut **S**tate **P**artnership **C**ommittee (**SPC**)

QUESTIONS?



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