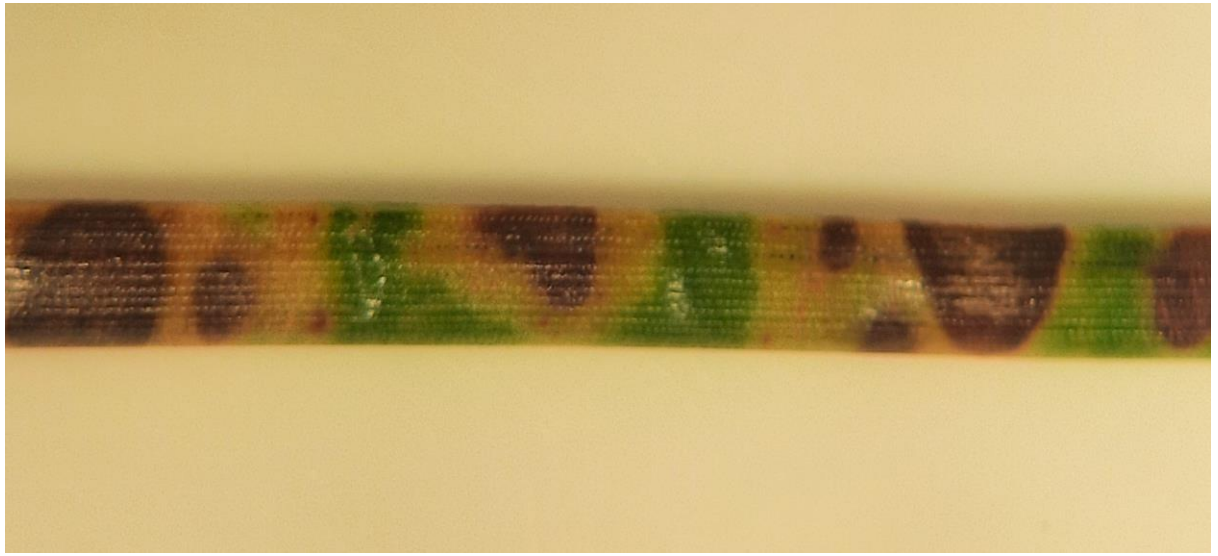
Brown Spot Needle Blight on Loblolly Pine: What USDA FS Has Seen So Far

USDA Forest Service Forest Health Protection
Region 8, Alexandria Field Office
Plant Pathologist
Jaesoon Hwang

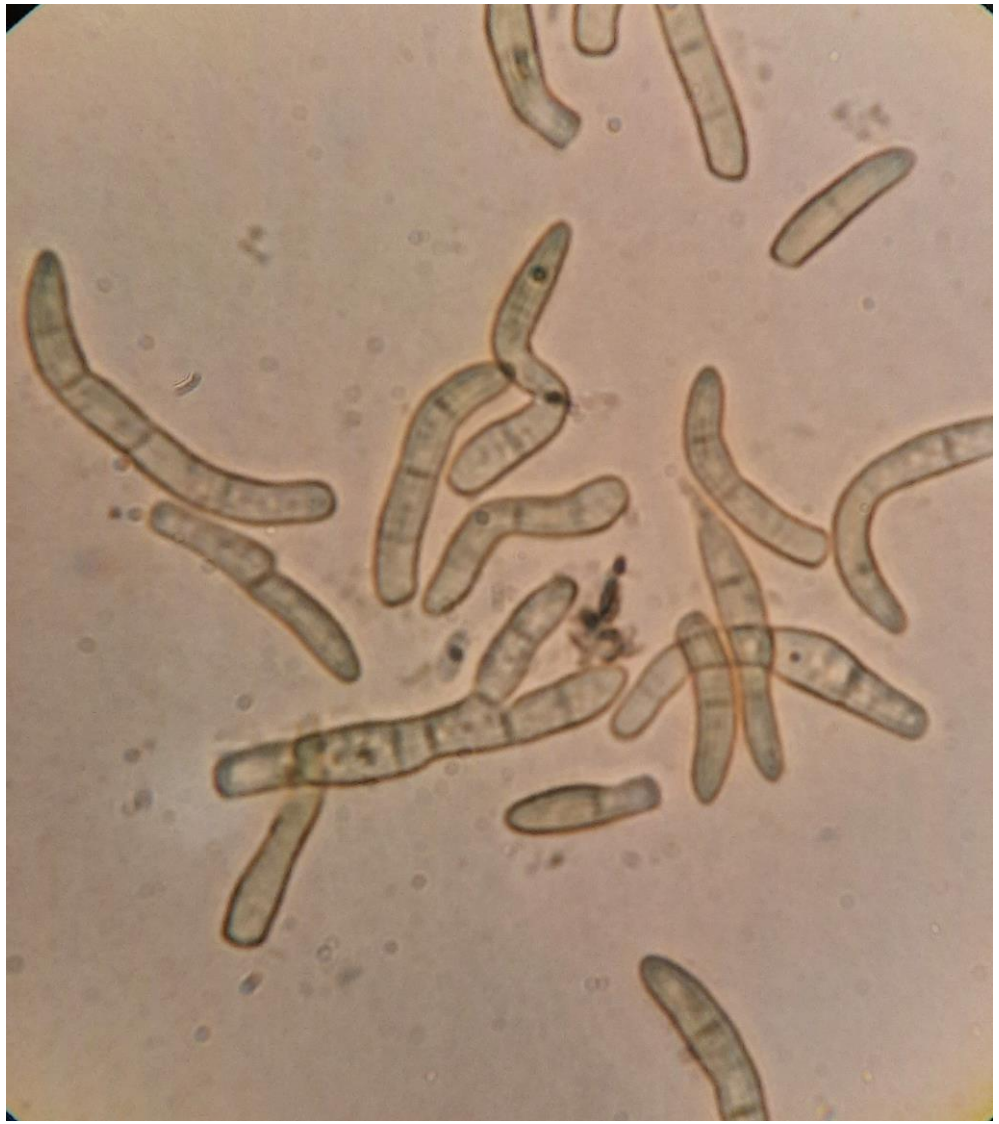
AR Stand affected by BSNB

Photo: Chandler Barton
AR Forestry Division

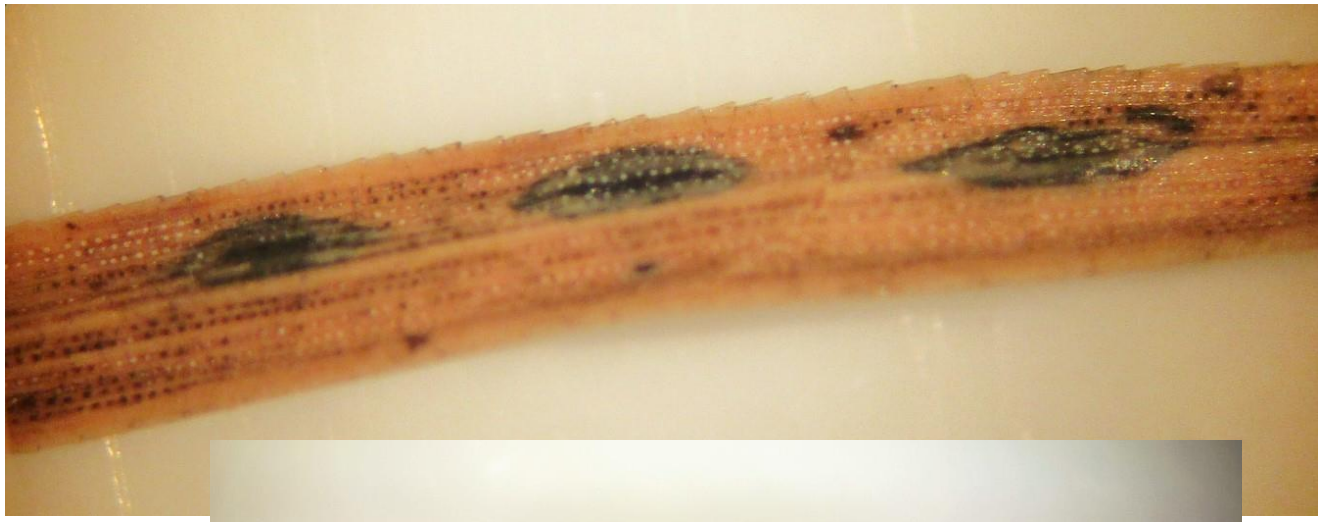


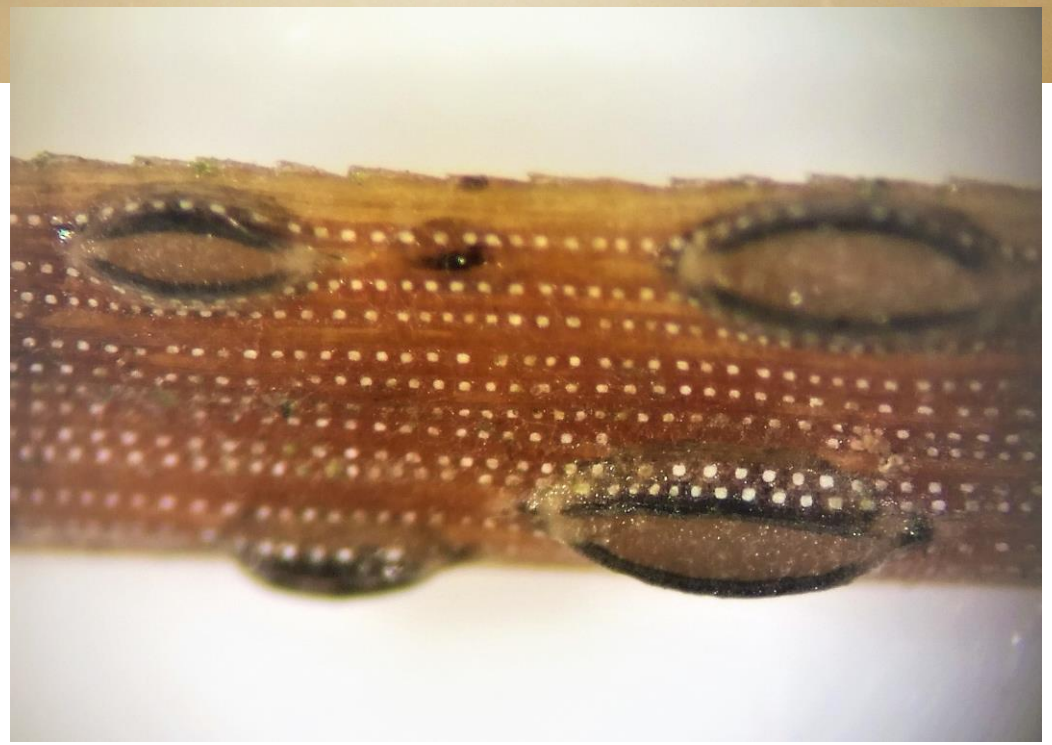
BSNB by *Lecanosticta acicola*

Photo: Colton Meinecke, Villari Forest Pathology Lab, UGA



Needlecast by *Lophodermium* spp.





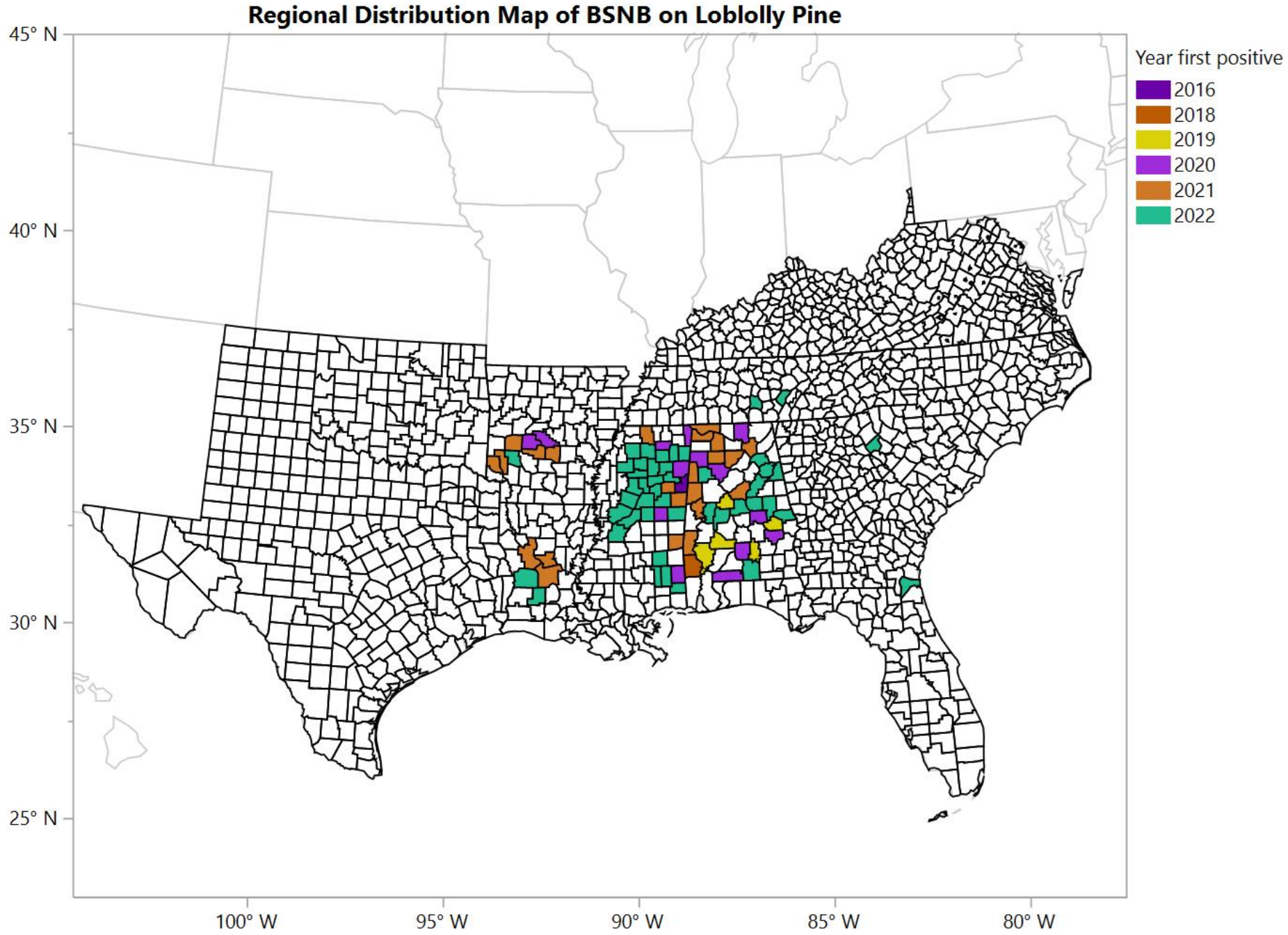
History of BSNB on loblolly in SE states

- First reported in 1929
- Around 2016, symptomatic needles and damage in loblolly plantations were reported—shortly after, BSNB pathogen was detected from the needles
- In 2020, for a FS-FHP Emerging Pest project, needles were sent to UGA for development of molecular technique to detect BSNB pathogen—floodgates opened for finding BSNB on loblolly
- Region-wide severity of damage and acreages affected are not available

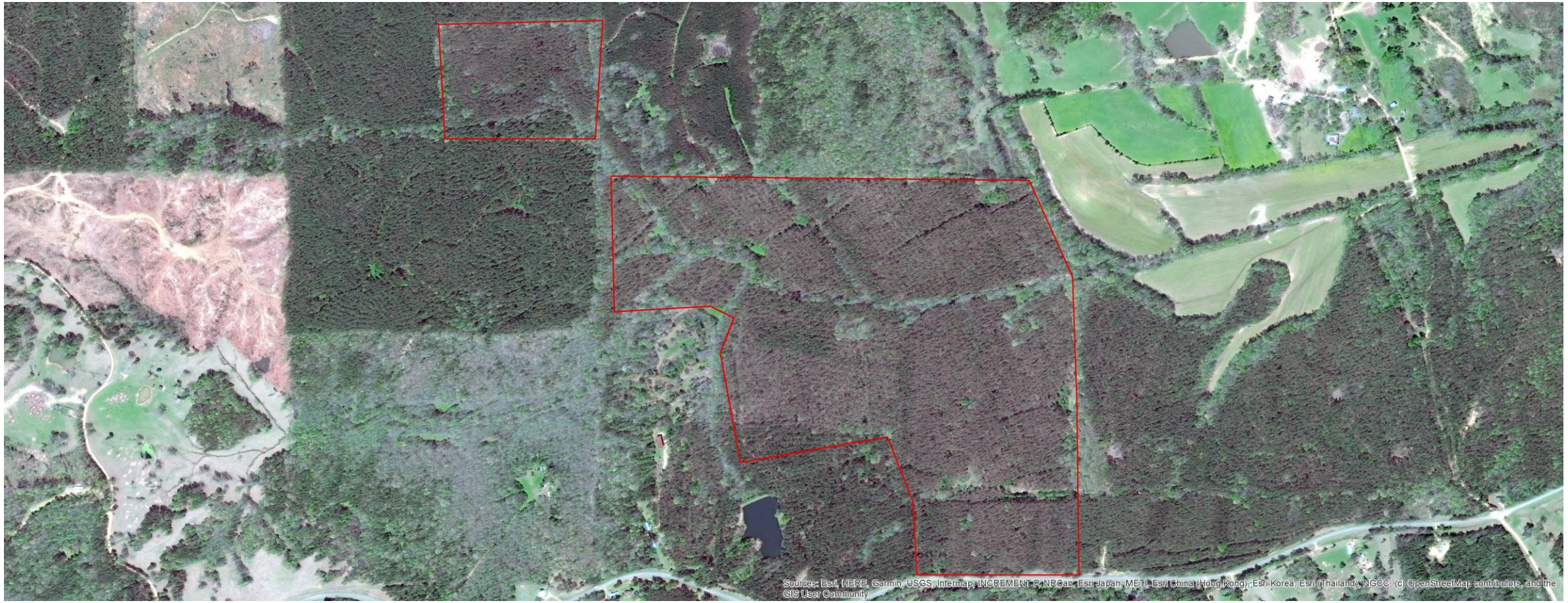
BSNB on loblolly cases confirmed by FS

- 1 in AL (National Forest recreation site, 80-year-old)
- 14 in MS, 2 in AR, and 12 in LA since 2020
- 9 improved, 1 not improved, rest to be determined
- Severe infestation at industry plantations in LA (3 to 10-year-old), fall 2021 to spring 2022
- Less than 5% mortality observed from stands in LA and MS
- 12 of 13 stands confirmed in central LA—already prevalent
- Most BSNB confirmed stands also affected by needlecast
- Plan to revisit stands to monitor disease progression
- More confirmed cases in other states—collected by state/university

  AL, AR, FL, MS, SC, and TN

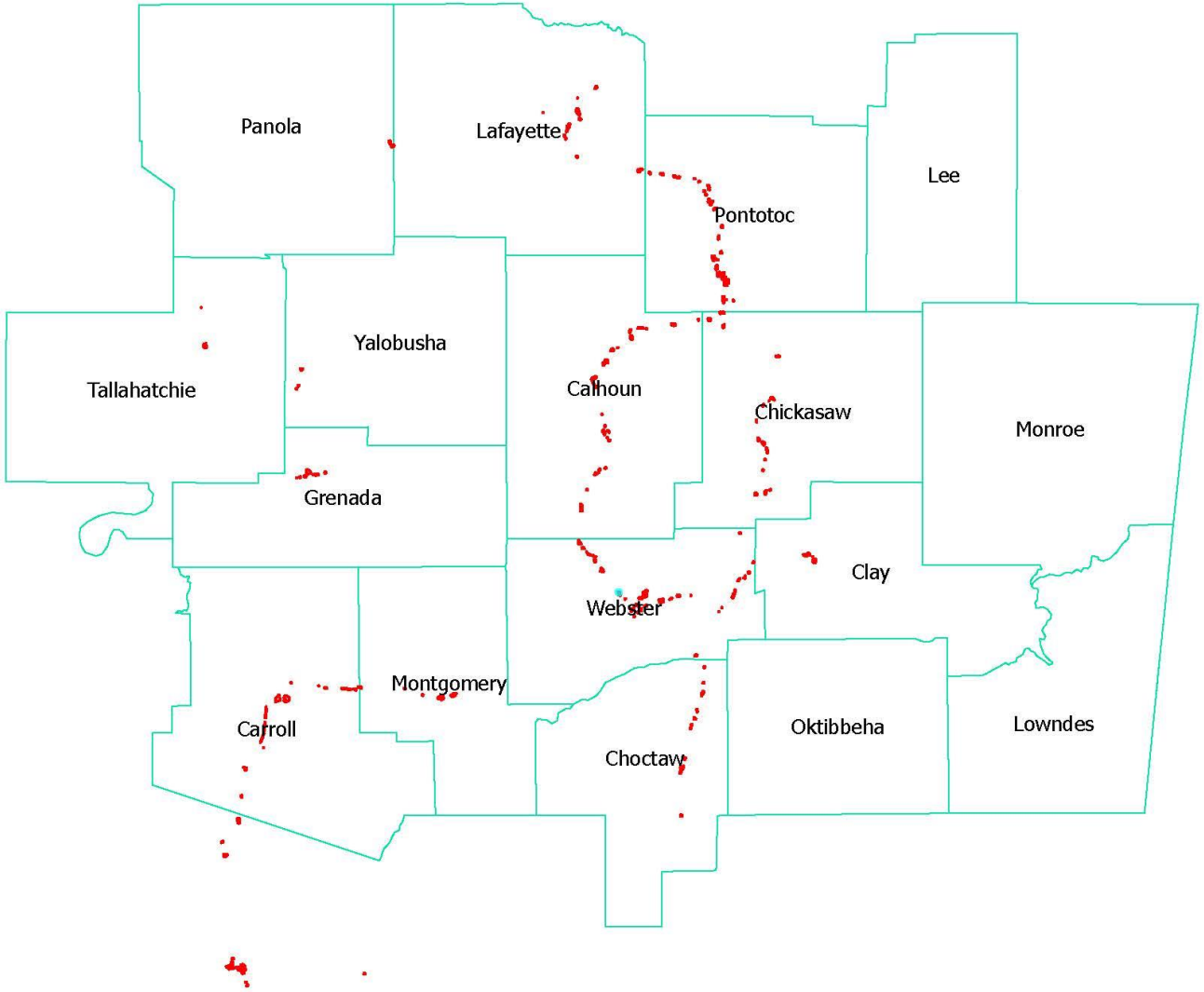


Rabiu Olatinwo
USDA FS SRS

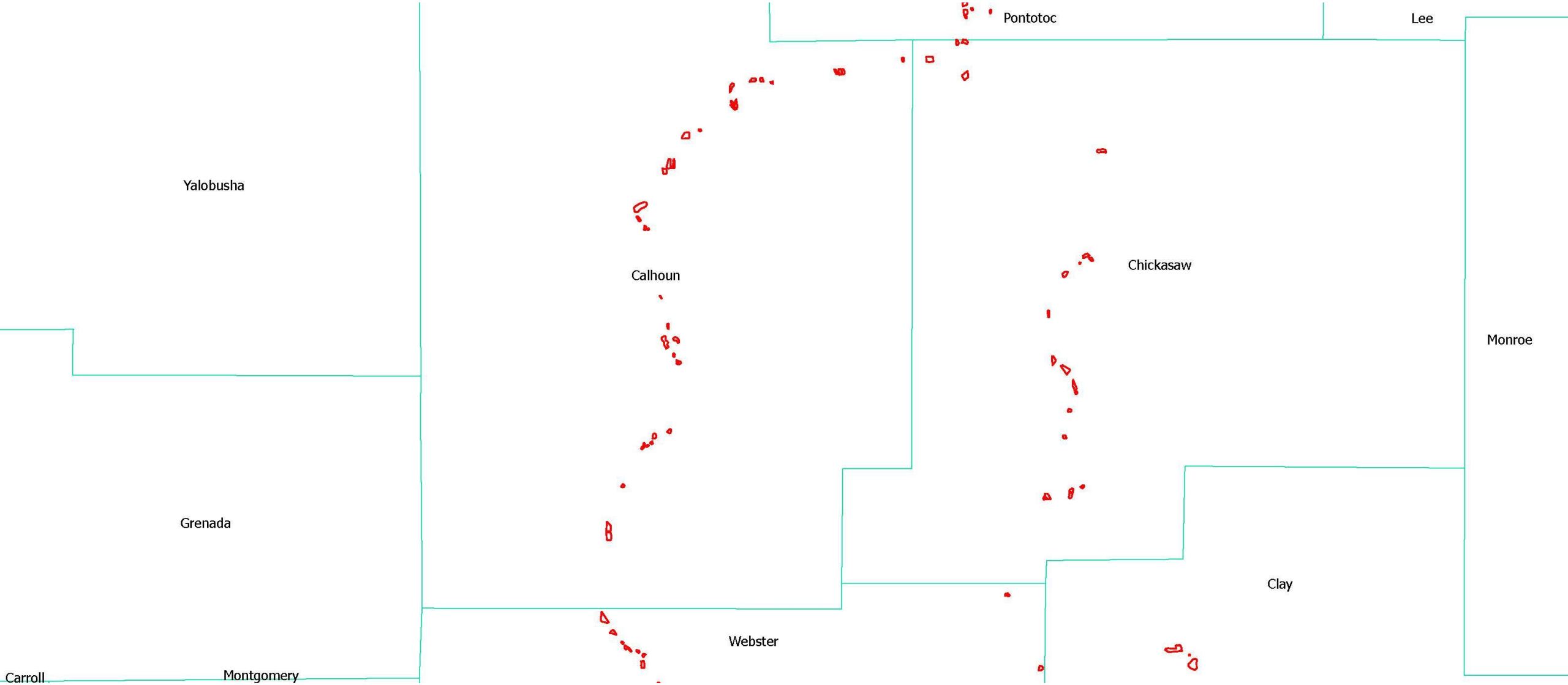


- Many discolored stands in northern MS and northern AL observed this spring
- Damage observed regardless of stand setting (natural and plantation) and tree age
- Damage was severe and widespread
- Needle diseases (needlecast and/or BSNB) speculated—ground truthing initiated
- Last four years of LA, MS, and AL were excessively wet with milder winters—favor needle diseases

Windshield survey northern MS 2022

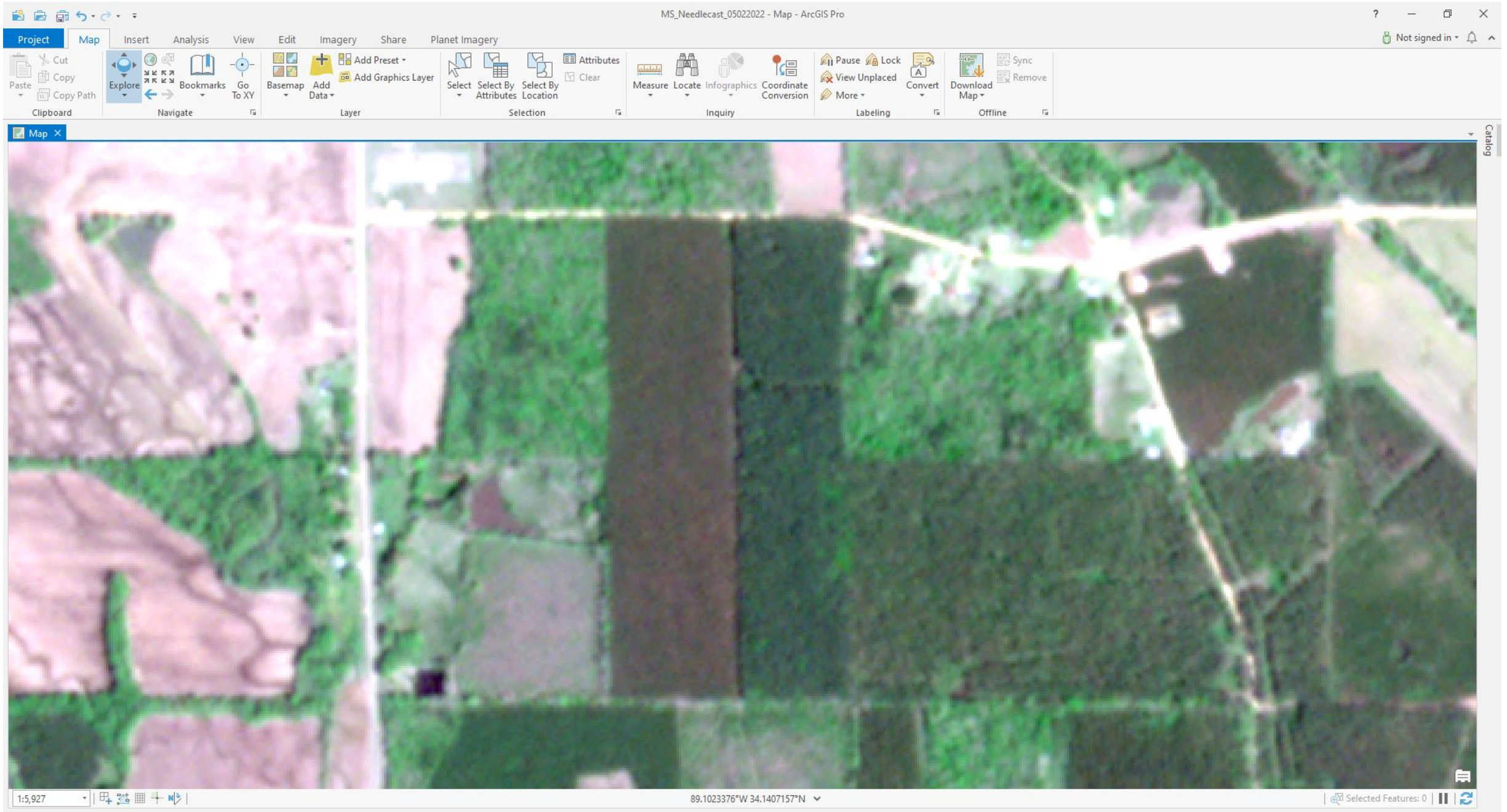


Chris Steiner
USDA FS FHP Pineville FO



- 5,685 acres affected from 252 polygons
- 13 samples collected from 13 counties—all positive for *L. acicola*

Difference in susceptibility within a stand


MS_Needlecast_05022022 - Map - ArcGIS Pro
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Analysis
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Edit
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Share
Planet Imagery
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Go To XY
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Basemap
Add Data
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Coordinate Conversion
Inquiry
Pause
Lock
View Unplaced
More
Convert
Labeling
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Sync
Remove
Offline
Map
Catalog
1:5,927
89.1023376°W 34.1407157°N
Selected Features: 0

- Separated by 10 yds
- Slightly younger
- Slightly overstocked
- Different family?

White Pine Needle Damage (WPND) in NE

- Needle discoloration/defoliation on Eastern white pine observed in 2010
- Damage on both mature and regeneration trees
- *L. acicola* and other needlecast fungi found
- *L. acicola* determined as one of major culprits
- Several consecutive years of wet spring played a role in outbreak
- Research papers on etiology, climatic model, long term monitoring, and remote sensing of WPND

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Article

Characterization of Fungal Pathogens Associated with White Pine Needle Damage (WPND) in Northeastern North America

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Emergence of white pine needle damage in the northeastern United States is associated with changes in pathogen pressure in response to climate change

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Detecting White Pine Needle Damage through Satellite Remote Sensing

Aaron Meneghini, Parinaz Rahimzadeh-Bajgiran, William Livingston & Aaron Weiskittel

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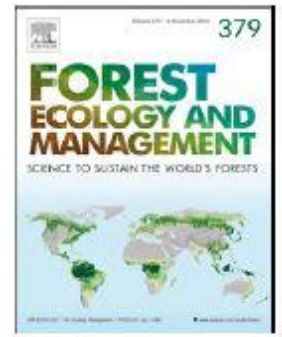

Impacts of White Pine Needle Damage on seasonal litterfall dynamics and wood growth of eastern white pine (*Pinus strobus*) in northern New England☆

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Summary

- BSNB on loblolly is new, emerging issue
- BSNB is causing damage to loblolly regardless of age and stand type
- This year is ‘bad’ year for needlecast/BSNB on loblolly
- BSNB is already prevalent in AL, AR, LA, and MS
- Prognosis for BSNB on loblolly is not available—mixed observations
- Distribution map generated
- More resistant family present in plantation—possibility of resistance screening at the RSC?
- White Pine Needle Damage in NE states may give us a clue