Southern Pine Beetle Symposium

Dendroctonus frontalis

Suffolk County College – Riverhead

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Beetle Basics

- **Native:**
  - Southern US pine forests
  - Expansion to NJ, NY, CT, MA, and RI due to warming temperatures
    - **first detected in NY in October 2014 in Hubbard County Park in Suffolk County*
- **Impacted Species:**
  - Pitch pine (*Pinus rigida*)
  - White pine (*Pinus strobus*)
    - **any pine species is susceptible*
- **Small Bark Beetle (1-4 mm)**

The Process

- **Behavior:**
  - Female beetles initiate the attack by finding a suitable host tree.
  - Female releases a pheromone attracting other beetles to colonize the tree
  - Mass attack
  - Multiple broods/year
    - Maturation: 1 month in summer - 2 months in winter
  - Multiple generations in a season
    - exponential growth
  - Girdling by 1000's boring insects
    - S- shaped galleries w/ pupae present

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The Damage

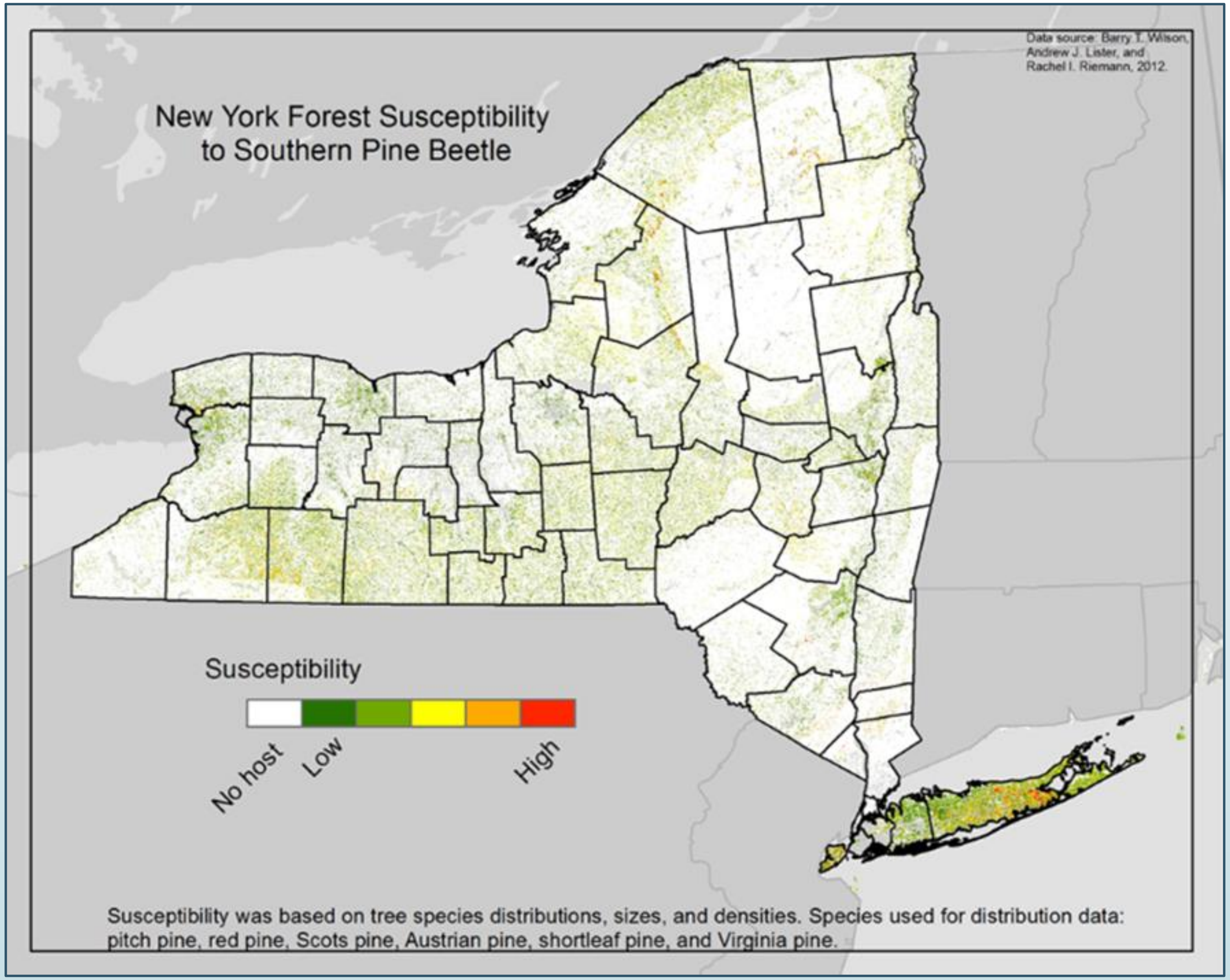
- **Small Pitch Tubes**
  - Size of a piece of popcorn
  - Beetles get entrapped in pitch
  - Numerous pitch tubes along entire length of trunk
- **Susceptibility:**
  - Host trees are usually stressed
    - (age, density, drought)
  - Cannot "*pitch out*" the beetle, the tree's only defense
  - Mortality (2 - 4 months)
  - Introduction of Blue Stain Fungus
    - (carried by SPB)
  - NJ documented spread rates up to 50' per day

The Result

- **Stage 1**
  - Fresh attack, needles are still green.
- **Stage 2**
  - Foliage is brown or yellow. Beetles are still present.
- **Stage 3**
  - Trees are dead. Beetles have emerged.

The Stakes

- **Average tree age**
  - 100 years
- **Average diameter**
  - 14.5"
- **Average height**
  - 59'
- **SPB Attack Diameter**
  - 4"
- **Time to 4" diameter**
  - 29 years

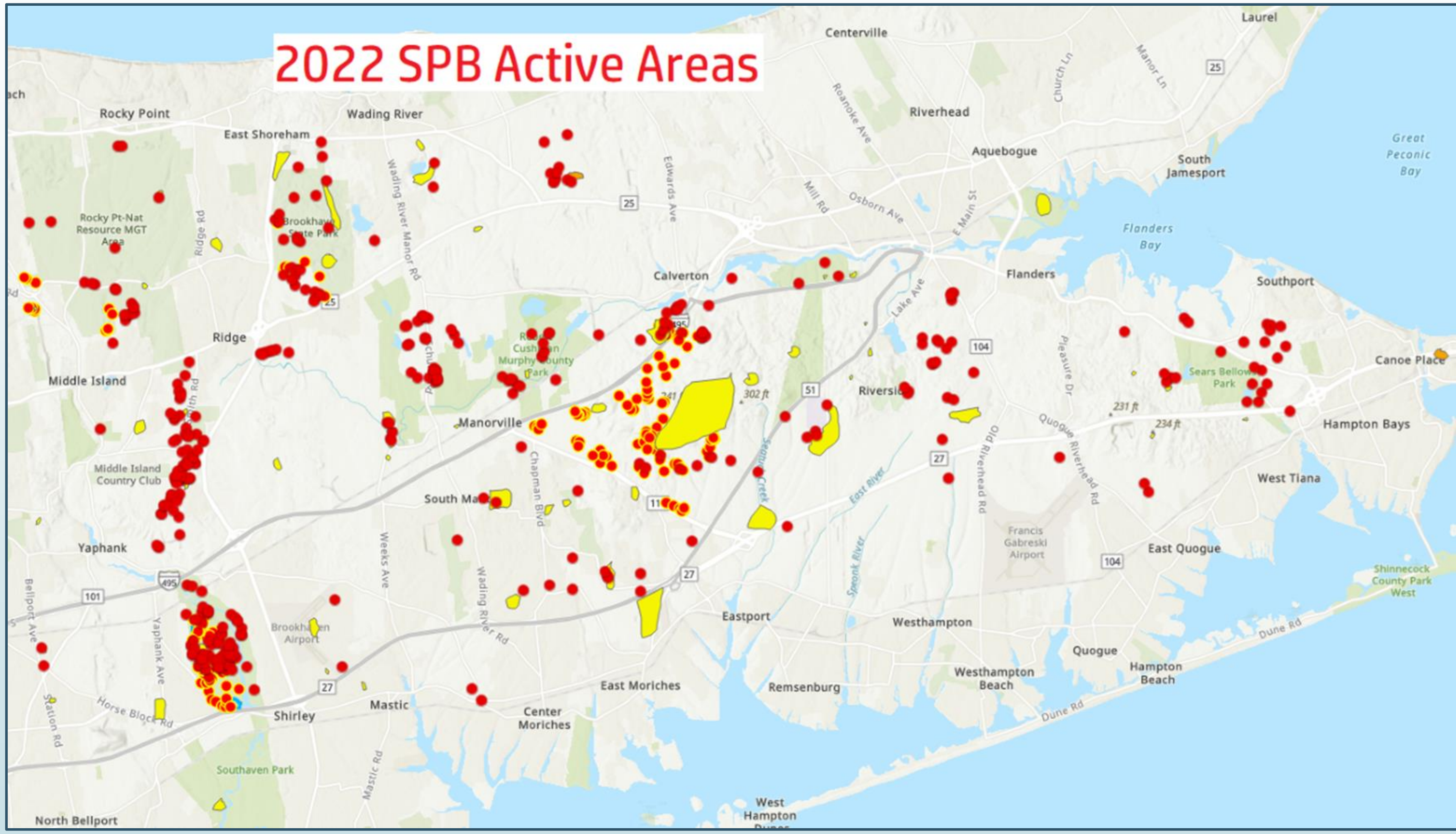


Accelerates Succession:

Reduced potential for regeneration to climax pine forest and loss of current old growth pines

Suffolk Extent

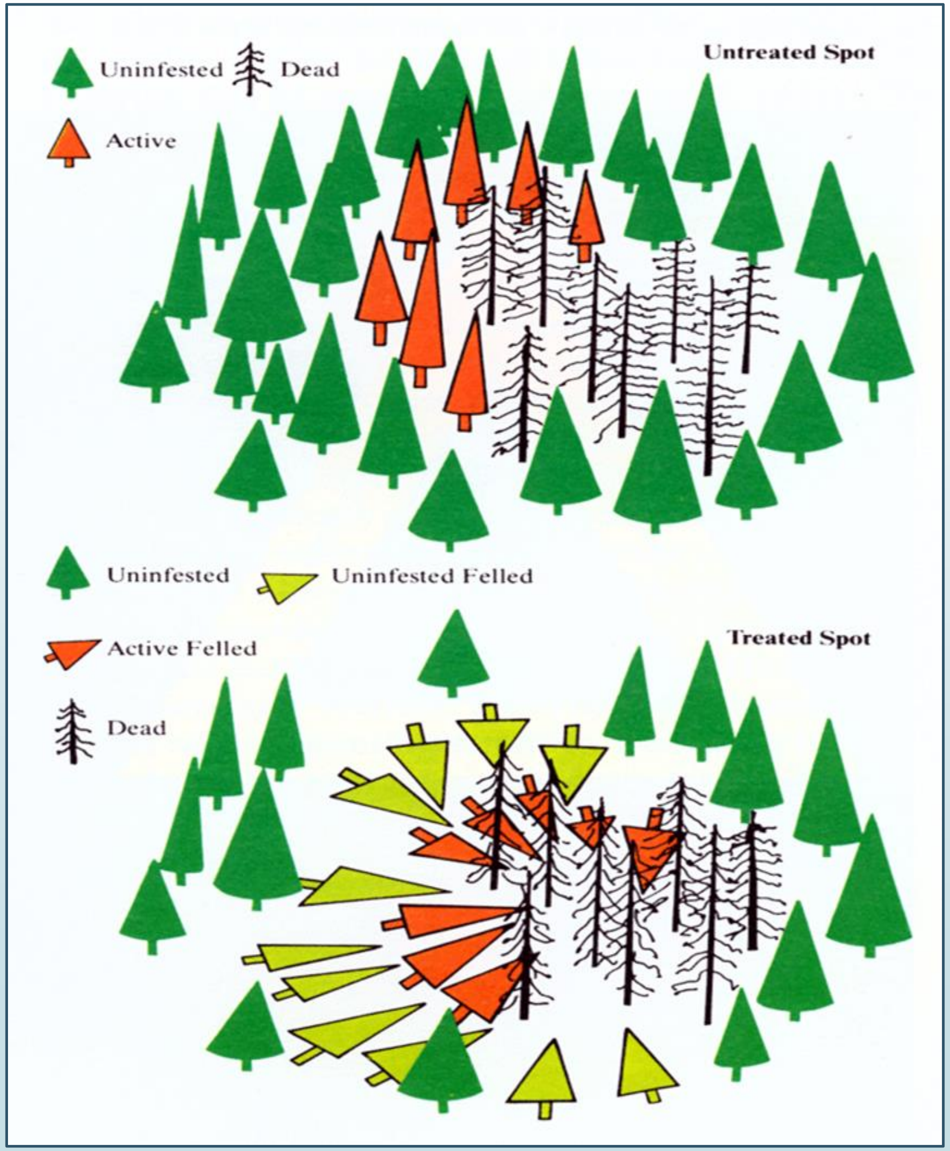
- Southaven County Park
- Brookhaven National Lab
- Manorville
- Long Island Expressway
- Sunrise Highway
- Quogue
- Dwarf Pine Plains



Red Dot Reality

Suppression Strategy

- **Thinning AND Removal**
  - Cut all Stage 1 & 2 trees, and any Stage 3 hazard trees
  - Stage 1 & 2
    - Limb and score along top of trunk to expose SPB larvae
    - Buck and chip (into chip truck)
    - Transport to disposal site and compost
  - Stage 3
    - Hazard – Handle and dispose of as normal
    - Non-hazard – Leave for habitat like NLEB
- **Thinning AND Leaving**
  - Cut all Stage 1 & 2 trees, and any Stage 3 hazard trees
  - Stage 1 & 2
    - Limb and score along top of trunk to expose SPB larvae
    - Buck to increase decomposition
  - Stage 3
    - Hazard – Limb and buck to increase decomposition
    - Non-hazard – Leave for habitat like NLEB



Northern Long-eared Bat (NLEB)

- ***Myotis septentrionalis***
  - Current Status: ***Endangered***
    - Federal: November 29, 2022
    - State: March 31, 2023
  - 2005: 500,000 individuals in NYS
    - 3rd most common species
  - 2006: White Nose Syndrome (fungus)
    - 98% decline in NLEB since

NLEB Policy

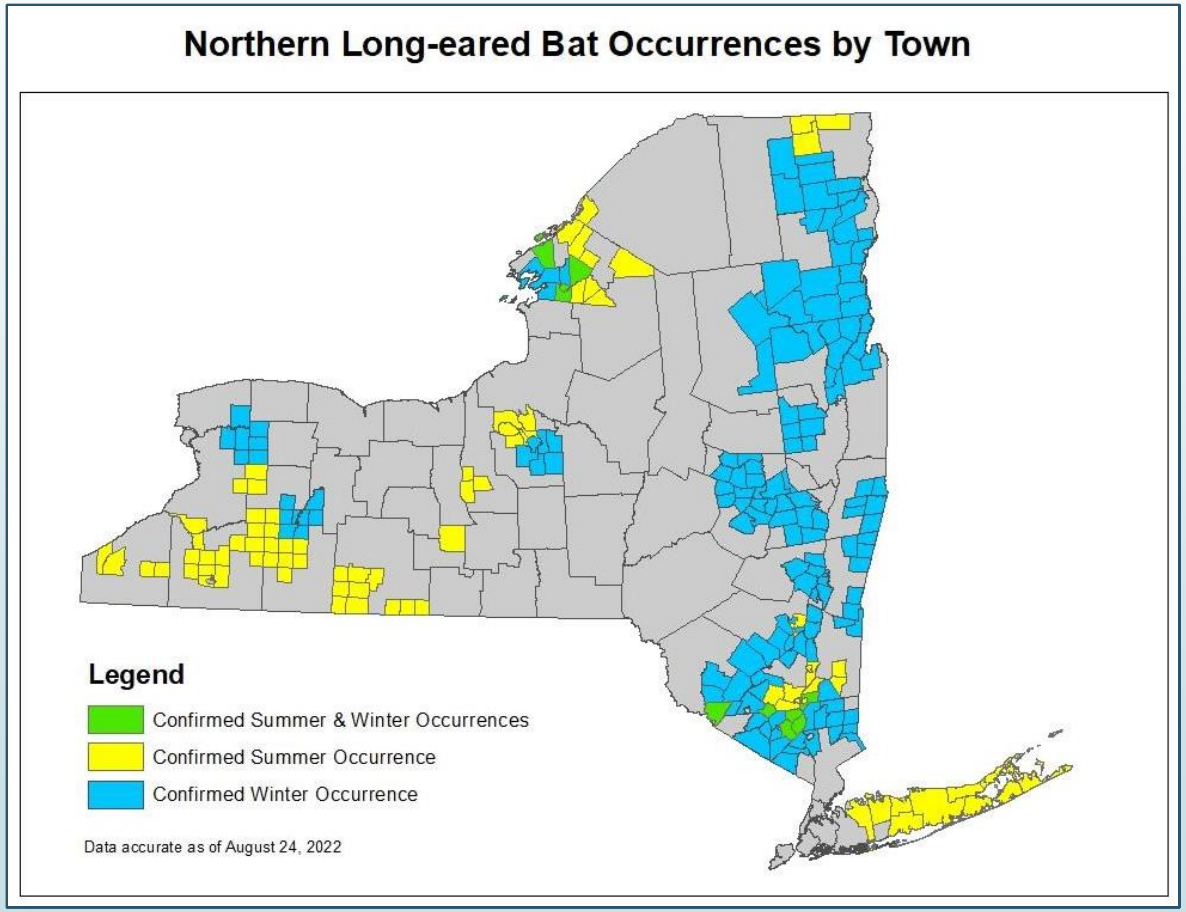
- **Suffolk County (Voluntary)**
  - All Forestry Activities Occur from **December 1 through February 28**
  - Hibernation Period (*when bats are not expected to be present*)
  - 5 miles of a known hibernation site

    or

  - 3 miles of a documented summer occurrence
- **Rest of NYS**
  - November 1 through March 31
- **Removal of Trees**
  - Snags and Cavity Trees remain uncut
  - If NLEB is detected during project **STOP**
    - Contact DEC (permit may be required to continue)

      or

    - Wait until Hibernation Period



FIRE

- **NLEB conservation has reduced the ability to suppress active SPB infestations**
  - Management becomes proactive not reactive
- **Fire: Wild and Prescribed**
  - Thinning to density ≤ 70 sq^2 basal area/acre
  - Reduced understory competition, fuel loads, and fire behavior
  - System becomes stronger, healthier, and less stressed
  - Reduced competition for
    - Space, Sunlight, Nutrients, and Water
  - Increased pitch production
    - "Pitch Out" Defense
  - Resiliency over time to forest pests

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Mechanical Thinning

Mimics Fire Process

- Thin to desired density ≤ $70\ sq^2$ basal area/acre
- Manages understory
- Alters fire behavior
  - NOT the fuel load
  - Pile Burning
- Increased space and light
- Reduced competition for nutrients and water
- Improved pitch production
  - “Pitch Out” Defense
- Improves resiliency

NLEB and SPB Ecology

- 2006 White Nose Syndrome introduced to NY's bat species.
- NY's bat species experience species threatening losses to their populations.
- NLEB experience a 98% population decline.
- NLEB are insectivores. As are many of NY's bat species.
- 2014 SPB enters the Pine Barrens because of changes in NY's climate.
- SPB infests ~5,000 acres of pine forest.
- Dead pine trees are habitat for breeding NLEB.
- 2022/2023 NLEB tree cutting policy (USFWS & NYSDEC).
- SPB is not the first insect to be influenced by climate change. It won't be the last.
- Forest resilience is essential. Forest resilience is not just forest health. The system itself needs to be resilient.
- Fire is a process that facilitates system health.
- The Pine Barrens is a fire dependent system.

Take Home Message

- The Central Pine Barrens requires proactive management to achieve/maintain system health
  - Natural/Prescribed Fire and/or Mechanical Thinning increases System Resilience
- Active Southern Pine Beetle (SPB) infestations should be managed during the Northern Long-eared Bat (NLEB) hibernation period
  - December 1 thru February 28 in Suffolk County (*rest of NY Nov 1 – Mar 31*)
  - Stage 3 trees (if not a hazard) can support NLEB and other wildlife

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