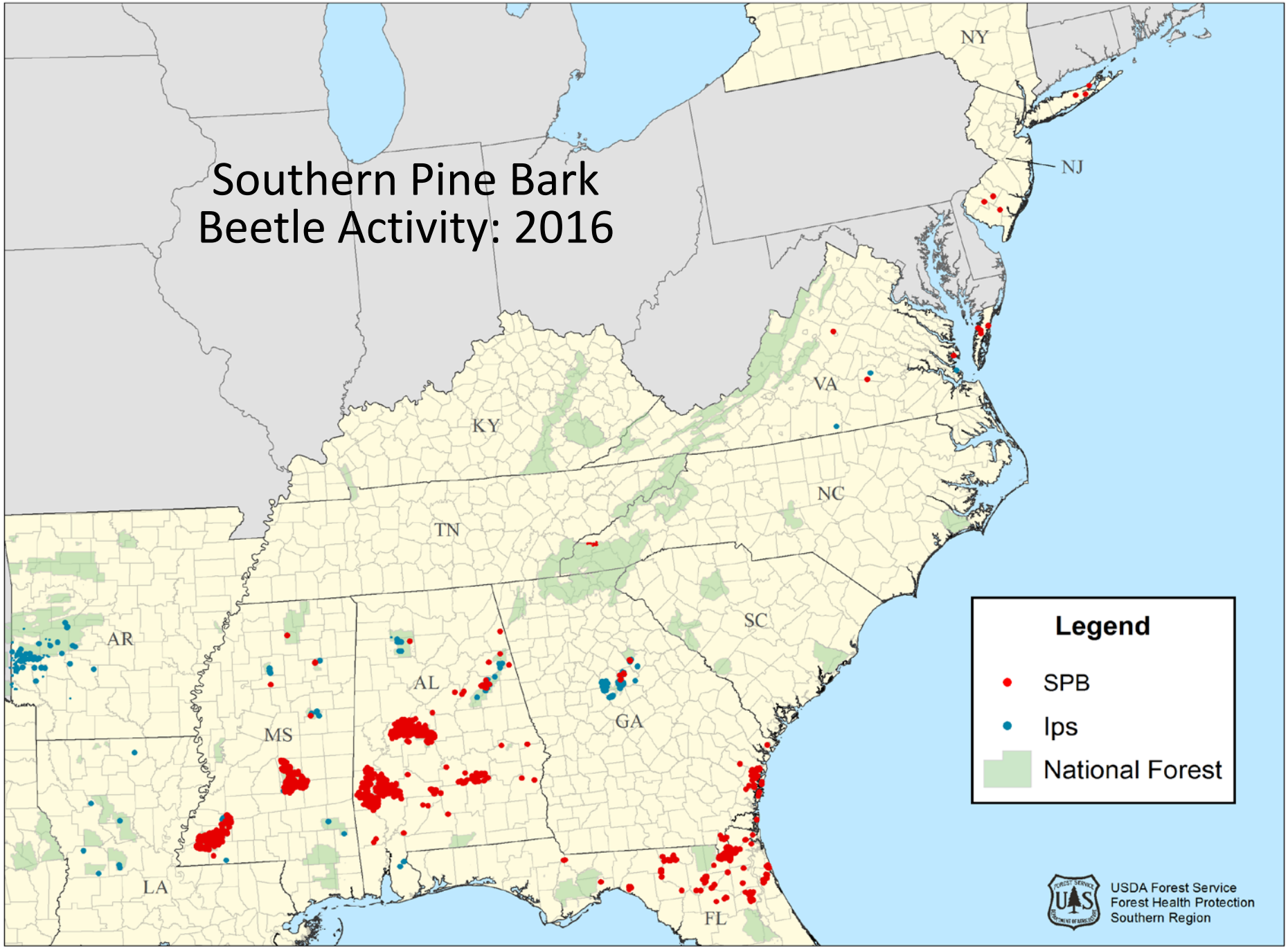
USDA
United States Department of Agriculture

Southern Pine Beetle

Forest Service

John T. Nowak Forest Health Protection jnowak@fs.fed.us

SPB: An aggressive/primary tree-killer, a cyclical outbreak species, and an area-wide pest


Southern Pine Bark Beetle Activity: 2016
NY
NJ
VA
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NC
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MS
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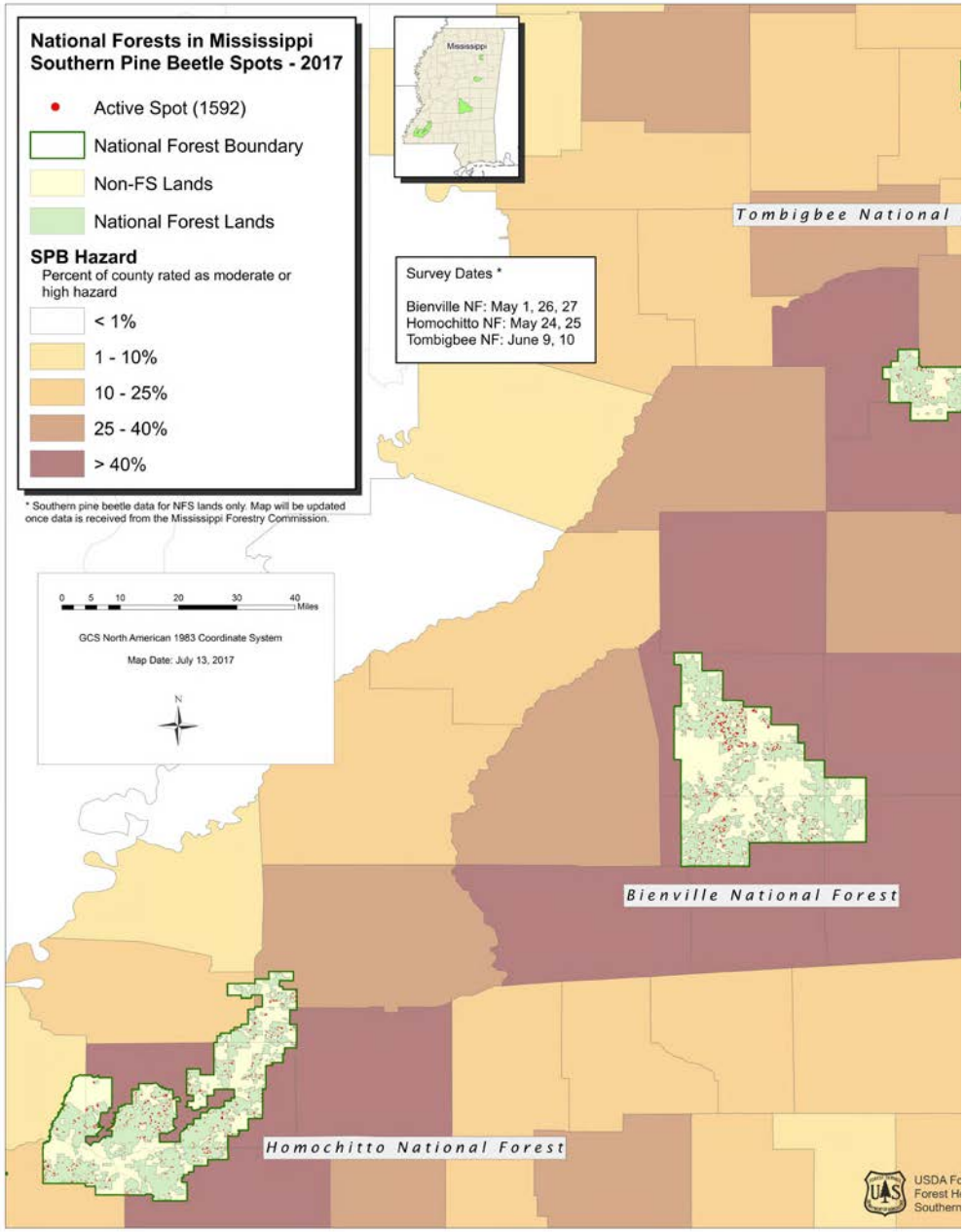
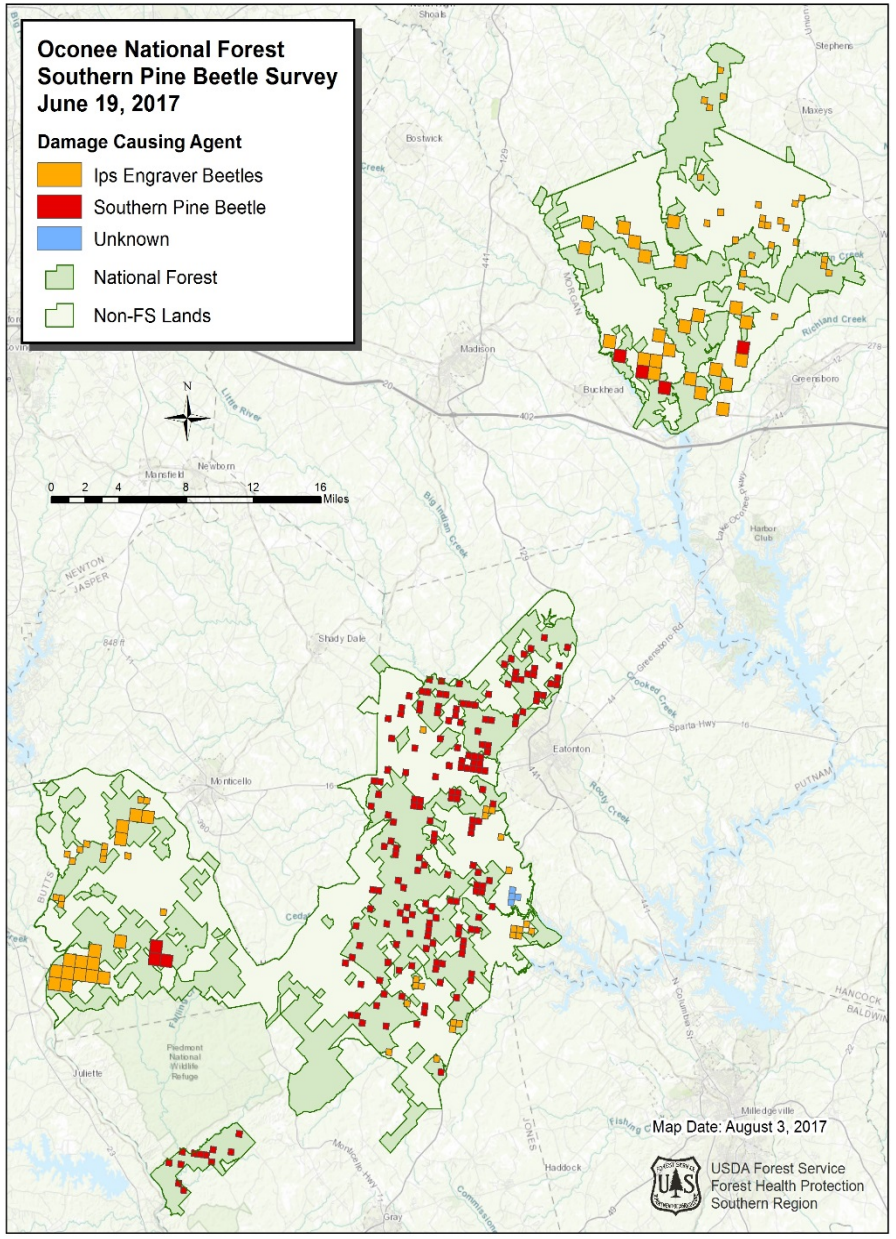
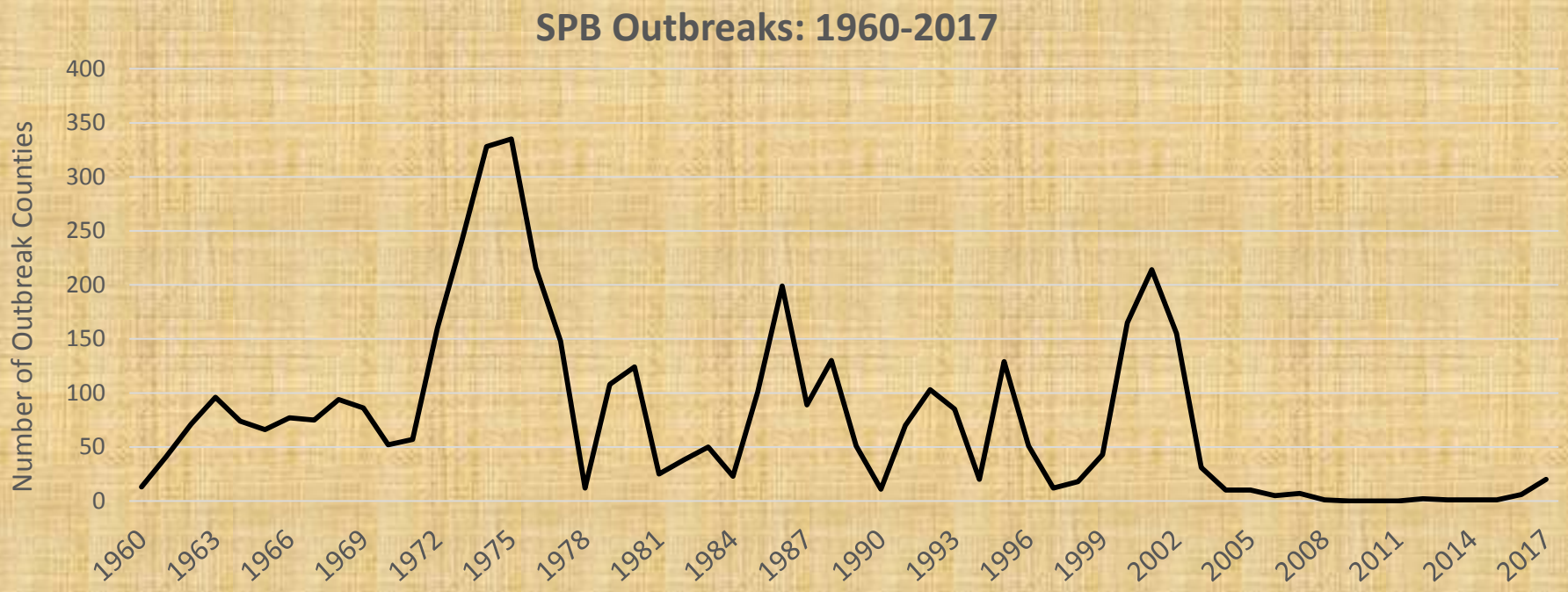
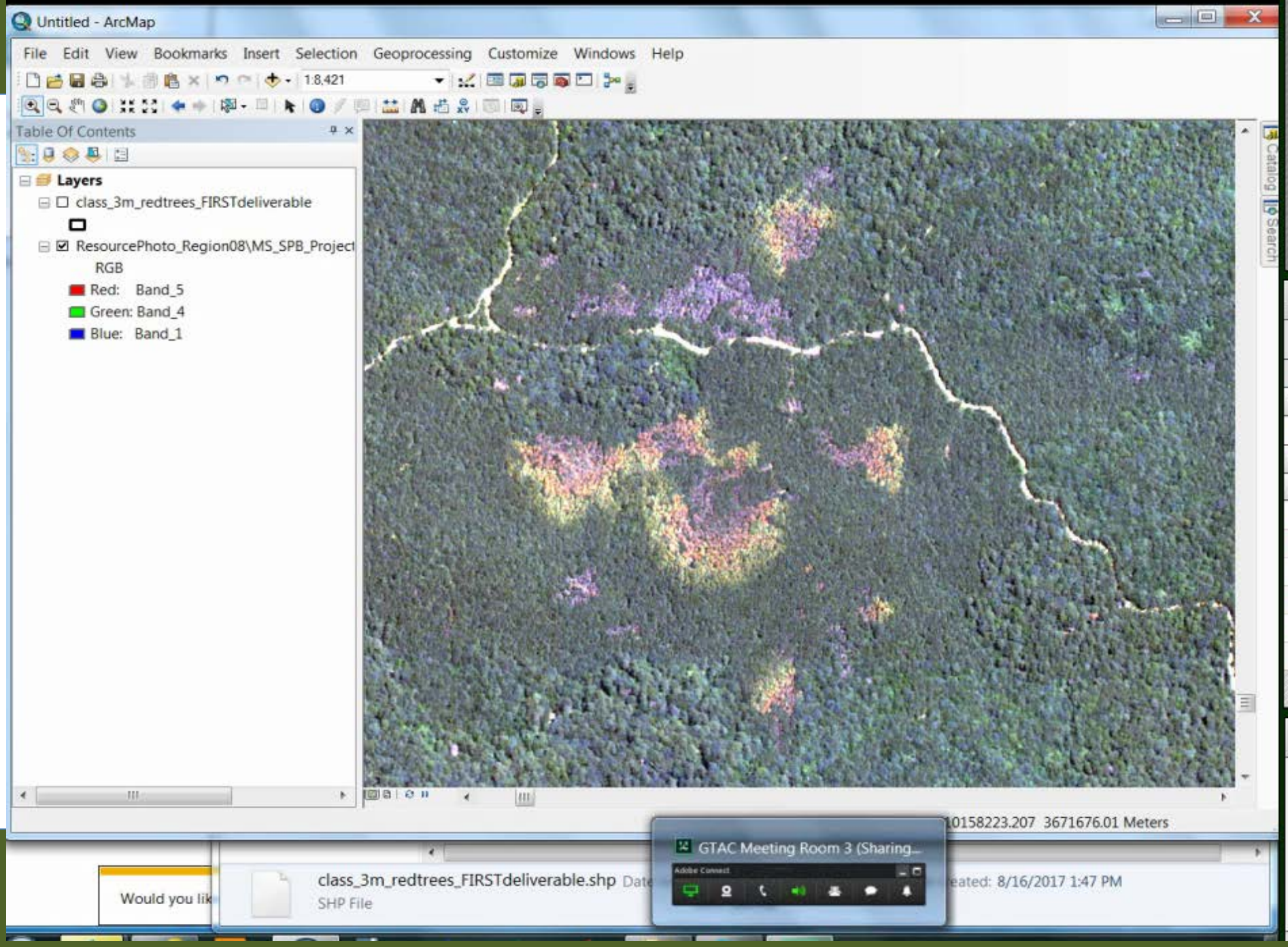
FL
Legend
SPB
Ips
National Forest
USDA Forest Service
Forest Health Protection
Southern Region


National Forests in Mississippi
Southern Pine Beetle Spots - 2017
Active Spot (1592)
National Forest Boundary
Non-FS Lands
National Forest Lands
SPB Hazard
Percent of county rated as moderate or high hazard
< 1%
1 - 10%
10 - 25%
25 - 40%
> 40%
* Southern pine beetle data for NFS lands only. Map will be updated once data is received from the Mississippi Forestry Commission.
Survey Dates *
Bienville NF: May 1, 26, 27
Homochitto NF: May 24, 25
Tombigbee NF: June 9, 10
Tombigbee National
Bienville National Forest
Homochitto National Forest
0 5 10 20 30 40 Miles
GCS North American 1983 Coordinate System
Map Date: July 13, 2017
N


Oconee National Forest
Southern Pine Beetle Survey
June 19, 2017
Damage Causing Agent
Ips Engraver Beetles
Southern Pine Beetle
Unknown
National Forest
Non-FS Lands
N
0 2 4 8 12 16 Miles
Map Date: August 3, 2017
USDA Forest Service
Forest Health Protection
Southern Region



Outbreak: 1 SPB Spot per 1,000 acres of host type (loblolly/shortleaf, Oak-pine)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Green: Band_4
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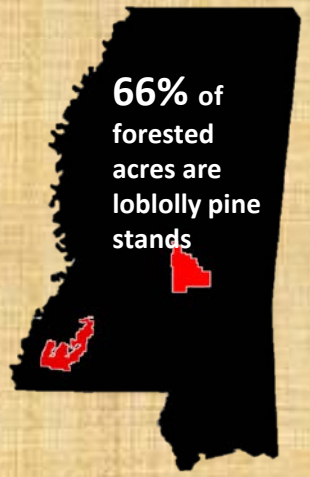
For Further Discussion

- How can we improve markets?
- Should we thin during an outbreak?
- Should we burn during an outbreak?
- Can we improve our spring trapping prediction system?

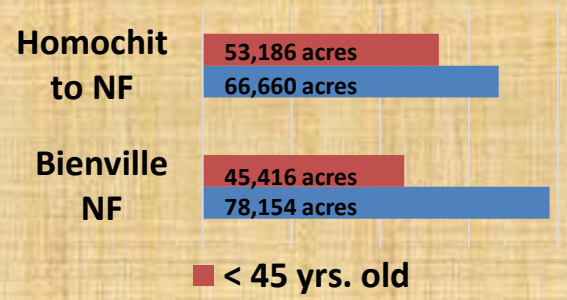
Key Findings from the 2016 Southern Pine Beetle Outbreak on the National Forests in Mississippi

Homochitto (361 SPB spots) and Bienville (317 SPB spots) National Forests

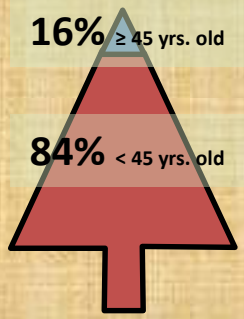


85% of all SPB spots occurred in loblolly pine stands

Age Distribution of Loblolly Pine Stands



SPB Spot Distribution by Loblolly Stands



Only **3 spots** occurred on the nearly **13,000** acres of young loblolly stands which were **thinned** in the previous decade.

99% of all SPB spots in young loblolly stands occurred in areas which had **not been thinned**

On these two National Forests, **85,000** acres of young loblolly pine stands are in need of thinning or other treatments to prevent or minimize outbreaks of SPB in the future.

PROPER THINNING OF PINE STANDS PREVENTS SOUTHERN PINE BEETLE SPOTS.

For more information about Southern Pine Beetle and this study, contact James Meeker at jrmeeker@fs.fed.us or John Nowak at jnowak@fs.fed.us.

Relationship between resin flow and SPB; Resin flow related to tree growth; thinning increases tree growth.

Hopkins (1899); Vite' (1961); Shopmeyer and Larson (1985); Brown et al. (1987); Nebeker/Hodges et al. (1992);

Untreated Spread of the Southern Pine Beetle

East Quogue

Dec. 2014

NEW YORK STATE | Department of Environmental Conservation


UGA0014309

United States Department of Agriculture

Forest Service

Southern Research Station

e-General Technical Report SRS–152

Economic Dynamics of Forests and Forest Industries in the Southern United States

Thomas J. Brandeis, Andrew J. Hartsell, James W. Bentley, and Consuelo Brandeis

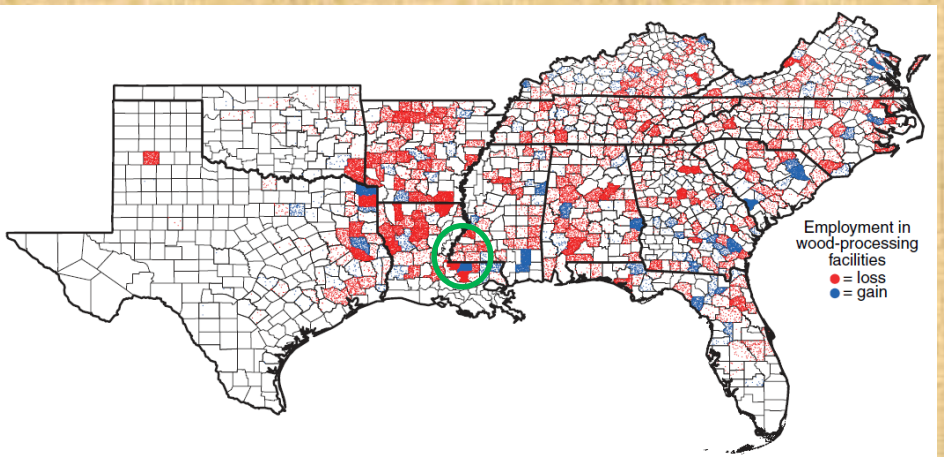


Figure 20—Total change in employment of primary wood-processing facilities as derived by timber product output survey, Southern United States, 2005–09. Each dot represents one individual.

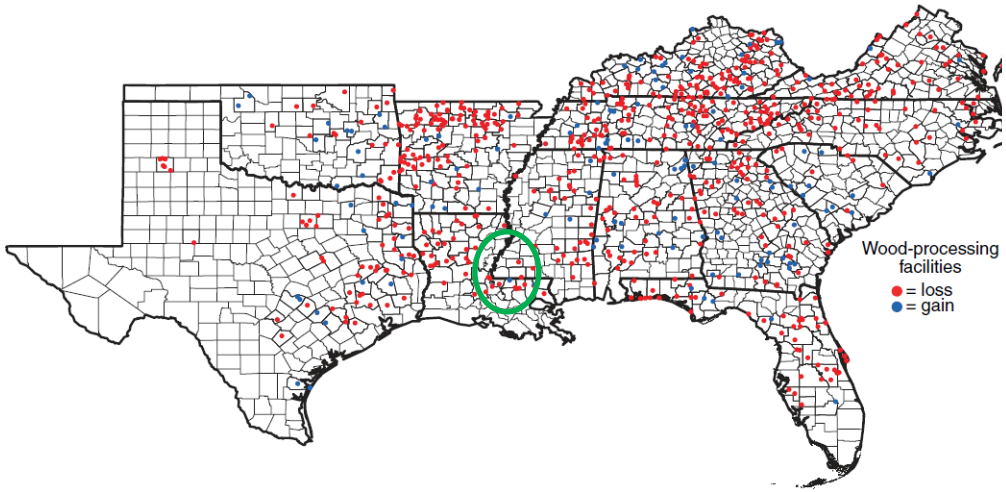


Figure 16—Total change in the number of primary wood-processing facilities as derived by timber product output survey, Southern United States 2005–09. Each dot represents one mill.

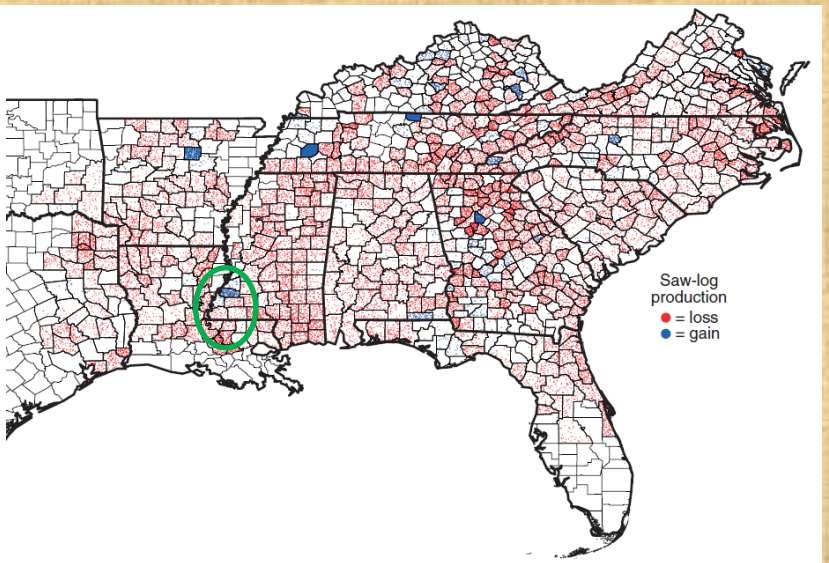
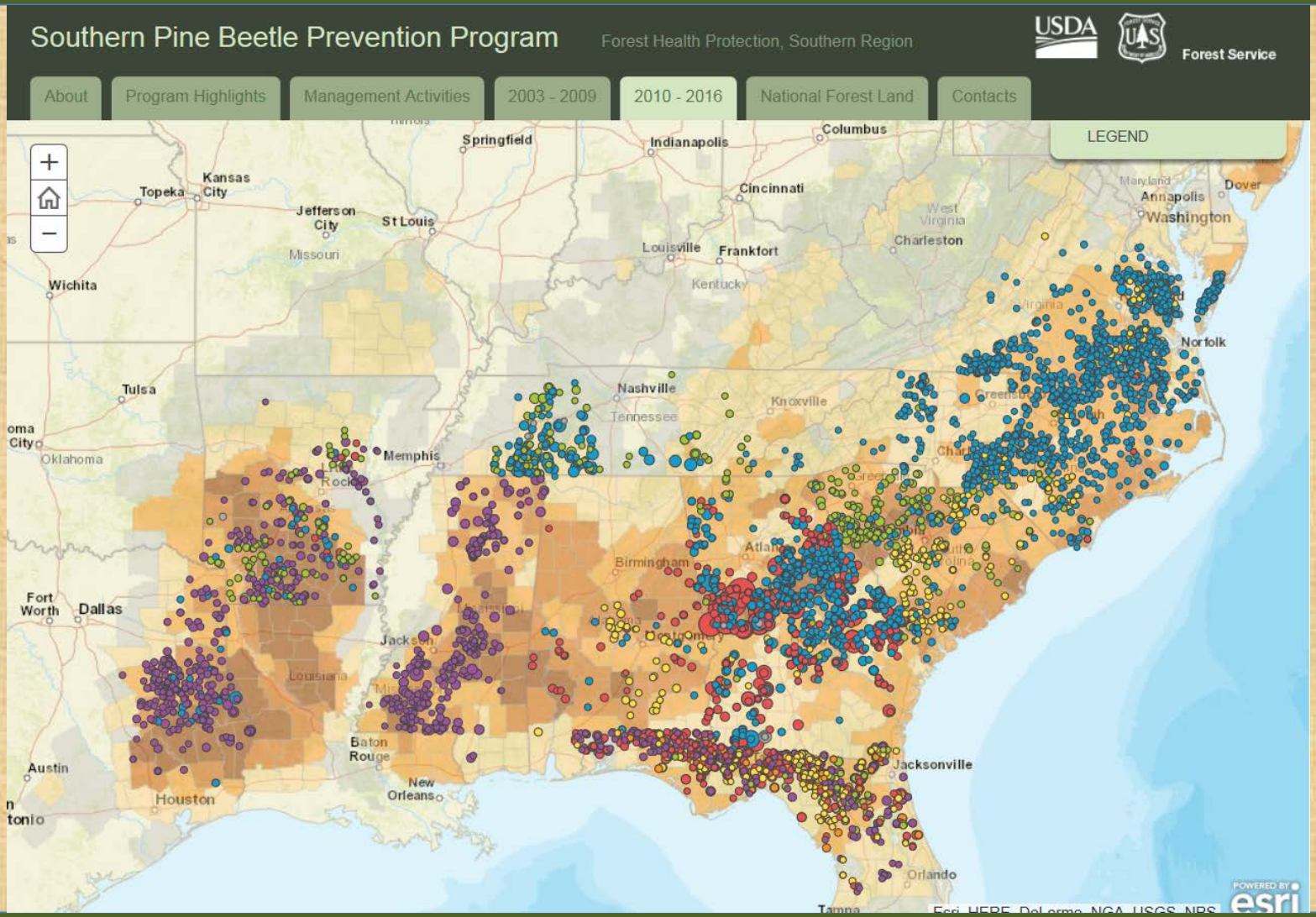


Figure 6—Total change in softwood saw-log production as derived by timber product output survey, Southern United States, 2005–09. Each dot represents 10,000 cubic feet of change.

Thinning to 80 sq. ft./ac. or less is currently the most effective and efficient means of preventing SPB losses.

Thinning Recommendations

- Thinning will prevent SPB
- Thin by spacing
- Consider 20’ distance between trees
- Create an open understory

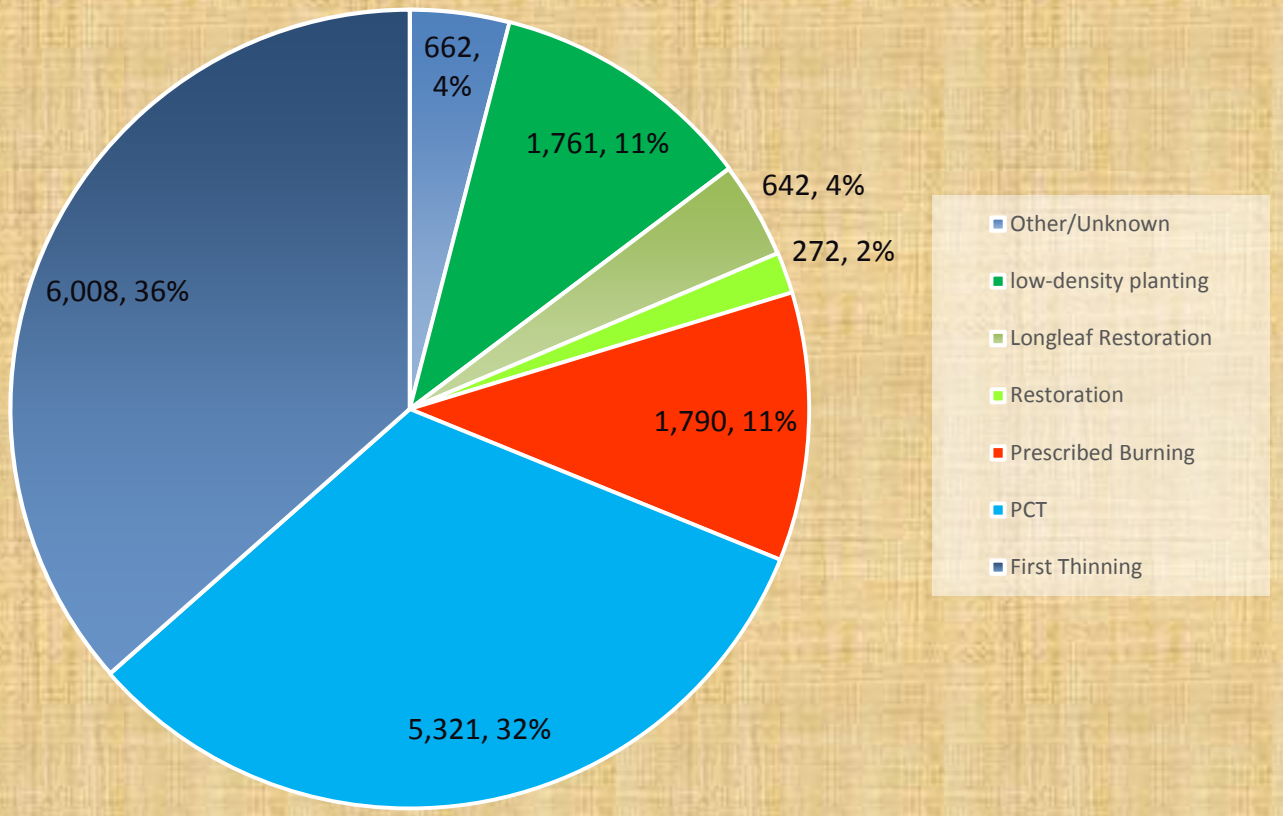

Southern Pine Beetle Prevention Program
Forest Health Protection, Southern Region
USDA
Forest Service
About
Program Highlights
Management Activities
2003 - 2009
2010 - 2016
National Forest Land
Contacts
LEGEND
Springfield
Indianapolis
Columbus
Kansas City
Topeka
Jefferson City
St Louis
Missouri
Cincinnati
Louisville
Frankfort
Kentucky
West Virginia
Charleston
Maryland
Annapolis
Washington
Dover
Wichita
Virginia
Norfolk
Tulsa
Nashville
Tennessee
Knoxville
Oklahoma
Memphis
Birmingham
Fort Worth
Dallas
Jackson
Louisiana
Baton Rouge
New Orleans
Houston
Austin
Jacksonville
Orlando
Tampa
esri

Pheromone Plume Modelling Results

- Thinning has a dramatic influence on ventilation, incident solar radiation and dispersive characteristics of the in-canopy environment.

Prevention of Southern Pine Beetle

SPB Prevention Accomplishments: Individual Treatments



Prevention of Southern Pine Beetle

Beetle Behavior Changes with Seasons

Winter - scattered, dispersed and less active

Spring – peak dispersal and spot initiation

Summer – spot growth and proliferation phase, slumps with periods of extreme heat

Fall – secondary dispersal phase

South-wide Spring Pheromone Trapping Survey

Black Turpentine Beetle

Dendroctonus terebrans

Ips Pine engravers

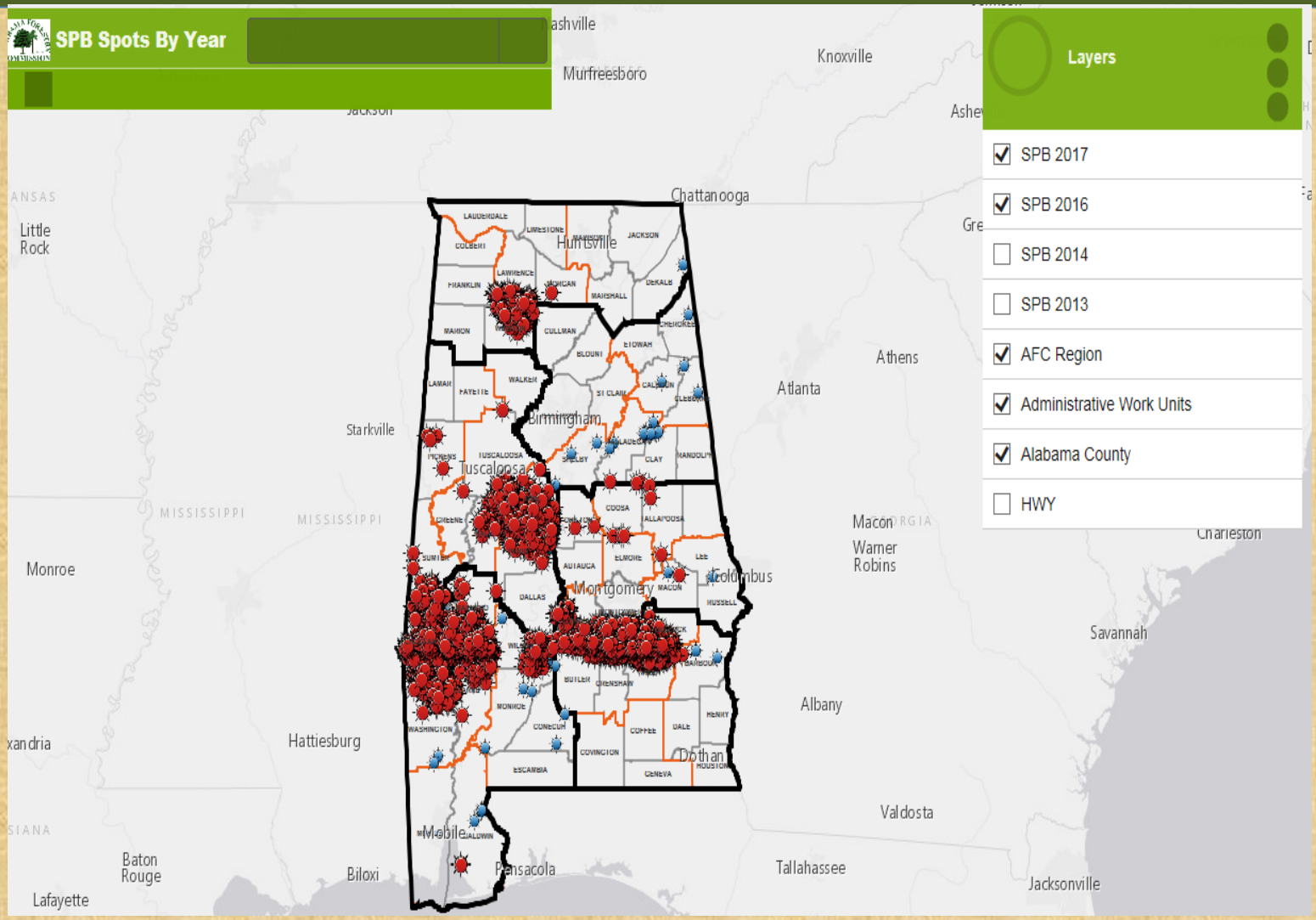
Ips avulsus

Ips grandicollis

Southern Pine Beetle

Dendroctonus frontalis

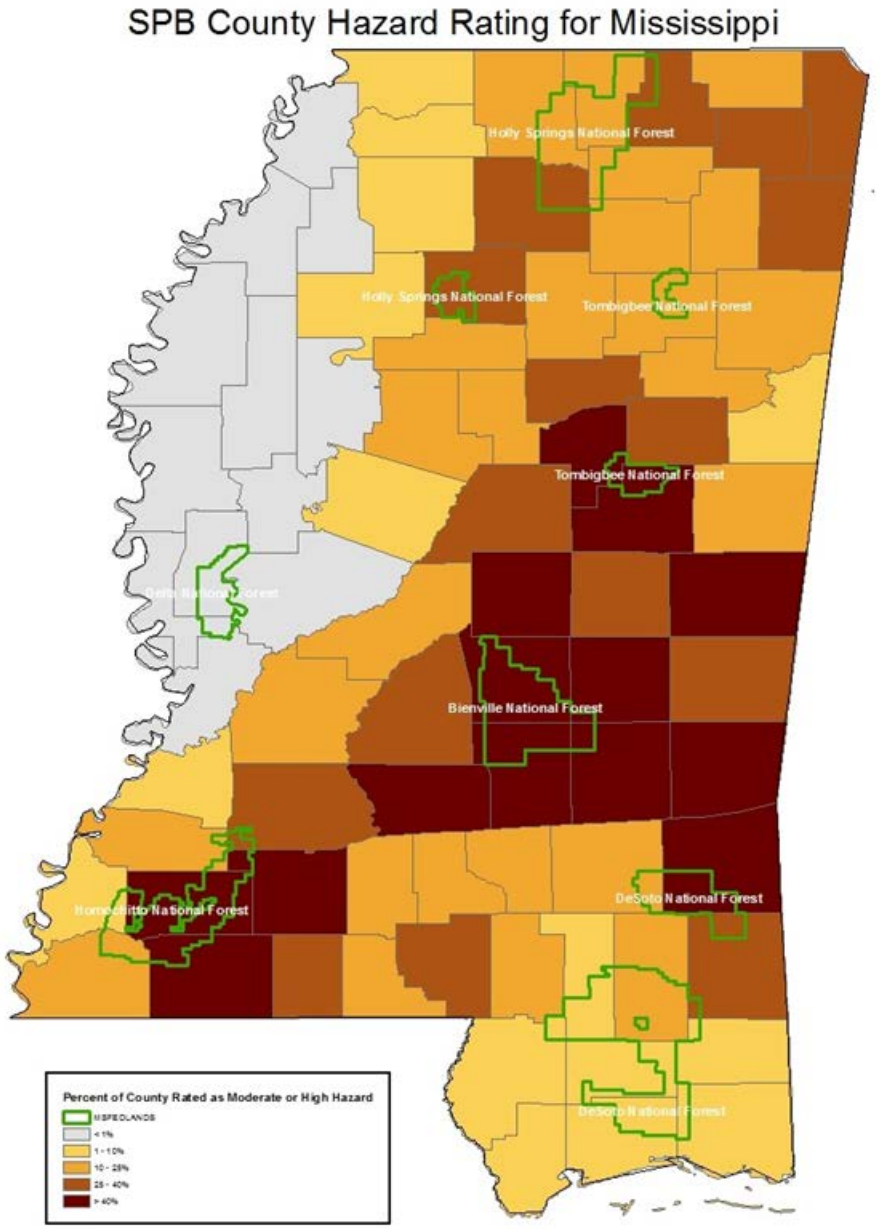
Ips calligraphus

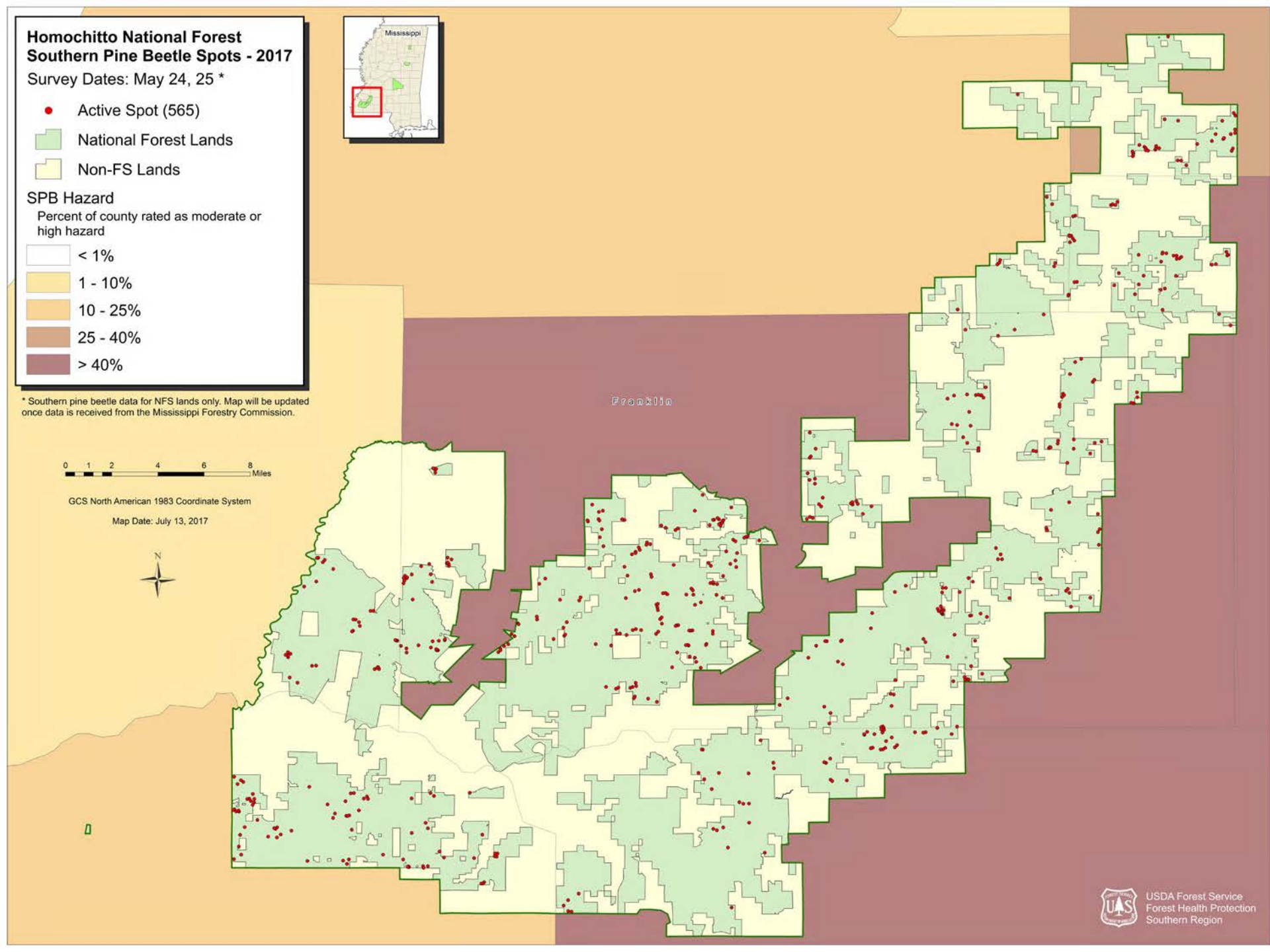

SPB Spots By Year
Layers
SPB 2017
SPB 2016
SPB 2014
SPB 2013
AFC Region
Administrative Work Units
Alabama County
HWY
Nashville
Murfreesboro
Knoxville
Chattanooga
Little Rock
Huntsville
Athens
Atlanta
Birmingham
Starkville
Tuscaloosa
Macon
Warner Robins
Monroe
Montgomery
Columbus
Savannah
Albany
Hattiesburg
Dothan
Valdosta
Mobile
Pensacola
Tallahassee
Baton Rouge
Biloxi
Lafayette
Jacksonville
Charleston

2012 National Insect & Disease Risk Map (NIDRM)

Vulnerability to SPB was modeled generally according to the following criteria:

1. Increasing with increases in **basal area** (basal area below 10 sq. ft. was excluded; 46% weighting)
2. Increasing with increasing **average diameter** (diameters below 3” were excluded; 23% weighting)
3. Increasing with increasing **stand density** (low stand densities were excluded; 15% weighting)
4. Increasing with increases in the number of **historical outbreaks** in a county (15% weighting)




Homochitto National Forest
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Survey Dates: May 24, 25 *
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> 40%
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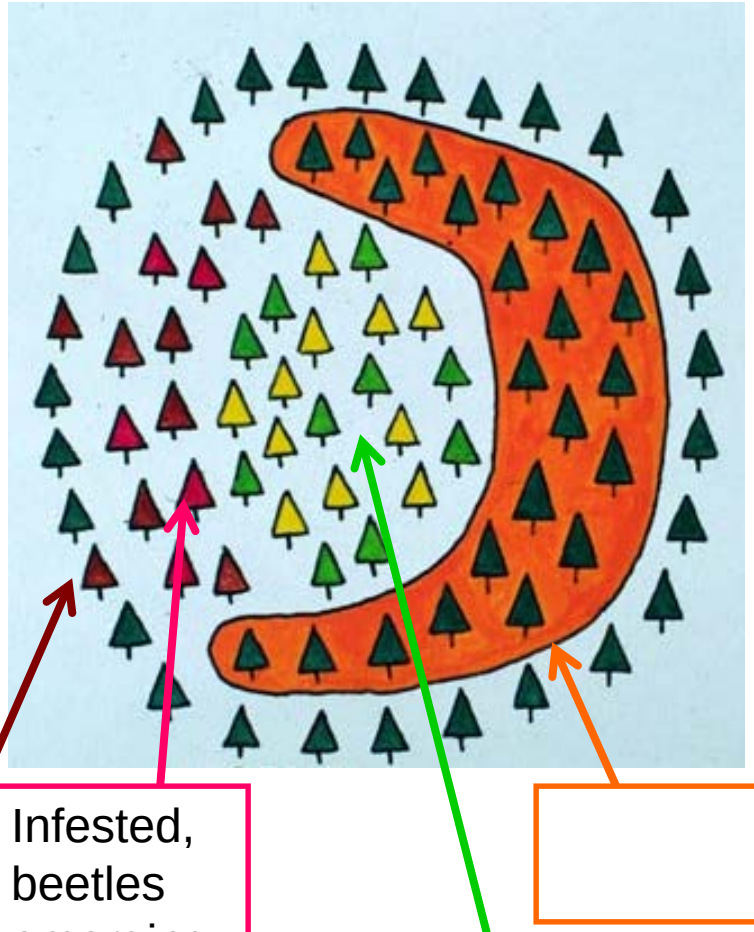
Mississippi
Franklin
0 1 2 4 6 8 Miles
GCS North American 1983 Coordinate System
Map Date: July 13, 2017
N
USDA Forest Service
Forest Health Protection
Southern Region

SPB Control: Cut and Remove

- Identify active spot “head” of recently-infested trees
  - fresh boring dust & pitch tubes, green or fading crowns
- Mark buffer strip around active head
  - Width ~ avg. height of trees
- Remove infested and buffer trees ASAP
- Vacated trees may be left standing



SPB Control: Cut and Leave

- Fell infested and buffer trees toward spot center and leave on ground

- Objectives: Disrupt pheromone biology and beetle attack behavior, halt spot expansion