



United States Department of Agriculture

# Southern Pine Beetle



Forest Service

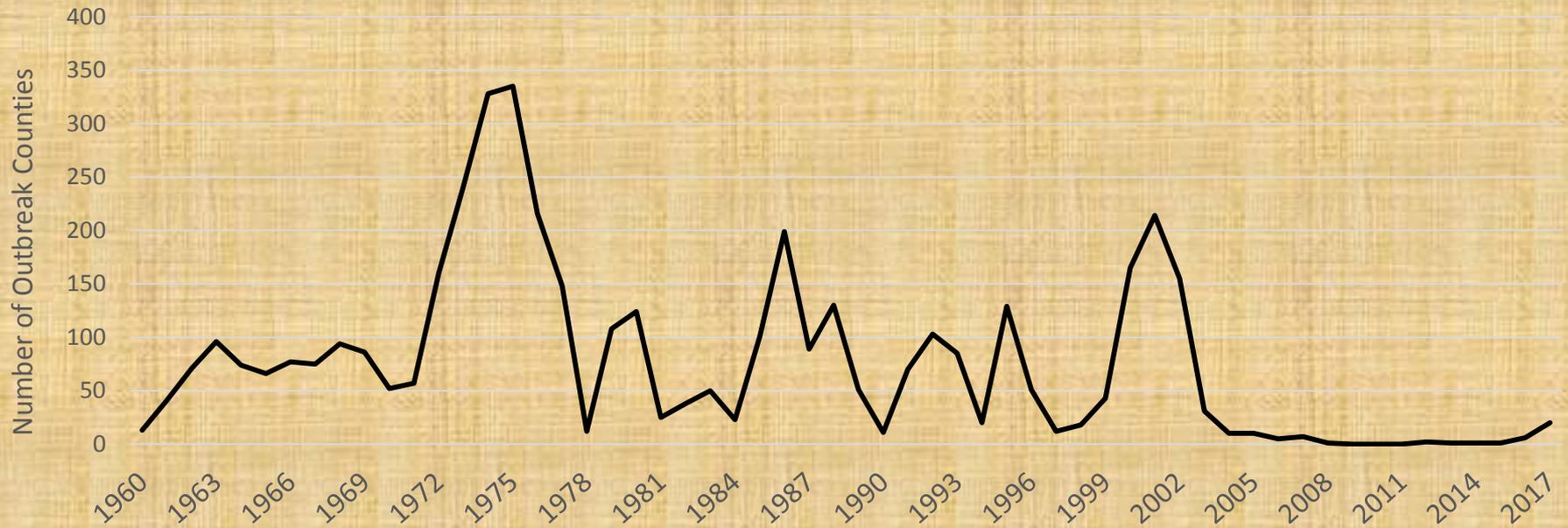
John T. Nowak

Forest Health Protection

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### SPB Outbreaks: 1960-2017



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





**Black  
Turpentine Beetle**

*Dendroctonus terebrans*



**Southern  
Pine Beetle**

*Dendroctonus frontalis*



**Ips Pine  
engravers**

*Ips avulsus*

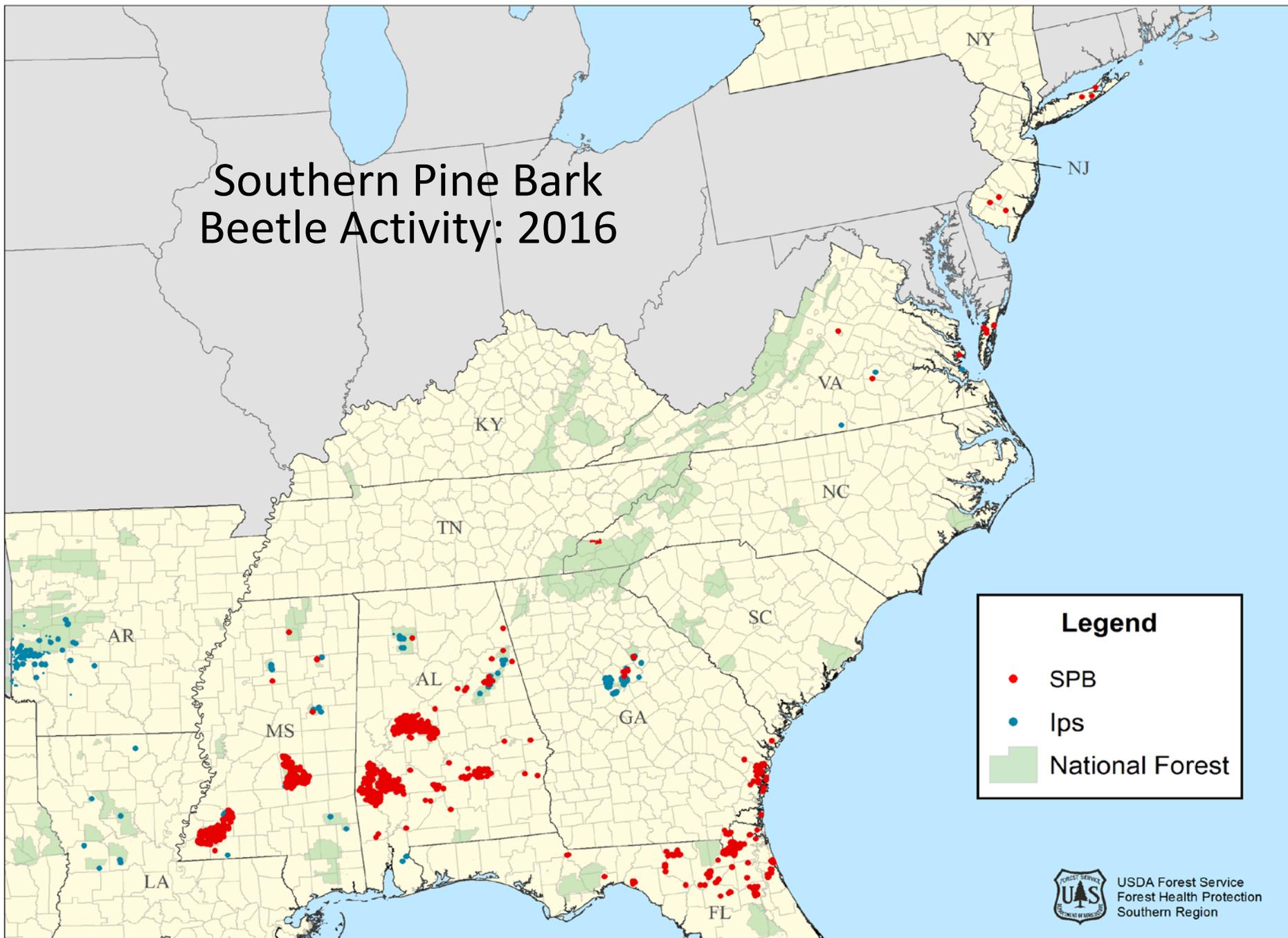


*Ips grandicollis*



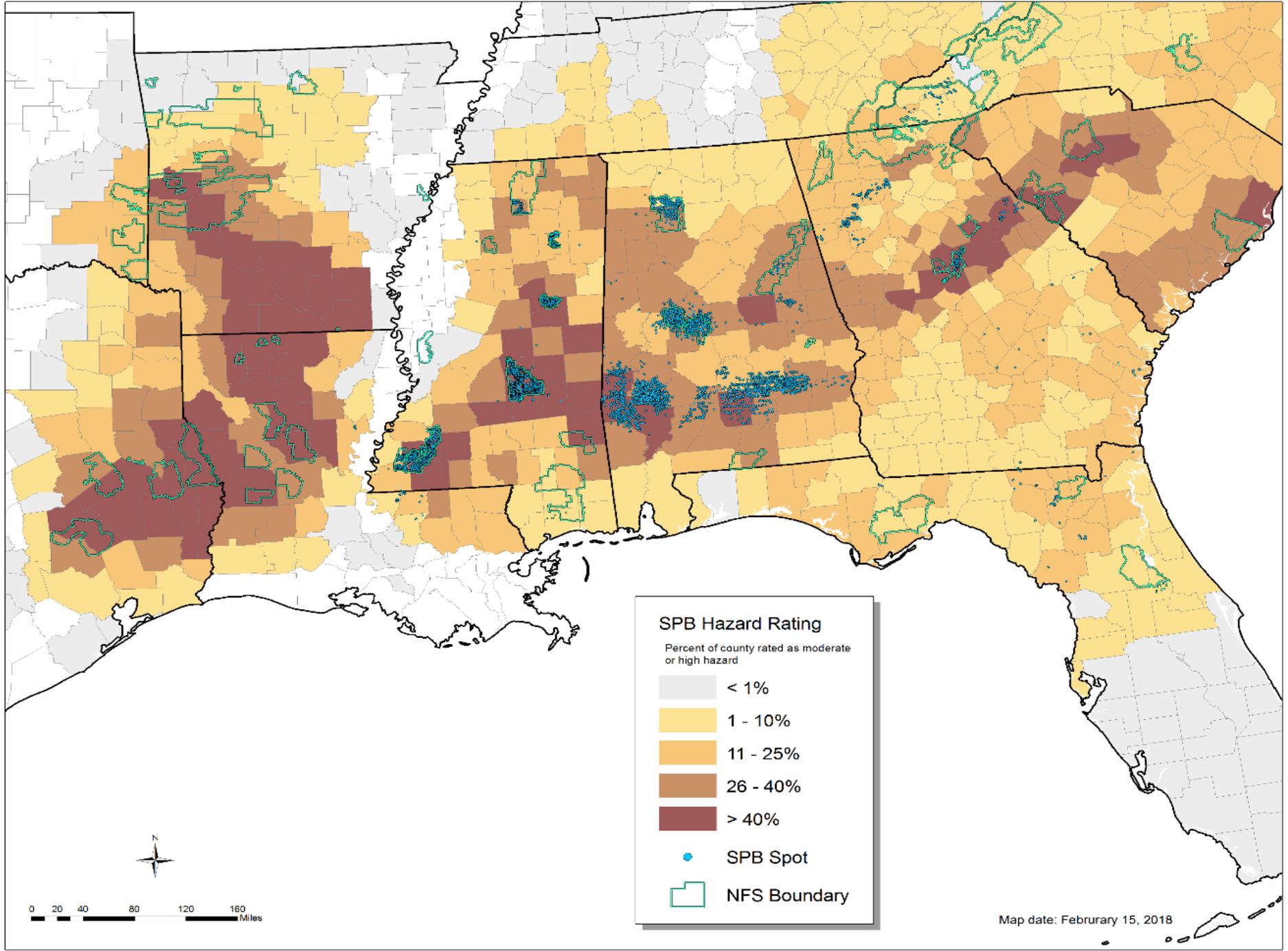
*Ips calligraphus*

# Southern Pine Bark Beetle Activity: 2016



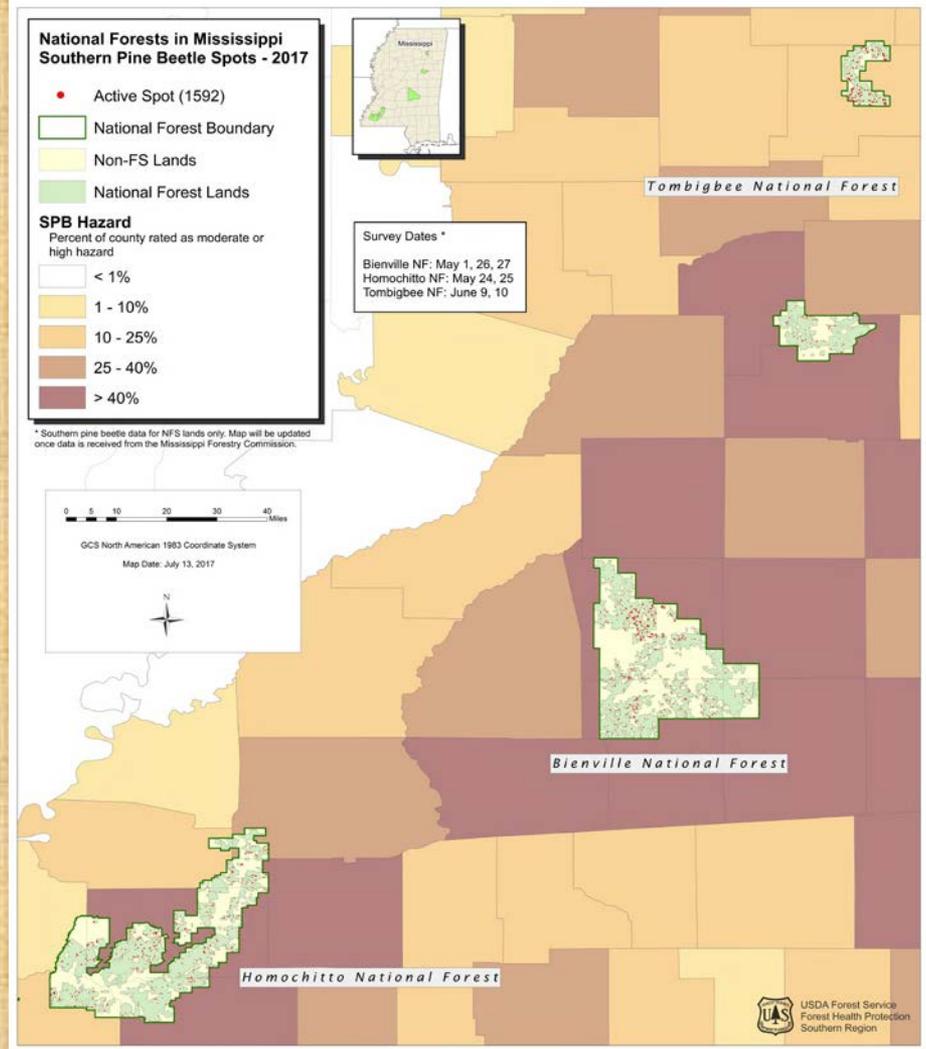
**Legend**

- Red dot: SPB
- Blue dot: Ips
- Green shaded area: National Forest



## SPB in MS

- Close to 5,000 known spots; impacting 20,000 acres; most spots in 20-40 yr-old unthinned loblolly
- Increasing activity
- Mostly NFs but more showing up on private land
- NFs are prioritizing spots near RCW and private land
- Suppression hindered by market conditions; Doing more suppression with an eye towards restoration





# Tools and Opportunities

- Population Trend Prediction
- Detection
- Suppression
- Prevention



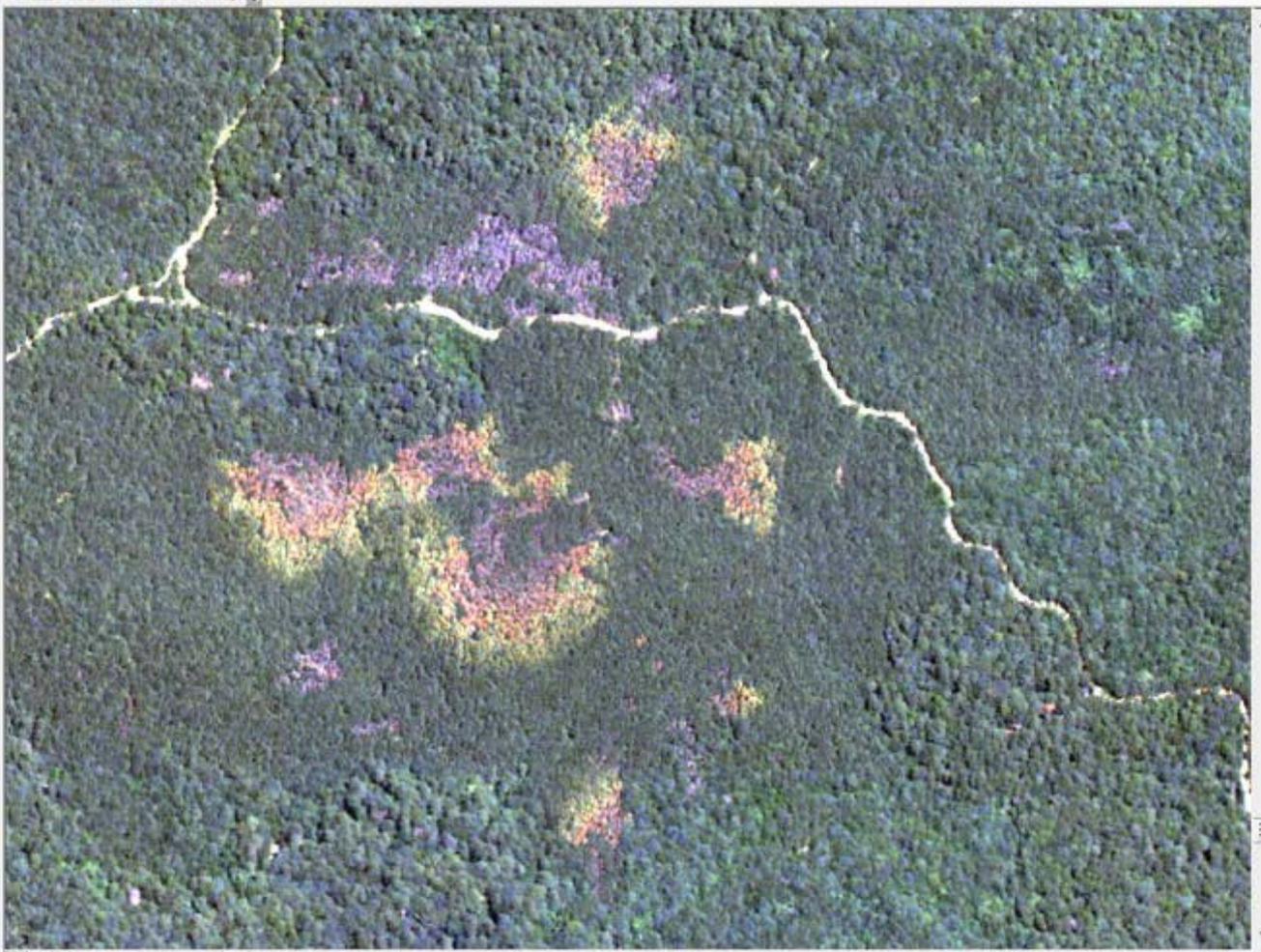
# South-wide Spring Pheromone Trapping Survey





Table Of Contents

- Layers
  - class\_3m\_redtrees\_FIRSTdeliverable
  - ResourcePhoto\_Region08\MS\_SPB\_Project
    - RGB
      - Red: Band\_5
      - Green: Band\_4
      - Blue: Band\_1



10158223.207 3671676.01 Meters

Would you like

class\_3m\_redtrees\_FIRSTdeliverable.shp Date  
SHP File

GTAC Meeting Room 3 (Sharing...)

Adobe Connect

Created: 8/16/2017 1:47 PM





UGA0014309





- Appropriate species for site
- Fire is part of the equation
- Low stand density is preferable



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);

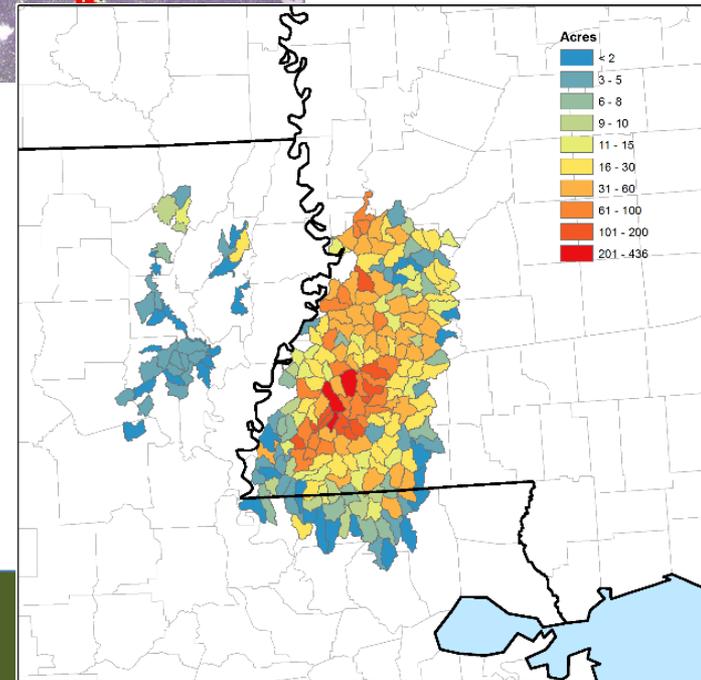
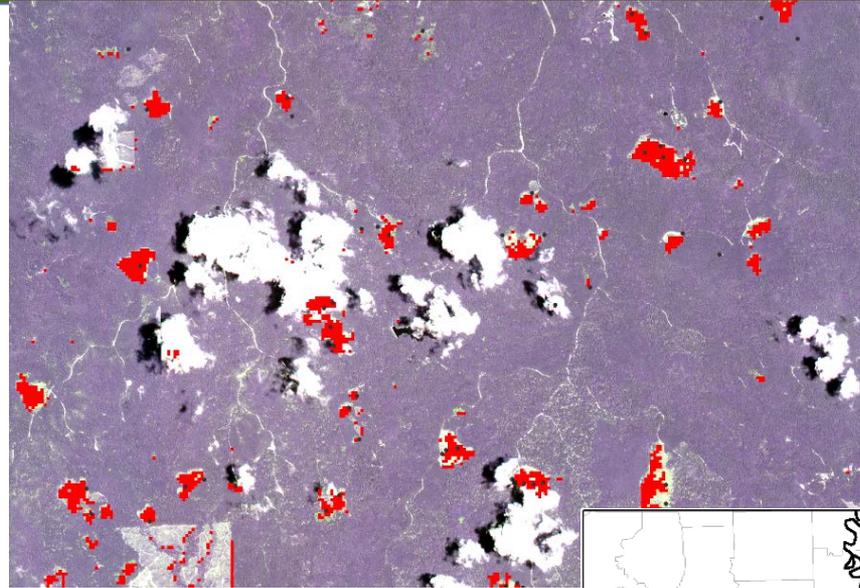


## For Further Discussion

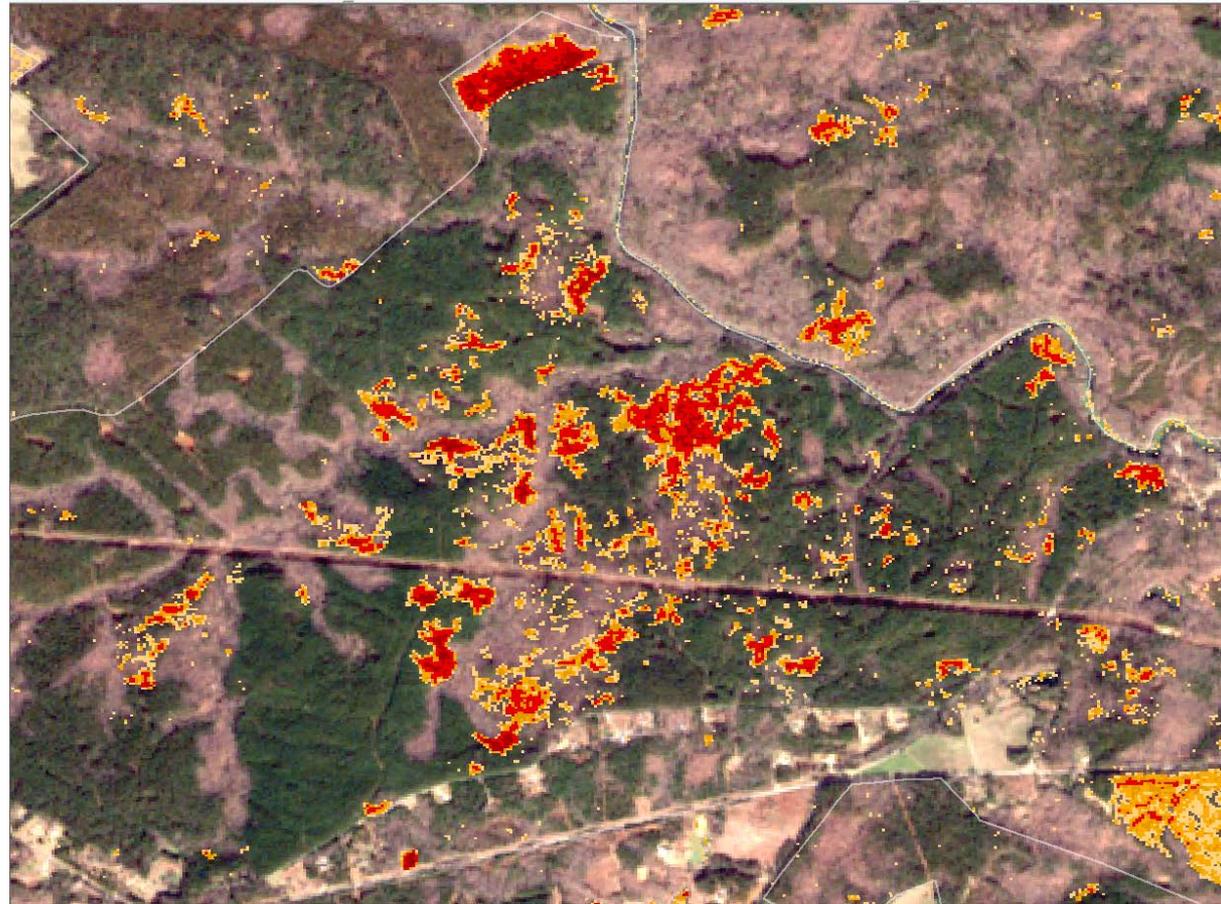
- How can we improve markets?
- Should we thin during an outbreak?
- Should we burn during an outbreak?
- Can we improve our spring trapping prediction system?



- Using Landsat and a supervised classification to identify spots regionally and produce an end of season map
- Forest Health Assessment and Applied Sciences Team (FHAAS)



- **Use of Sentinel-2 Imagery in Forest Health Monitoring**
- **Steve Norman**  
**William Hargrove**  
**William Christie**
- National Forest Health Monitoring Workshop
- Phoenix, Arizona  
Feb. 13-15, 2018





## Southern Pine Beetle Prevention Program

Forest Health Protection, Southern Region



Forest Service

About

Program Highlights

Management Activities

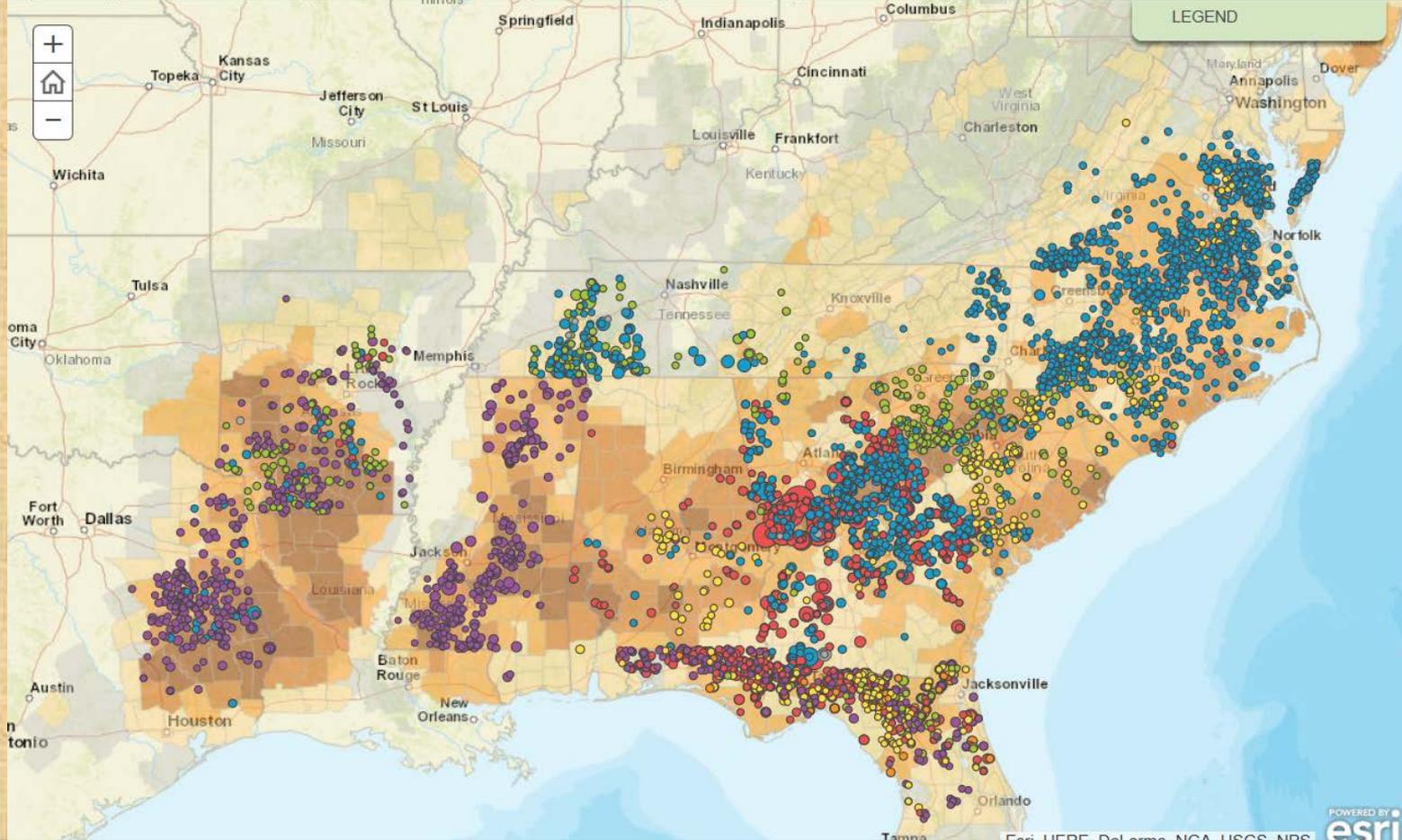
2003 - 2009

2010 - 2016

National Forest Land

Contacts

LEGEND



POWERED BY  
Esri



# Thinning Recommendations

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





## INCIDENT STATUS SUMMARY (NIMS ICS 209): October 30, 2017

47. Remarks (or continuation of any blocks above – list block number in notation):

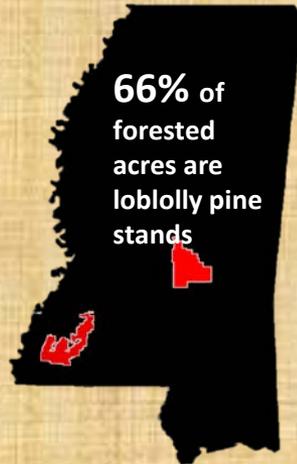
District	Total Spots	New Spots	Total # of Spots Still needing Recon	Total Treated Spots	# of Spots Treated Today	Total Acres Treated	Total Acres Treated Today	Spots Grown out of Buffer
Bienville	1,660	0	96	449	2	2485.01	25.04	27
Homochitto	994	0	0	351	0	2225.3	0	36
Tombigbee/ Holly Springs	1,352	0	149	191	0	541.8	0	3
<b>Grand Total</b>	<b>4,006</b>	<b>0</b>	<b>245</b>	<b>991</b>	<b>0</b>	<b>5252.11</b>	<b>0</b>	<b>66</b>

Bienville –CUT AND LEAVE OPERATIONS COMPLETED ON BIENVILLE.  
Homochitto – 3 Mechanical cutters working today.  
Tombigbee & Holly Springs –Cut and Leave Operations are finished for the year.



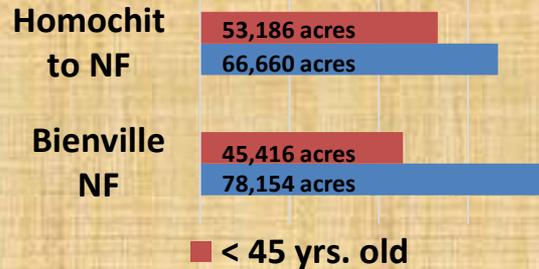
# Key Findings from the 2016 Southern Pine Beetle Outbreak on the National Forests in Mississippi

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

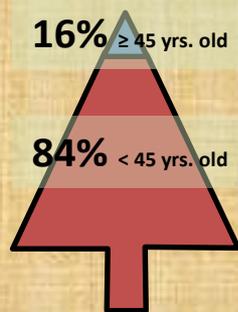


**85%** of all SPB spots occurred in loblolly pine stands

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,

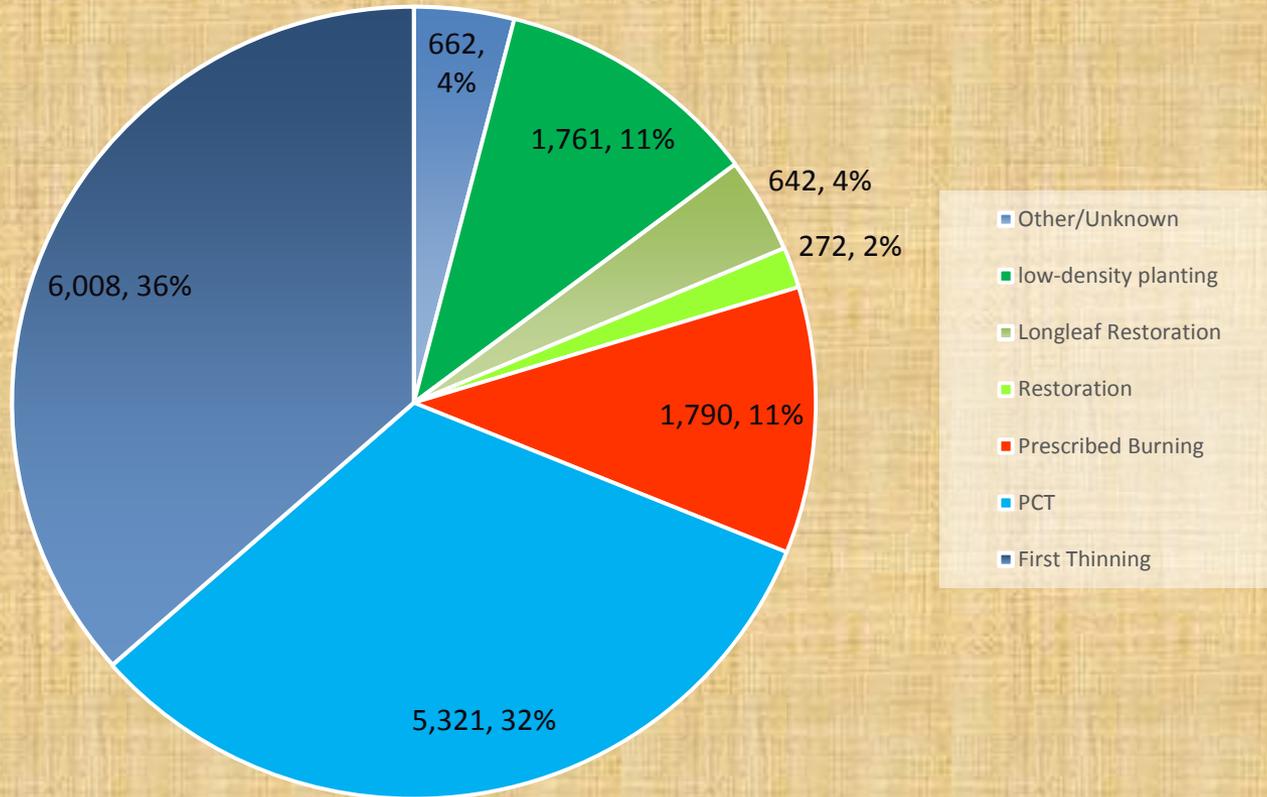
**85,000** acres of young loblolly pine stands are in need of thinning or other treatments to prevent or minimize outbreaks of SPB in the future.

**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](mailto:jrmeeker@fs.fed.us) or John Nowak at [jnowak@fs.fed.us](mailto:jnowak@fs.fed.us).



### SPB Prevention Accomplishments: Individual Treatments



# 2012 National Insect & Disease Risk Map (NIDRM)

## SPB County Hazard Rating for Mississippi

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)

