

Georgia's Forest Health Threats

April 12, 2023

Lynne Womack
Forest Health
Coordinator

Georgia Forestry
Commission
Rome, GA

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Georgia Forestry Commission

**GEORGIA FORESTRY
COMMISSION**

OUR MISSION
We provide leadership, service and education to protect and conserve Georgia's forest resources.
GFC works to promote, protect and conserve healthy, sustainable forests.

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GEORGIA FORESTRY COMMISSION

6645 Riggins Mill Road
Dry Branch, GA 31020
1-800-GA-TREES (428-7337)
GaTrees.org

Forest Health Program

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Regional Forester Boundaries

Prepared by M Turbell
8/24/22 10:28:56 AM EDT
14/0001 12:44 PM

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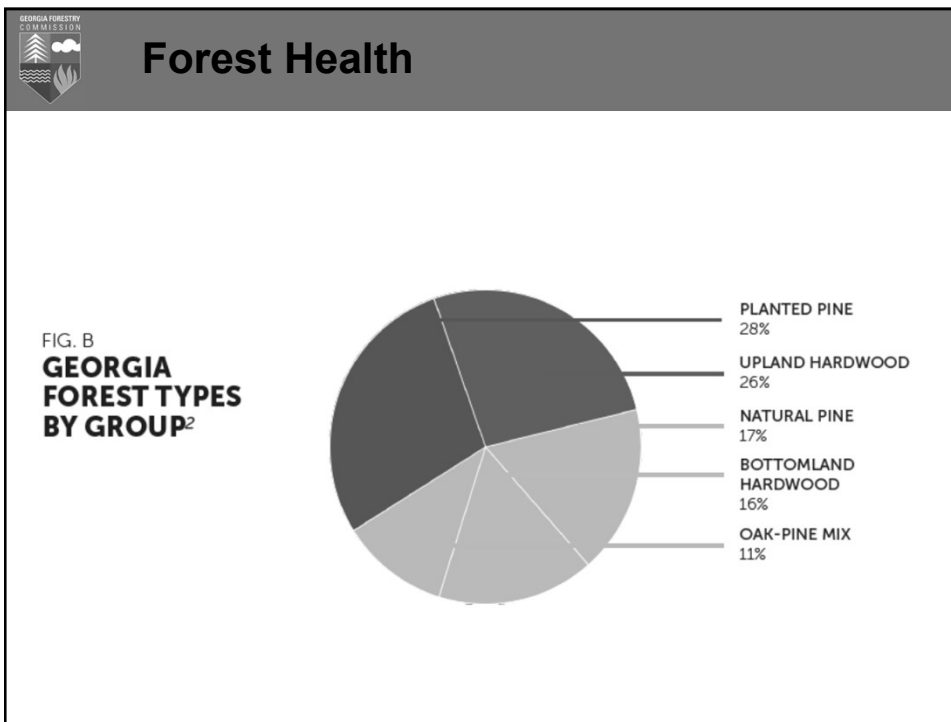
Forest Health

Georgia's Forest Statistics –

- 24 million acres of forestland
 - 2/3 of the state
 - Size of 4 Vermonts
- 91% of forestland is privately owned

Ownership Type	Percentage
PRIVATE, INDIVIDUAL	55%
FOREST INDUSTRY	6%
PUBLIC	9%
CORPORATE	29%

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Invasives not new....

- Gypsy Moth - 1869
- Chestnut Blight - 1904
- Dutch Elm Disease - 1921



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What is happening in Georgia now....

- Invasive Plants
- Pine Bark Beetles
- Emerald Ash Borer
- Asian Longhorned Beetle



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The Port of Savannah...

1994	550,000 Containers
2004	1.05 million Containers
2014	3.34 million Containers
2016	3.61 million Containers
2018	4.35 million Containers
2021	5.61 million Containers

***Georgia Port Authority (Includes Imports and Exports)**


- Savannah's total container trade expanded 19.9% in Calendar Year 2021 (CY21) from CY20 to reach 5.61 million TEUs.
- Fueled by growth in imports (up 42%) and exports (up 36%), the Port of Savannah grew 39% from CY17 through CY21.

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Ideal places to find non-native insects

- Bark on lumber or SWPM
- Large wood chocks, skids, pallets or wooden spools




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Ideal places to find non-native seeds

- Cogongrass
- Wild sugarcane



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The Problems with Invasive plants

- Early introduction in the 1700s and 1800s as ornamentals or forages, resulting in a long period of spread, hybridization, and adaptation.
- Rapid early growth rates that outpace native cohorts.
- Few native predators.
- Production of abundant fruit and seed at a young age.
- Seed that is readily spread by wind, water, birds, and mammals.
- Seed that can remain viable in the soil for 1 year and even up to decades.
- Capability to establish and spread in sites of periodic disturbance, such as along ever expanding forest edges, on rights-of-way, along stream and river banks, and in abandoned crop and pasture lands.


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The Problems with Invasive plants

- Roots or rhizomes that persist and resprout after topkill following herbicide applications, cutting, or burning and that grow outward to yield intensified and dense infestations
- Wide tolerance to shade, drought, soil conditions, and flooding.
- Capability of forming exclusive (or limited species) dense infestations.
- Capability to adapt and spread in a new site through a “set-and-wait” strategy until conditions are suitable.
- Capability of suppressing other plant seed germination and growth by releasing allelopathic chemicals (through the invasive plant’s foliage and roots).

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FOREST HEALTH

Top Twelve Nonnative Invasive Plants
(Using Forest Inventory and Analysis Data in Acres)
2021 Dirty Dozen List

Rank	Species	2015 - 2019			Trend	
		2019 Acres	2017 Acres	2015 Acres		
1	Non-native privet	716,930	644,317	718,311	693,186	Stable
2	Nepalese browntop	93,110	90,204	106,194	96,503	Stable
3	Chinaberry	54,990	47,757	58,064	53,604	Stable
4	Non-native lespedeza	47,870	35,862	44,175	42,636	Increasing
5	Kudzu	32,850	30,961	36,968	33,593	Stable
6	Chinese tallowtree	32,290	24,321	19,724	25,445	Increasing
7	Non-native olive	24,720	19,456	22,631	22,269	Increasing
8	Japanese climbing fern	20,280	19,978	19,724	19,994	Stable
9	English Ivy	16,680	12,981	12,744	14,135	Increasing
10	Wisteria	14,000	7,874	9,902	10,592	Increasing
11	Mimosa (Chinese silk tree)	10,170	11,647	15,180	12,332	Decreasing
12	Callery Pear (Bradford Pear)	10,040	5,400	1,623	5,688	Increasing
	Cogongrass Control Efforts * (Acres)(12/31/2021)	418	348	303		Stable


72 counties have had cogongrass detection since 2007, and to date 34 of the 72 counties have no active cogongrass. Georgia's proactive treatment program assists landowners across the state, and 85% of all known cogongrass spots in Georgia are considered inactive. The Georgia Forestry Commission documents all known cogongrass infestations.

Invasive Species: Any plant or animal that has been introduced and aggressively competes with and displaces local native communities; normally having no native enemies to limit reproduction and spread.

The Dirty Dozen List of Non-native Invasive Species is ranked by the total acres occupied according to Forest Inventory and Analysis data. Honey Suckle and Vervain are not included in this list. Credit for the data used to make this list to the US Forest Service Forest Inventory and Analysis Program and The Georgia Forestry Commission FIA Foresters.

	2019	2017	2015
Callery Pear	10,040	5,400	1,623
Trifoliate Orange	9,800	7,874	3,404


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Invasive Species Books

A Field Guide for the Identification of

Invasive Plants in Southern Forests






United States
Department
of Agriculture

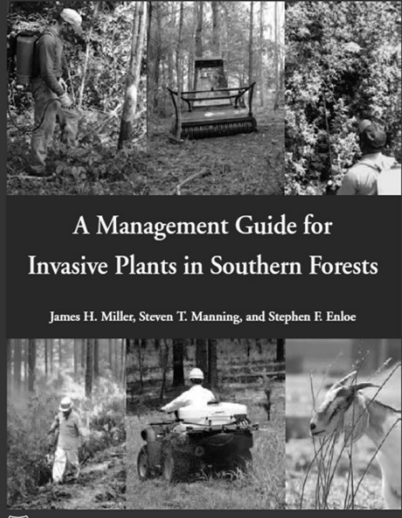
Forest Service
Southern Research Station
General Technical Report SRS-119

James H. Miller, Erwin B. Chambliss, and Nancy J. Loewenstein

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Invasive Species Books



**A Management Guide for
Invasive Plants in Southern Forests**


James H. Miller, Steven T. Manning, and Stephen F. Enloe

United States Department of Agriculture • Forest Service • Southern Research Station
General Technical Report SRS-131


Website:
<https://wiki.bugwood.org/Archive:IPSF>

Download PDF:
<https://www.srs.fs.usda.gov/pubs/36915>

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Top 12 Invasive Exotic Species



Cogongrass

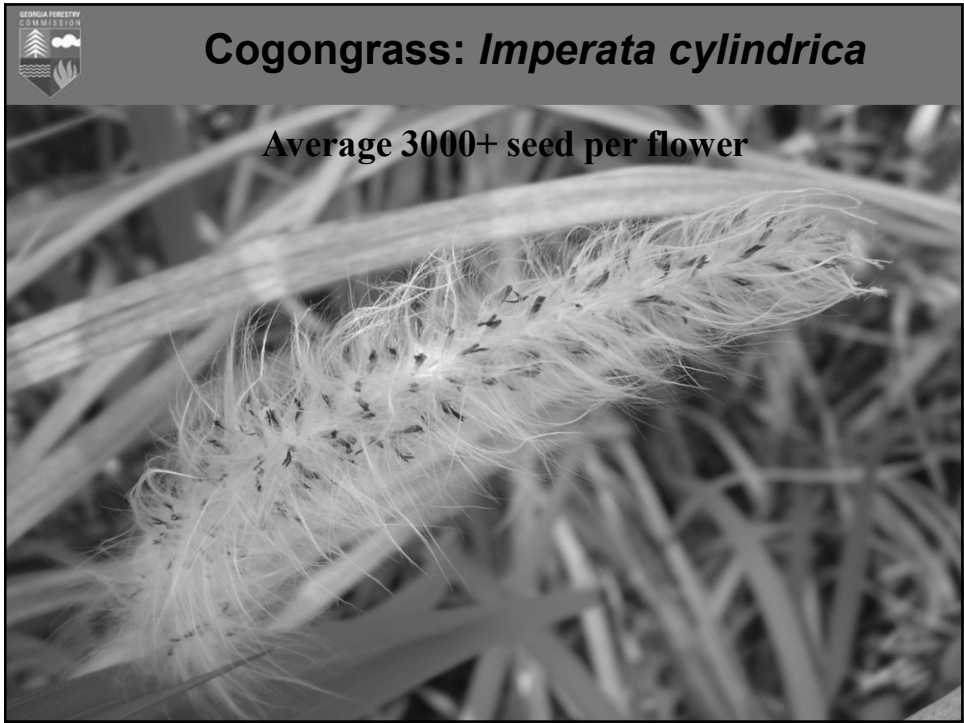
- FIA has no plots with Cogongrass detected, but this is such a dangerous species early on in its invasion of Georgia that we wanted it on the list. GFC Forest Health staff has measured acreage at 450+ acres.



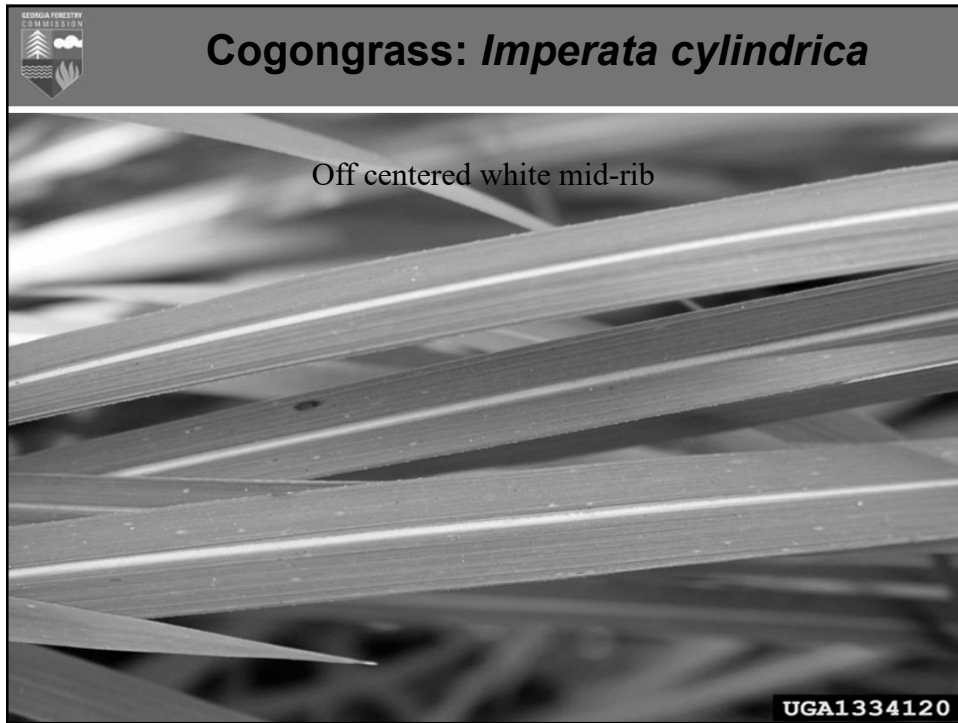
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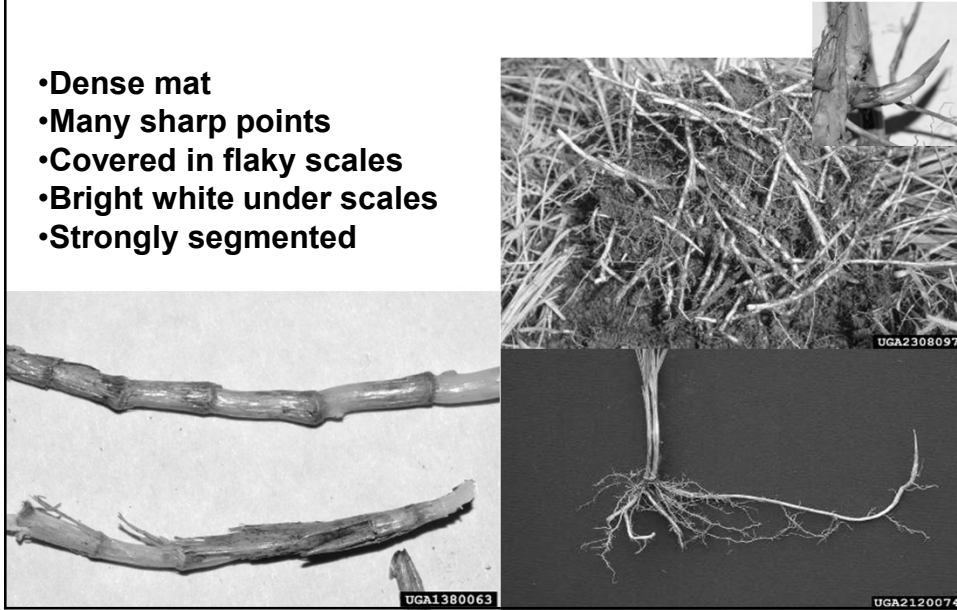


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Rhizome/Roots

- Dense mat
- Many sharp points
- Covered in flaky scales
- Bright white under scales
- Strongly segmented

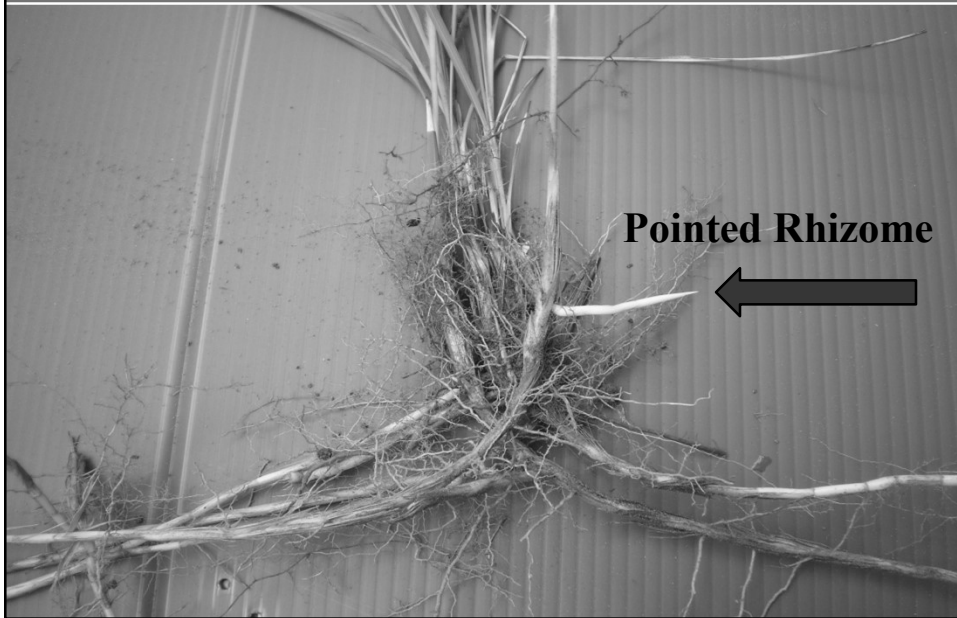


The composite image consists of three parts: a top-right view of a dense mat of roots, a bottom-left view of two individual rhizome segments showing their segmented and scaly texture, and a bottom-right view of a root system with a prominent white rhizome. Each image has a small UGA identification code in the bottom right corner: UGA2308097, UGA1380063, and UGA2120074.

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Cogongrass Identification



The image shows a cogongrass root system against a corrugated metal background. A prominent, white, pointed rhizome is highlighted with a black arrow and the text "Pointed Rhizome".

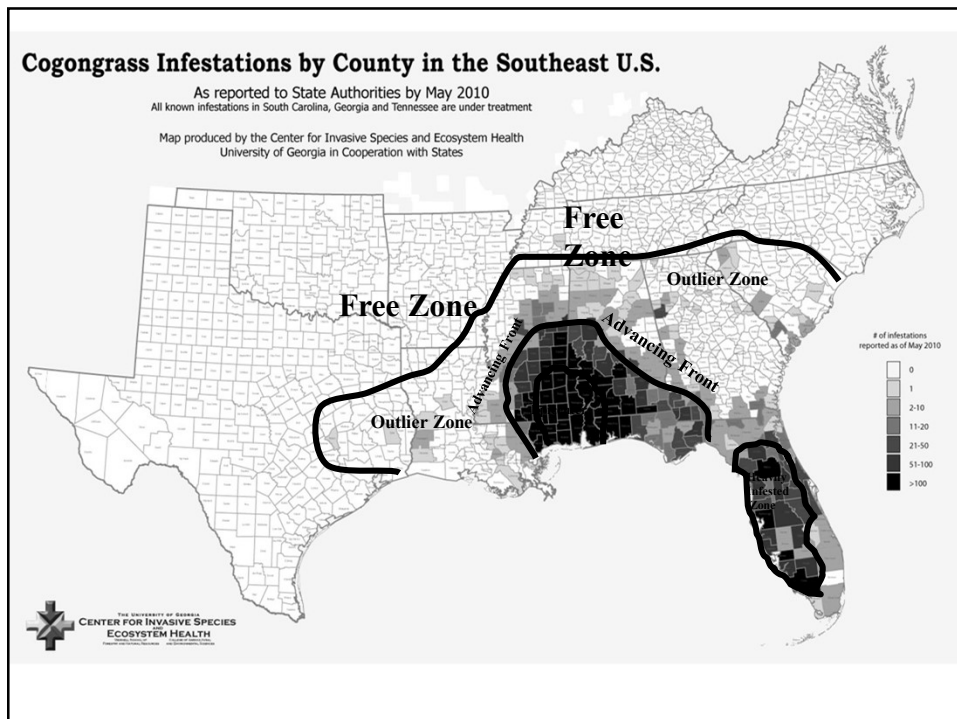
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Cogongrass Identification

- The best way to identify cogongrass is by the roots/rhizomes
- When you think a plant may be cogongrass always:
 - ✓ Dig up a plant
 - ✓ Look for a dense mat of white, pointed rhizomes

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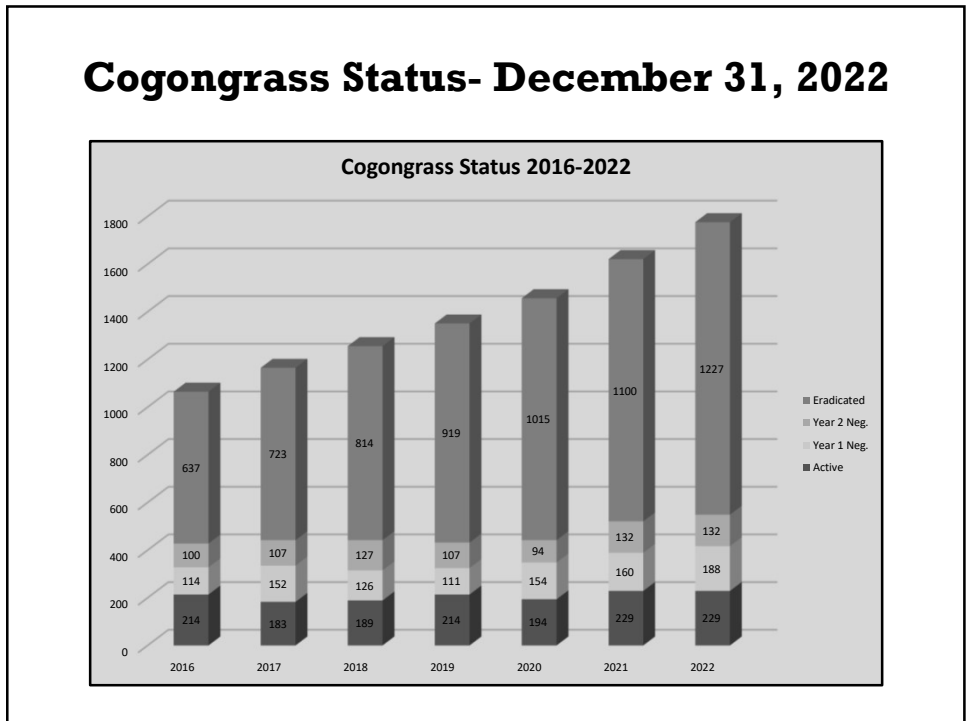


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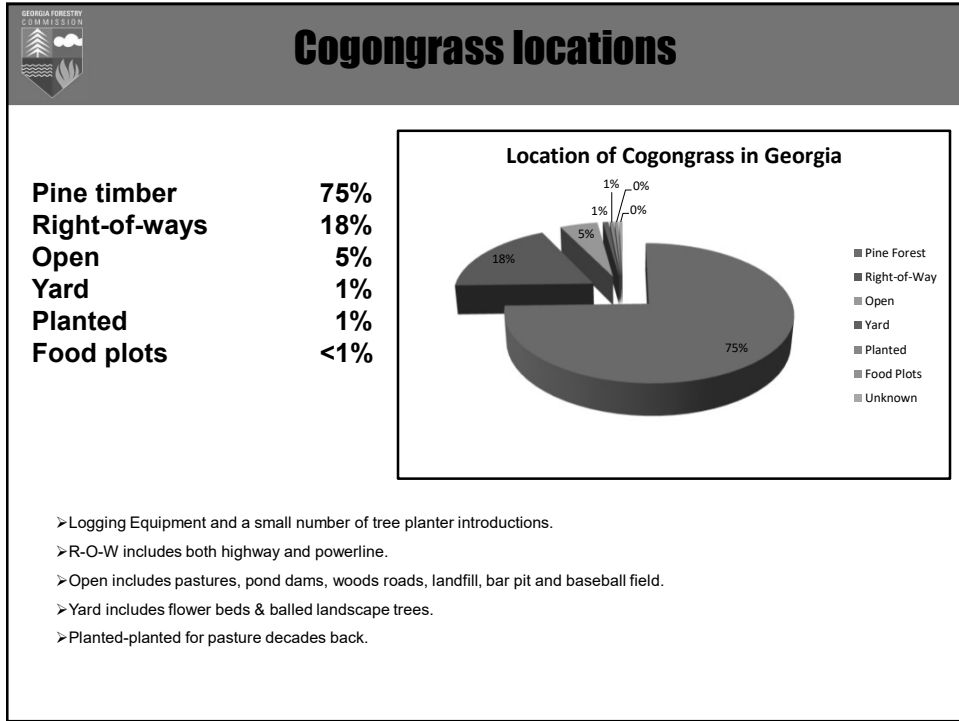
Year	Sites Reported	Cumulative Total Sites
1994-2006	59	59
2007	37	96
2008	131	227
2009	110	337
2010	135	472
2011	130	602
2012	87	689
2013	102	791
2014	76	867
2015	88	955
2016	110	1065
2017	100	1165
2018	91	1256
2019	95	1351
2020	107	1458
2021	156	1621
2022	155	1776

**Reports of
Cogongrass as of
12-31-22**

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Top Twelve Nonnative Invasive Plants

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What do I do if I find a spot of cogongrass?

Report the spot to the local GFC office or
Regional Forest Health Specialist

GFC will treat and monitor the spot
at **NO** cost to the landowner.

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Top 12 Invasive Exotic Species

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

12 – Callery Pear (Bradford Pear)

	2015	2017	2019
Callery Pear	1,623	5,400	10,040
Trifoliolate Orange	3,404	7,874	9,800

UGA1539090

34



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Callery Pear

Becoming a major invasive tree across Georgia.

Bradford pear was ornamental variety planted for decades.

USFS, GFC, UGA Forestry Extension conducting herbicide and management trials.

5369495

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Georgia Forestry Commission

Callery Pear

- Trees--cut large stems & immediately treat the stump tops with Garlon 3A or a glyphosate herbicide as a 25-50% solution.
- Make stem injections using undiluted Garlon 3A during June through September in cut spacings as specified on the herbicide label.
- Subsequent foliar application may be required to control new seedlings & resprouts.

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Callery Pear

- Saplings– Apply Garlon 4 as a 20% solution in a labeled basal oil product or apply undiluted Pathfinder II to young bark as a basal spray.
- Seedlings– Wet all leaves with one of the following herbicides in water with a surfactant: a glyphosate herbicide or Garlon 3A as a 2% solution, Arsenal AC® as a 0.25% solution.

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Trifoliate orange

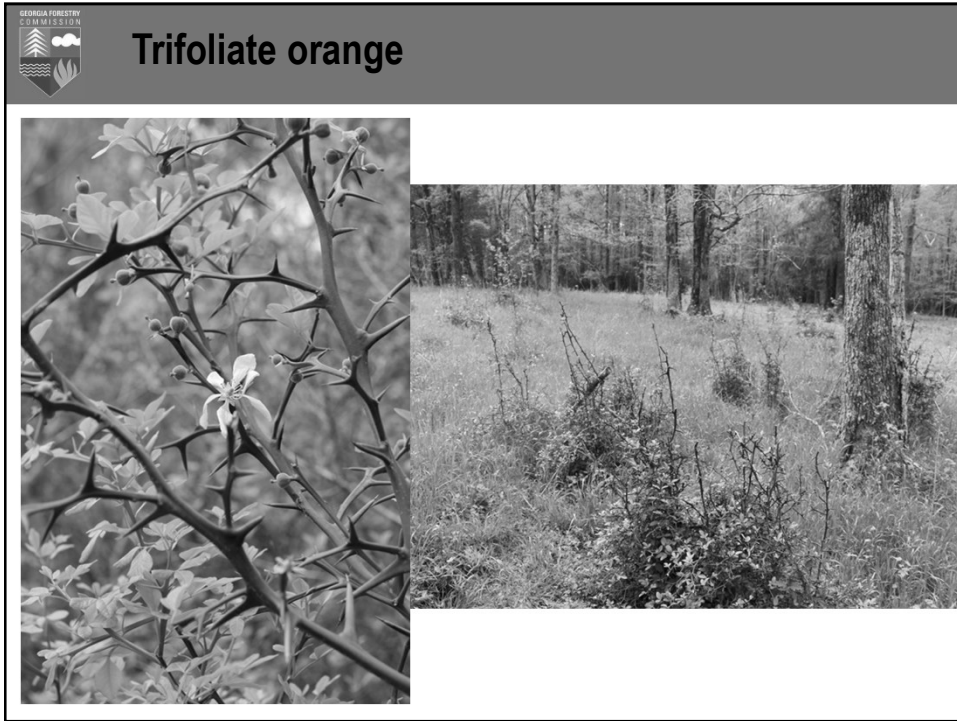
Becoming a major invasive tree in piedmont of east Georgia.

Seed easily spread by wildlife and domestic animals (cattle).

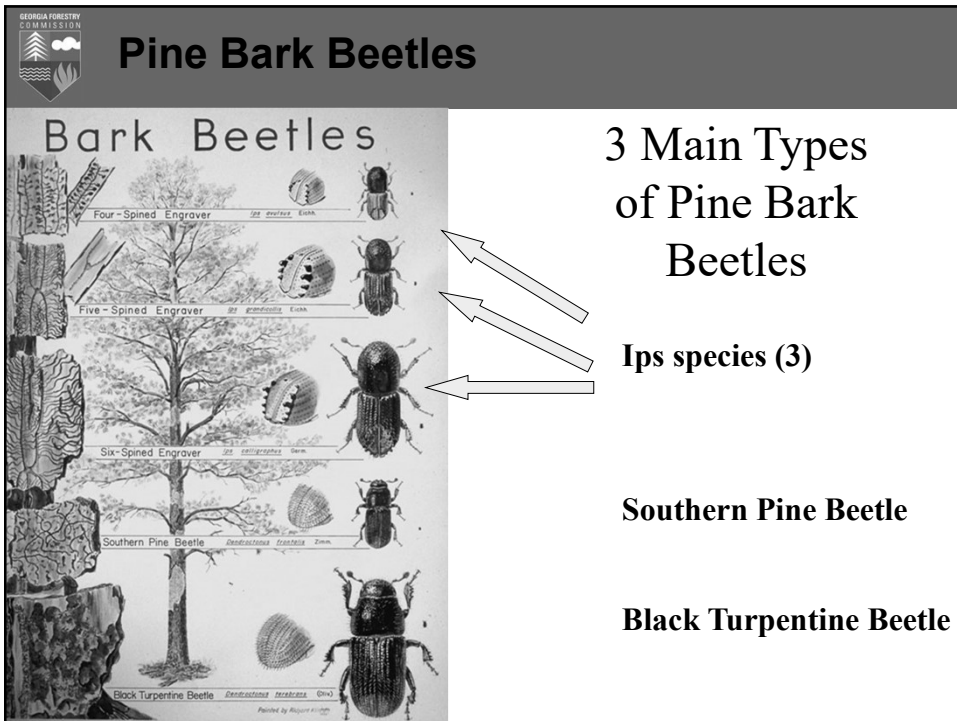
Frequently found around edges of fields.



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Black Turpentine Beetle

- Attracted to:
 - Stressed trees
 - Lightning strikes
 - Logging debris
 - Broken branches/ mechanical injury
 - Wildfire
 - Drought
 - Hurricane/Tornado

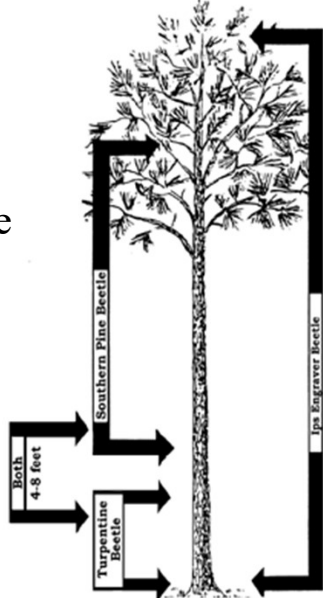


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Black Turpentine Beetle

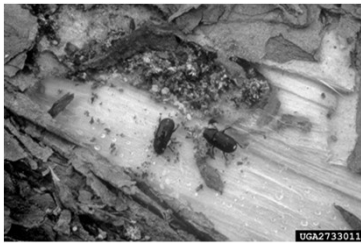
- Found in bottom 8-10 feet of tree
- Do not spread rapidly
- Infestations are not usually large (5-10 trees)
- Historically in areas that were heavily turpented
- Can be controlled with insecticide – bark spray



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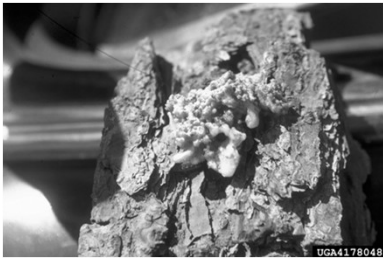
GEORGIA FORESTRY COMMISSION

Black Turpentine Beetle




UGA2733011

Large Beetle



UGA4178048

Large Pitch Tubes





UGA2089086

Large Pitch Tubes

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Black Turpentine Beetle




Loblolly pine, Cherokee County, GA

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Ips Engraver Beetles

- Attracted to:
 - Stressed trees
 - Lightning strikes
 - Logging debris
 - Broken branches/ mechanical injury
 - Drought
 - Hurricane/Tornado damage

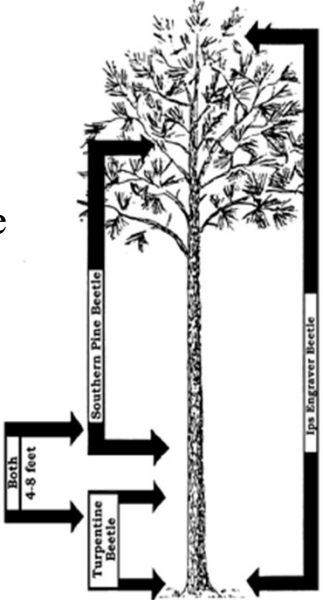


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Ips Engraver Beetles

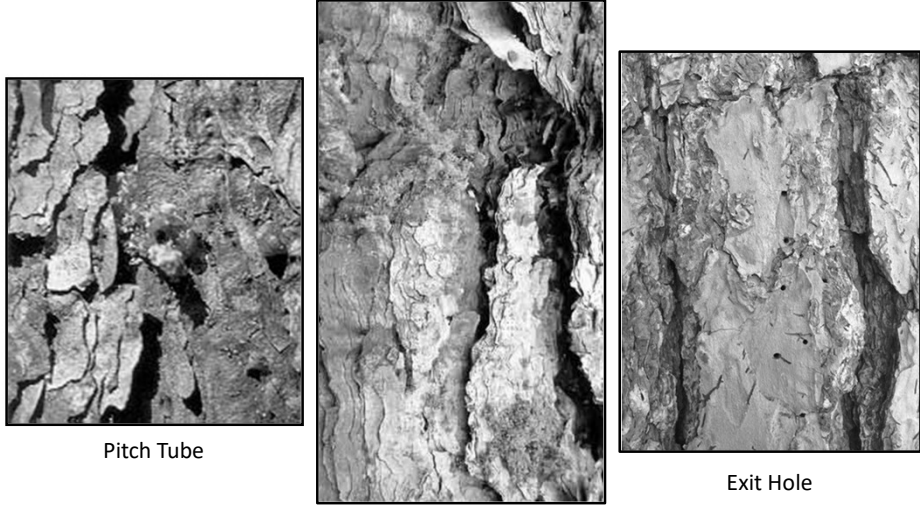
- Can invade trees from top to bottom
- Do not spread rapidly
- Infestations are not usually large (0.5 acre or less)
- Usually will accompany southern pine beetles, even across large infestations
- Cannot be controlled with insecticide



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Ips Engraver Beetles



Pitch Tube

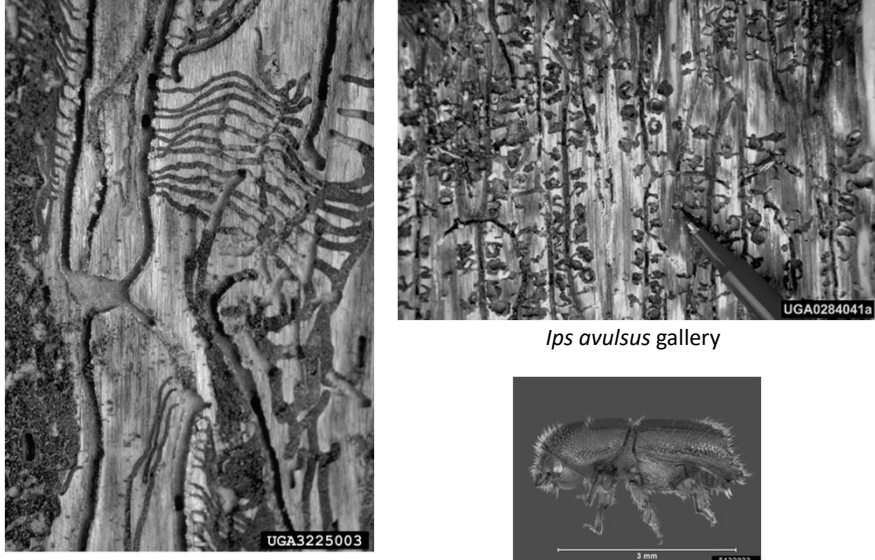
Boring Dust

Exit Hole

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Ips Engraver Beetles

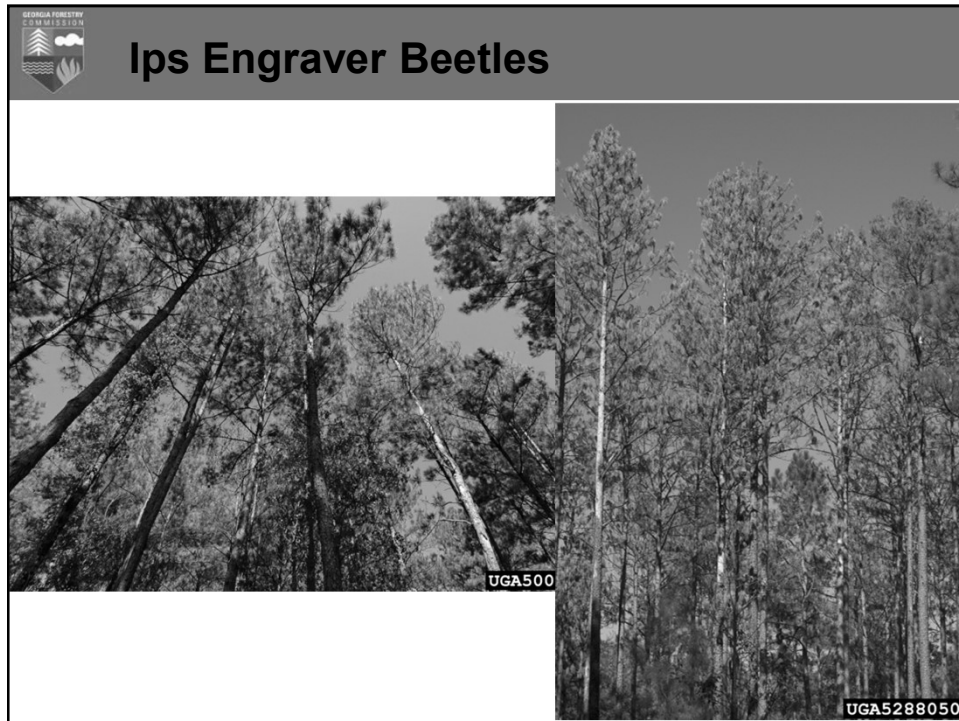


Ips grandicollis gallery

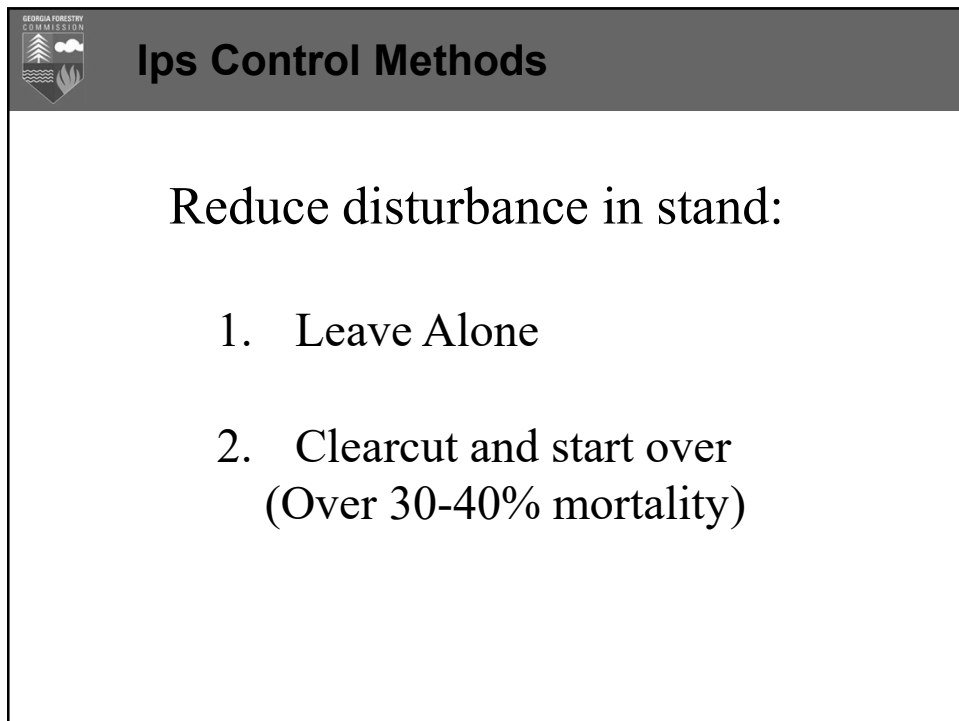
Ips avulsus gallery

Ips grandicollis

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Southern Pine Beetles


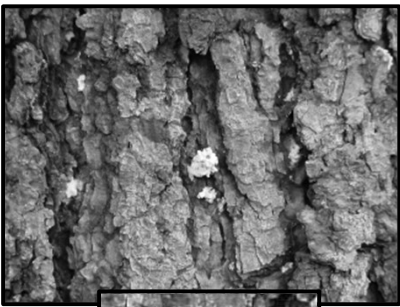
- Attracted to:
 - Overstocked pine stands
 - Over mature pine stands
 - Unmanaged stands
 - Stressed trees (Healthy during outbreak)




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Southern Pine Beetle



Pitch Tube





Exit Hole

UCA2089070

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Southern Pine Beetles

Dorsal view of southern pine beetles with female on the bottom and male on the top. Bar corresponds to 1.0 mm.
Credit: Demian Gomez, UF/IFAS

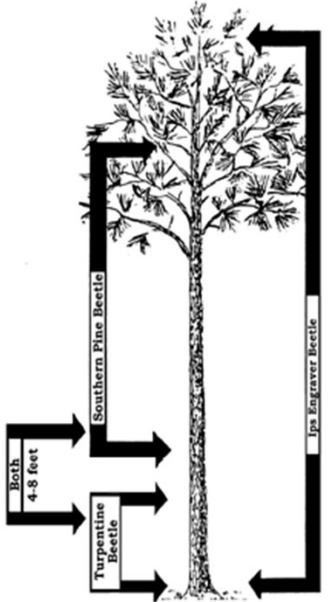
S-shaped or "wandering" galleries

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Southern Pine Beetles

- Invade trees from top to bottom
- Can spread rapidly
- Infestations can be large – spread until a physical barrier to stop them
- Sometimes associated with Ips and Turpentine beetles
- Healthy stand management usually prevents outbreaks




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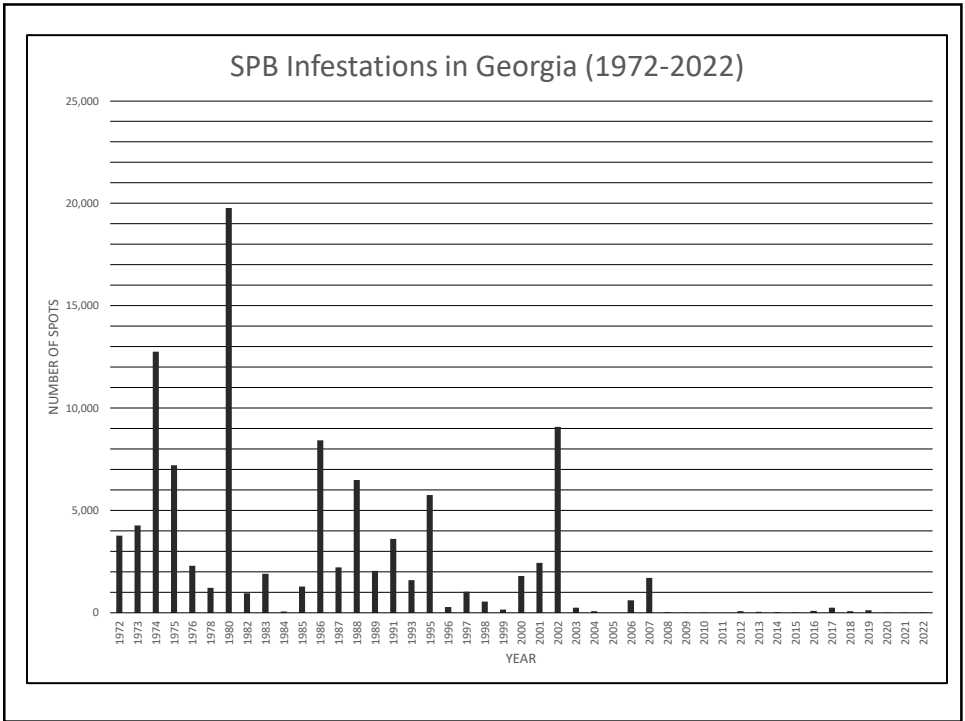
SPB Control Methods

1. Cut and Remove
2. Cut and Leave

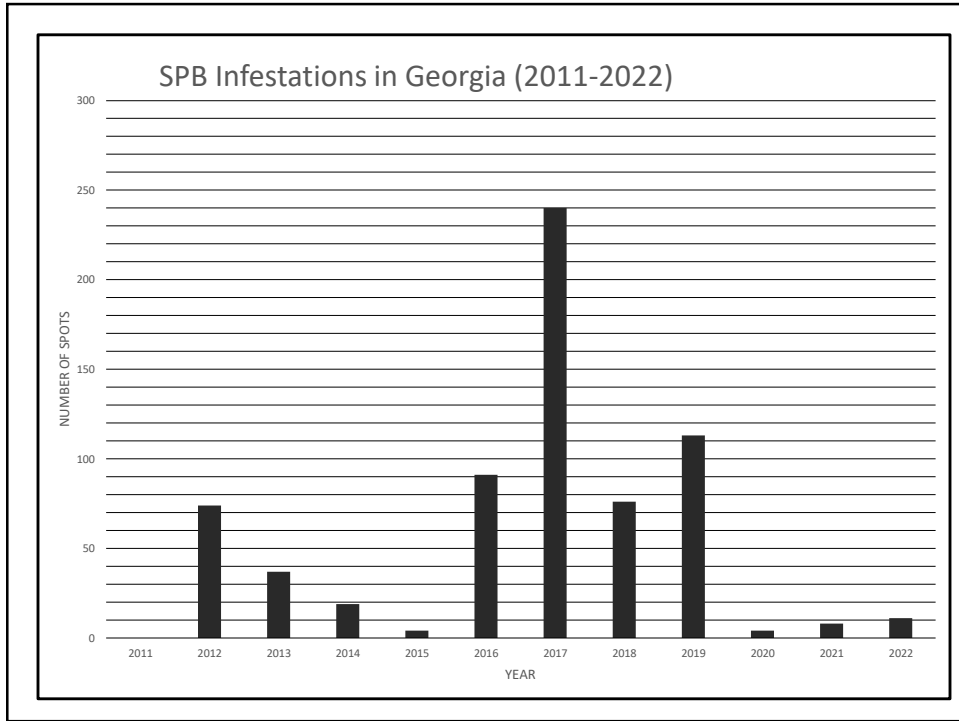
Both require a buffer




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SPB Prevention Trapping

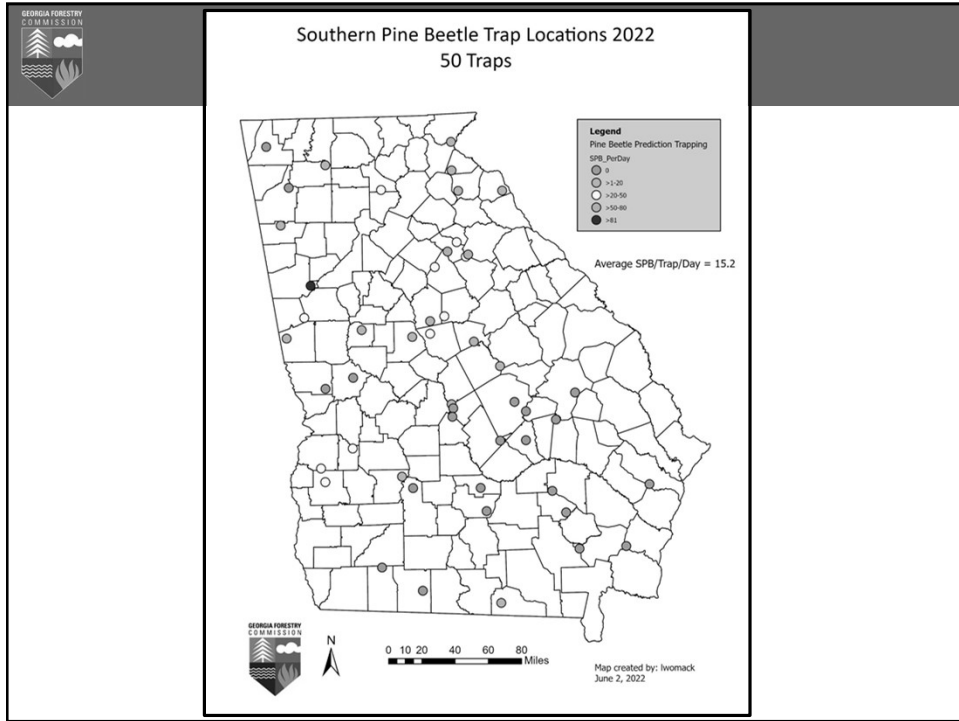
- Program funded through USFS and is conducted region-wide
- New model for predictions based on:
 - # SPB per two week period
 - Number of spots previous year

50 traps statewide in 2022

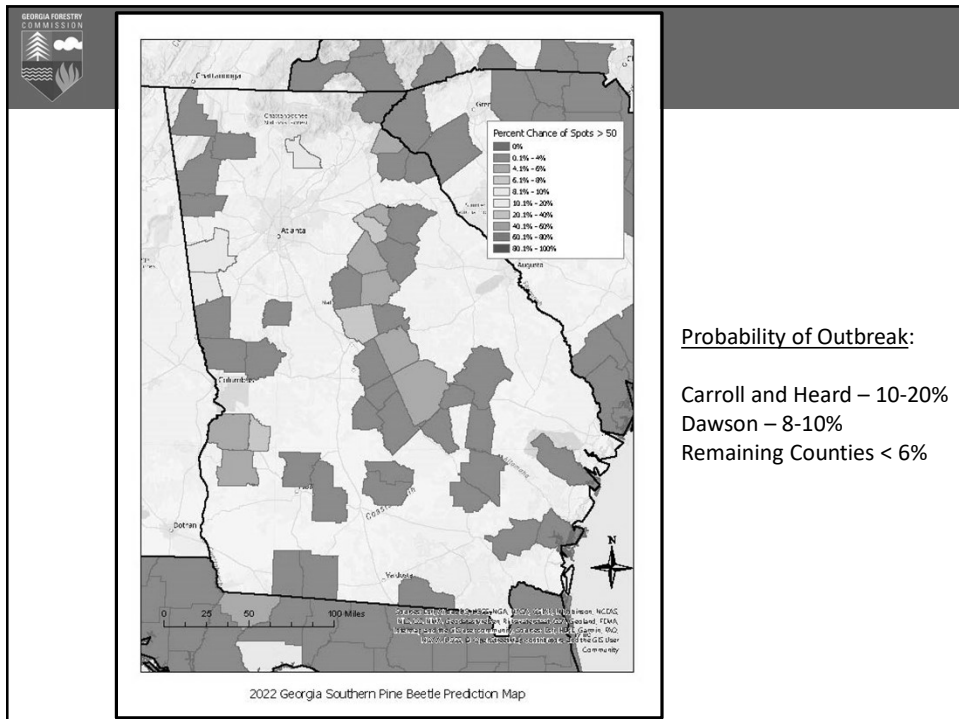
<https://www.spbpredict.com/>



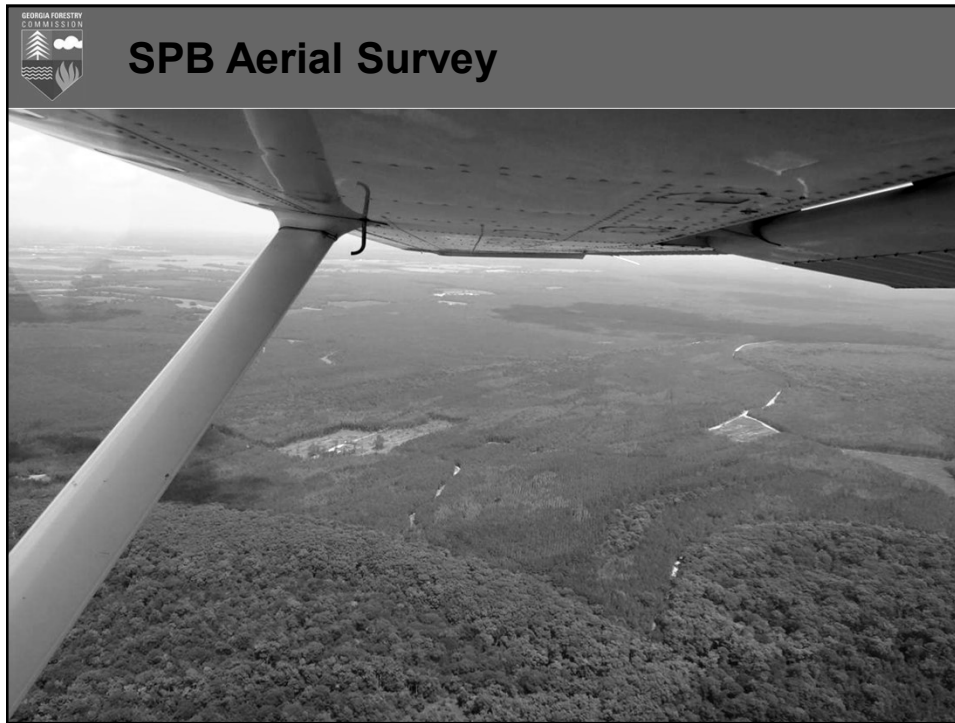
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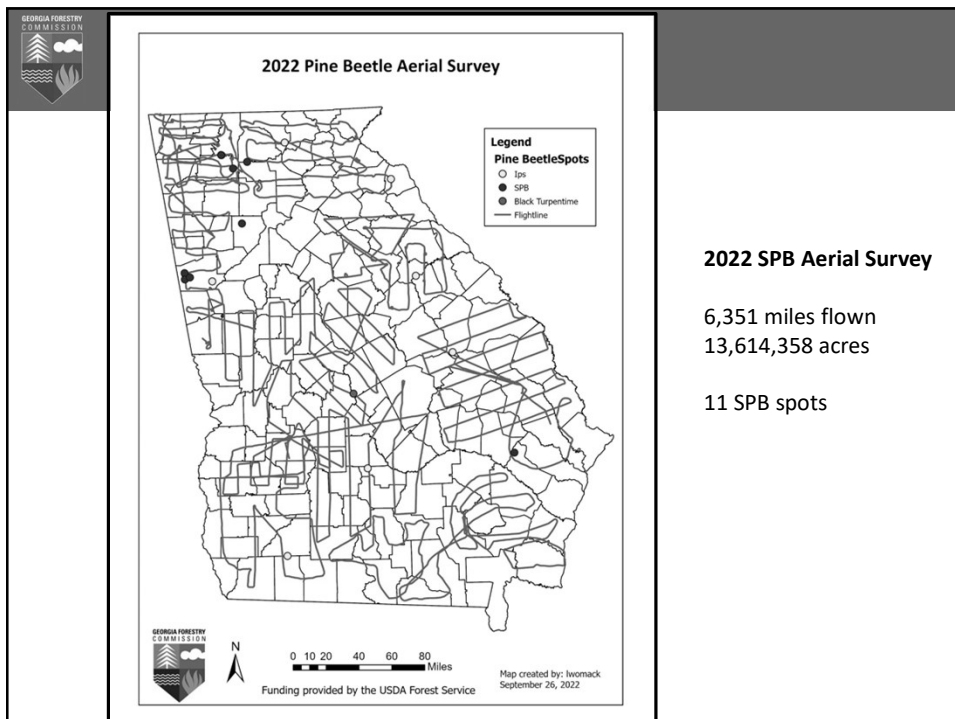
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SPB Cost Share

Southern Pine Beetle Cost Share Program

Landowner assistance for:

Prevention

- Non-commercial thinning (\$70/acre)
- Pine release (\$40/acre)
- Prescribed burning (\$5/acre)

Reforestation

- Loblolly, slash, shortleaf, longleaf, white pines and hardwood (\$100/acre)

Contact your local GFC forester for more information.

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Pine Bark Beetles

What can you do?

Manage for Healthy Forests

- Proper thinning (less than 90 ft² BA)
- Prescribed Fire
- Hardwood/Invasive Species Control
- Always monitor stands
- Mark areas of active infestation to be able to monitor spread


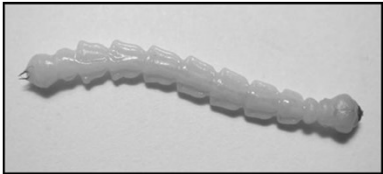
Contact local GFC Forester:
<http://www.gatrees.org/about-us/contact-us/>



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EMERALD ASH BORER


- *Agrilus planipennis* Fairmaire
- *Metallic wood-boring beetle*
- *Native to Asia*
- *Many Native lookalikes that do not kill ash tree*

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EMERALD ASH BORER

- **Accidentally introduced in Michigan 1990's**
 - Solid Wood Packing Material
 - Went unnoticed until 2002
- **By then, EAB was well established and widespread**
- **Emerald Ash Borer can fly: (BUT)**
 - Human movement of ash logs, ash firewood, ash nursery stock, and other ash products is the problem

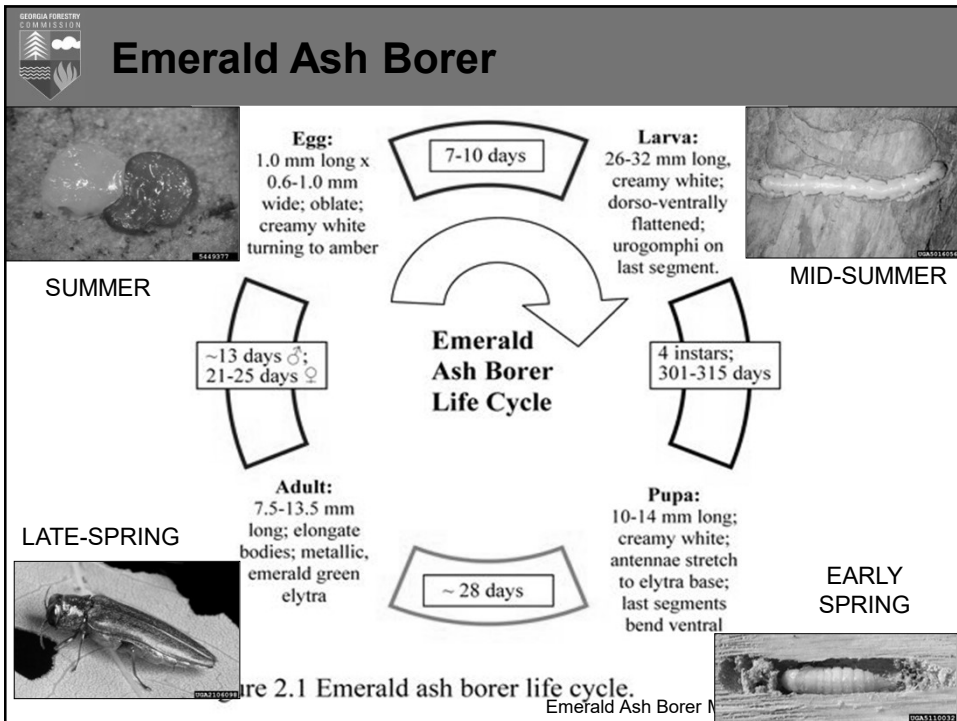


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Emerald Ash Borer

- Only attacks North American ash. Has been found in white fringetree, no other trees in family *Oleaceae* yet.
- EAB has destroyed 100's of millions of ash trees.
- EAB has caused \$100's million in damage to urban/suburban trees
- EAB as devastating as chestnut blight and Dutch elm disease.
- Most destructive and costly forest insect in the US.

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Emerald Ash Borer

Crown Thinning Trunk Shoots Bark Splits Woodpecker Damage

Serpentine Feeding Galleries D - shaped Exit holes

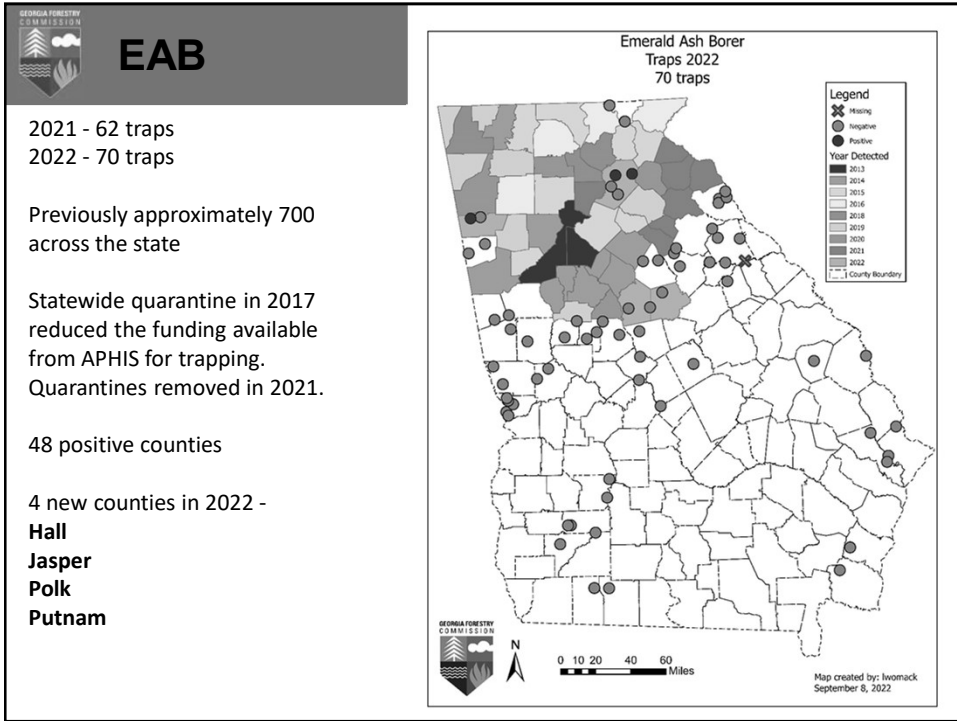
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Emerald Ash Borer

- GA has had an annual trapping program in place since 2005
- Detected in traps in DeKalb and Fulton Counties in July 2013
- GA was the 21st state in US to find EAB
- Now found in 35 U.S. states (plus 5 Canadian provinces)
- Now in 48 GA counties

70



2021 - 62 traps
2022 - 70 traps

Previously approximately 700 across the state

Statewide quarantine in 2017 reduced the funding available from APHIS for trapping. Quarantines removed in 2021.

48 positive counties

4 new counties in 2022 -

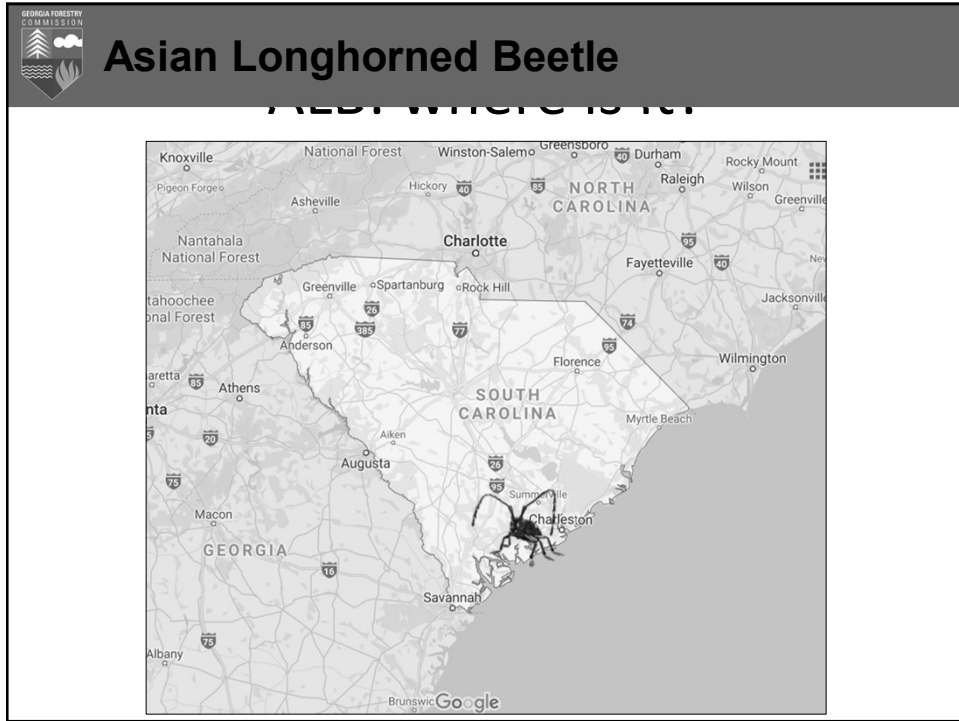
- Hall
- Jasper
- Polk
- Putnam

71

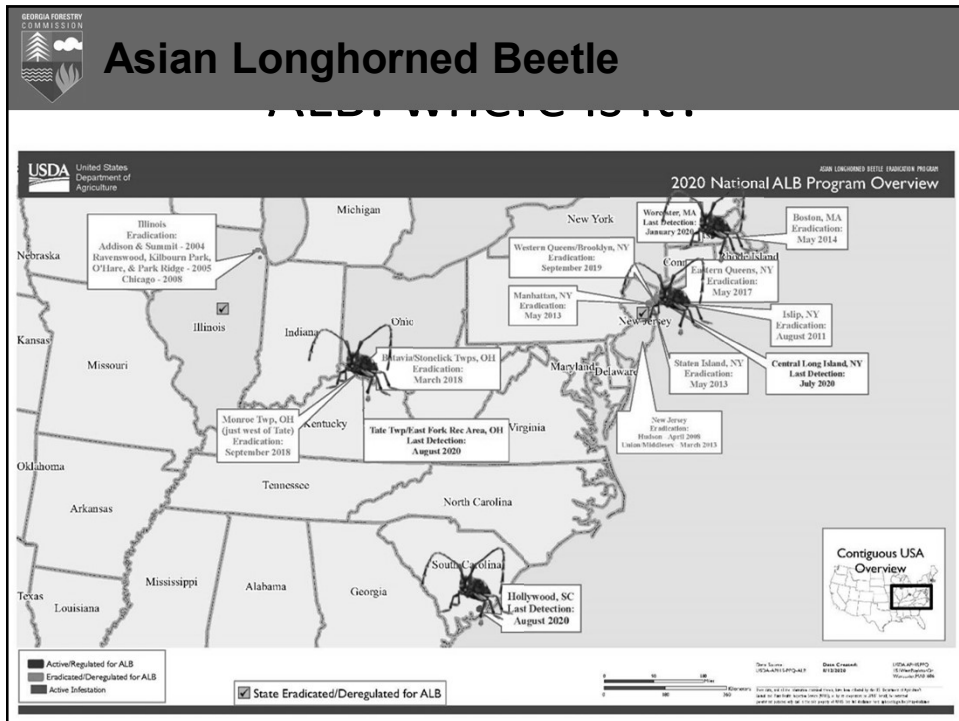
Asian Longhorned Beetle

NOT in GEORGIA -
Found in SC in May 2020

72



73



74










Georgia Forestry Commission

Asian

Center for Invasive Species and Ecosystem Health
UNIVERSITY OF GEORGIA

Asian Longhorned Beetle and its SE US Lookalikes

CLEMSON **ODA** **USDA**

 <p>Eye click beetle <i>Alaus oculatus</i></p> <p>1.0-1.75 in. body</p> <p>Large eye spots</p>	 <p>Northeastern pine sawyer <i>Monochamus notatus</i></p> <p>0.75-1.25 in. body</p> <p>Brown body color</p>	 <p>Carolina pine sawyer <i>Monochamus carolinensis</i></p> <p>1.0-1.25 in. body</p> <p>Brown body color</p>	 <p>Flat-faced longhorn <i>Graphisurus fasciatus</i></p> <p>0.3-0.66 in. body</p> <p>Brown body color</p>
 <p>White oak borer <i>Goes tigrinus</i></p> <p>0.75-1.25 in. body</p> <p>Brown body color</p>	 <p>Southern pine sawyer <i>Monochamus titillator</i></p> <p>0.75-1.25 in. body</p> <p>Brown body color</p>	 <p>Whitespotted sawyer <i>Monochamus scutellatus</i></p> <p>0.75-1 in. body</p> <p>White scutellum</p>	
 <p>Cottonwood borer <i>Plectrodera scalator</i></p> <p>1.5 in. body</p> <p>More white than black</p>	 <p>Asian longhorned beetle <i>Anoplophora glabripennis</i></p> <p>Antenna banded black and white Female antennae as long as body; Male antennae much longer</p> <p>Black scutellum</p> <p>Body 0.75-1.5 in. long Body glossy black with white spots Feet have a bluish color</p>		

75

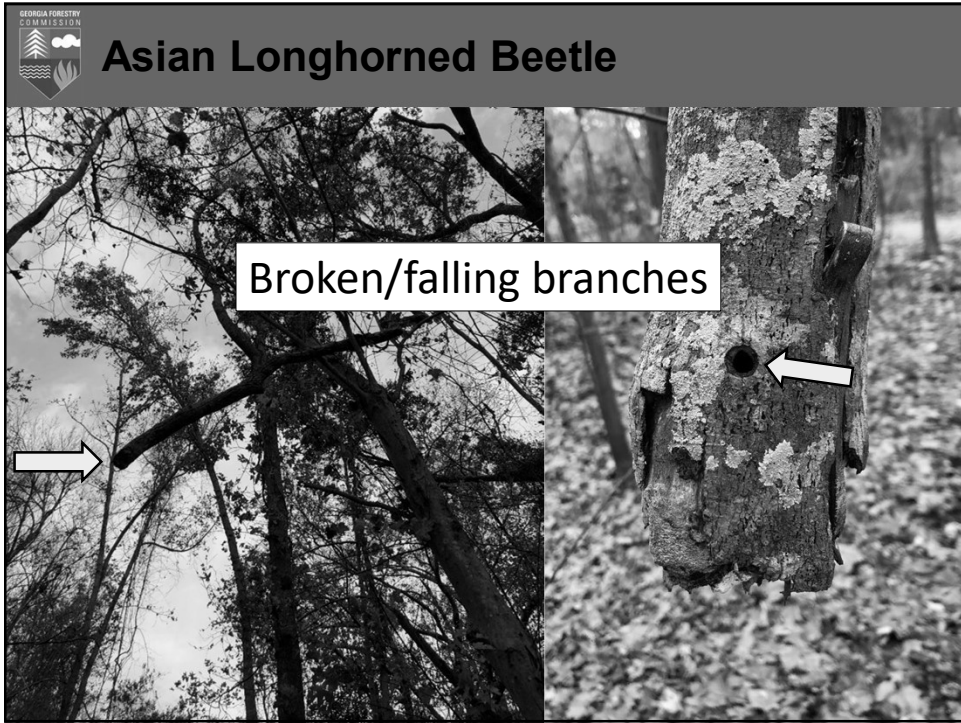
Georgia Forestry Commission

Asian Longhorned Beetle

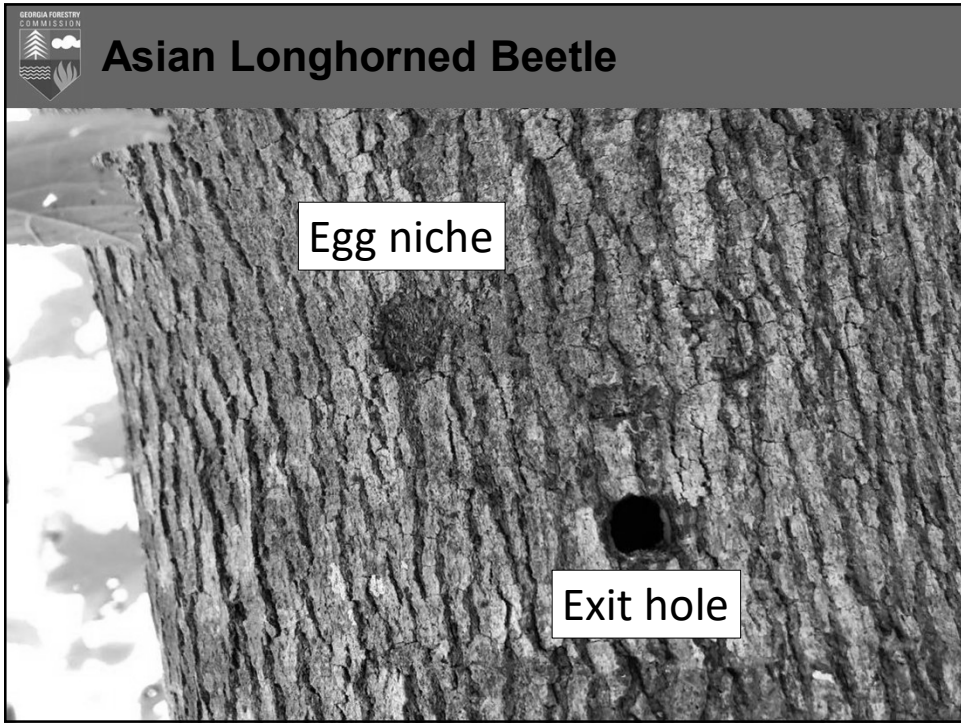


Broken/falling branches

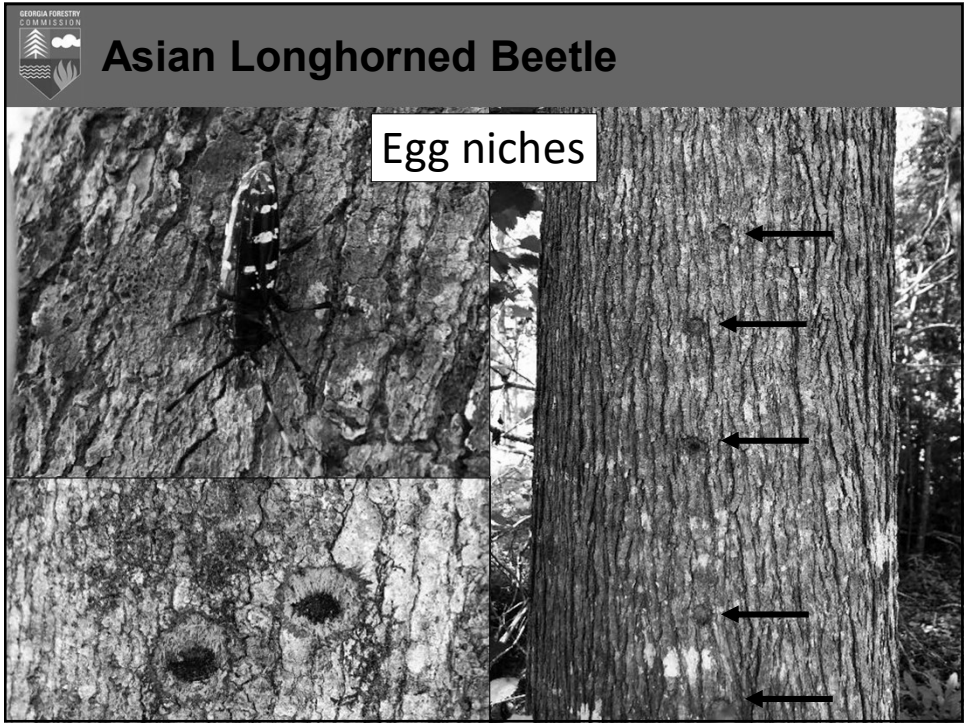
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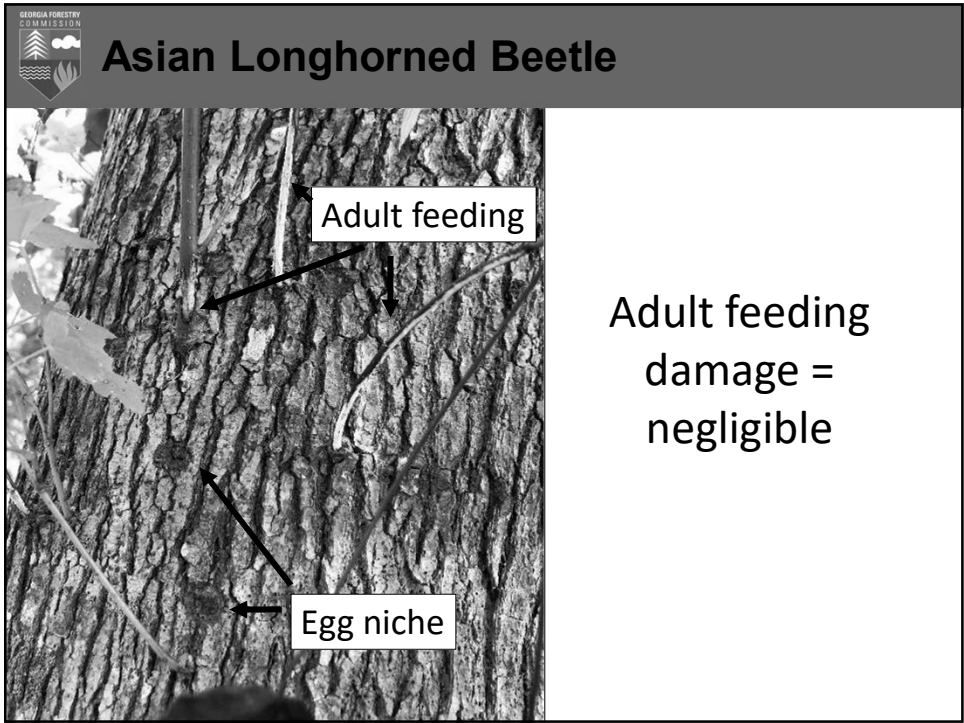
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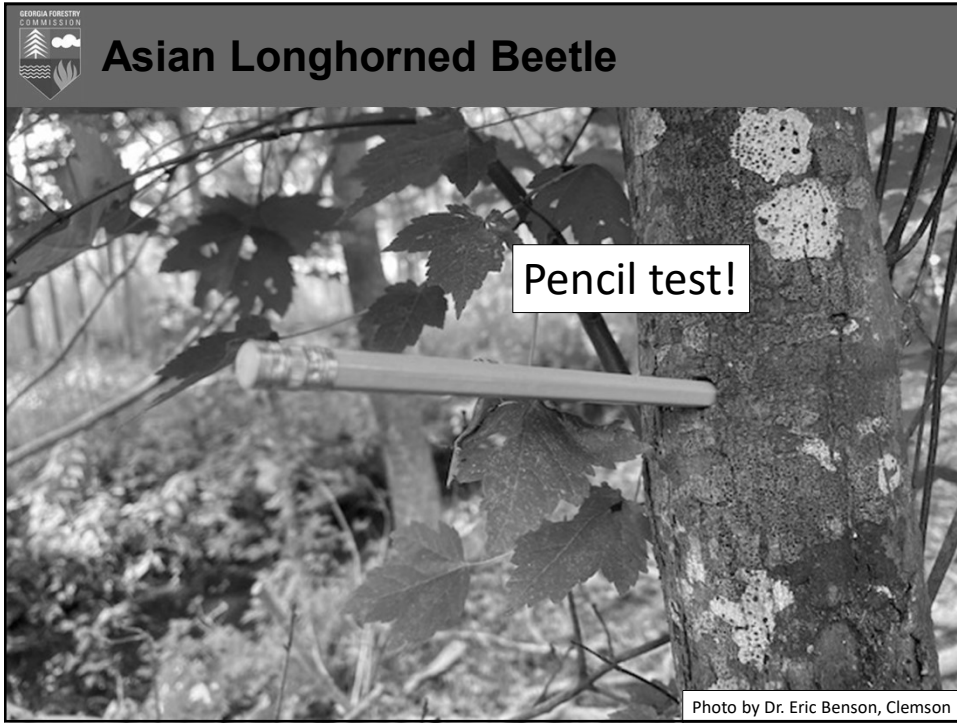
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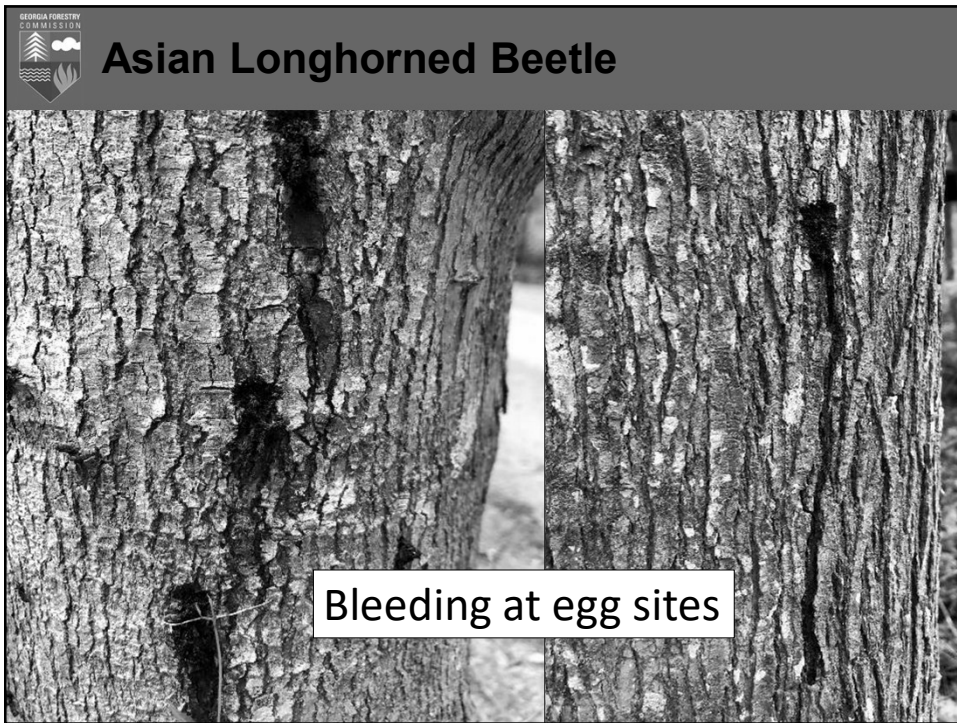
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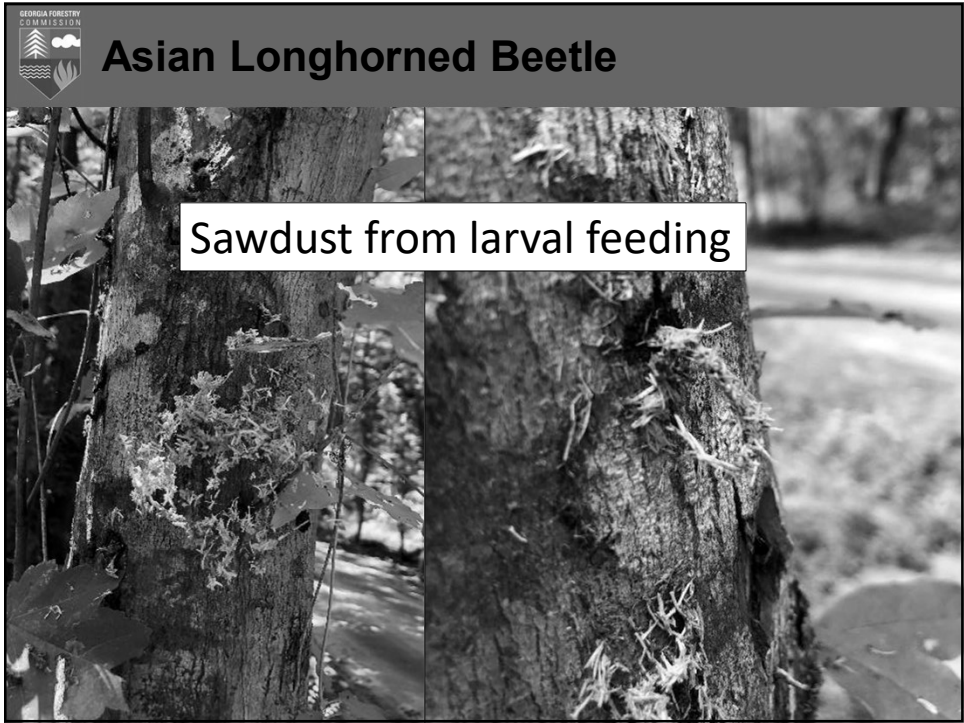
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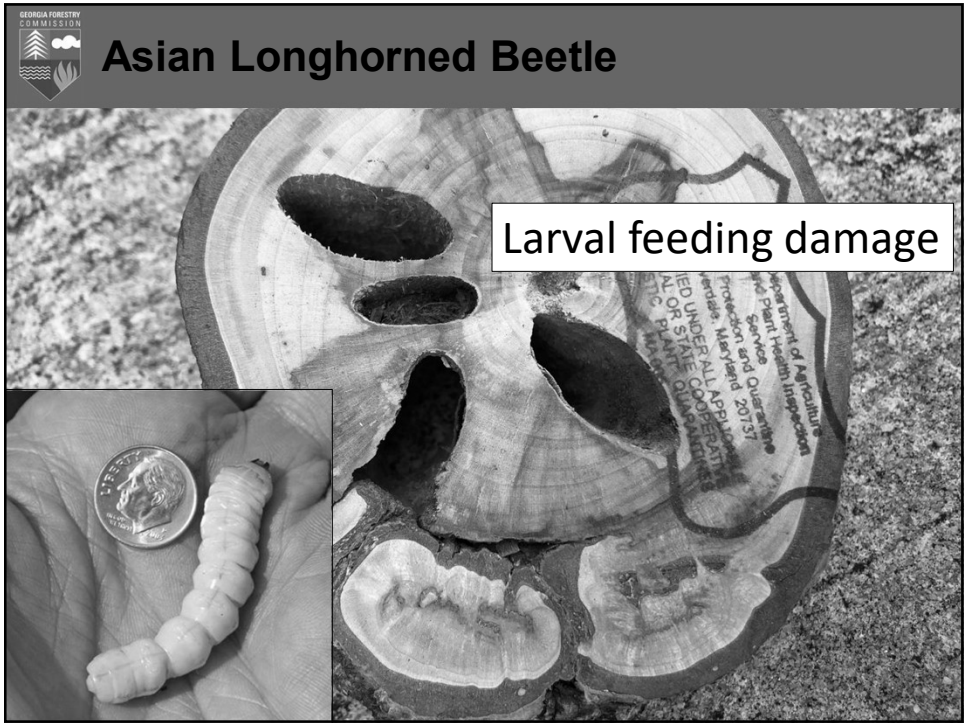
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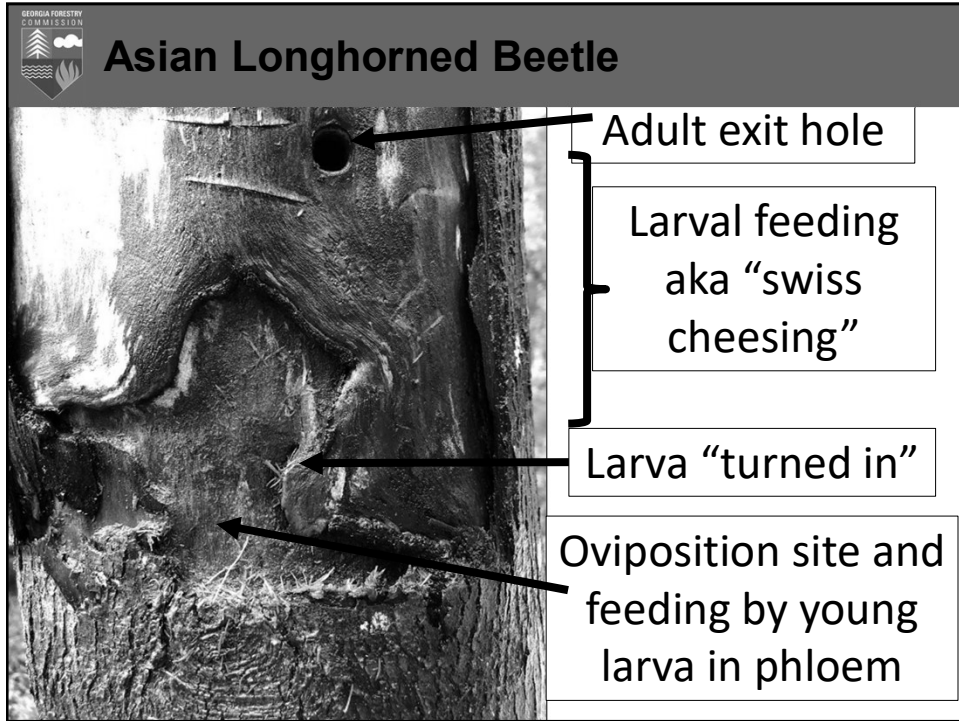
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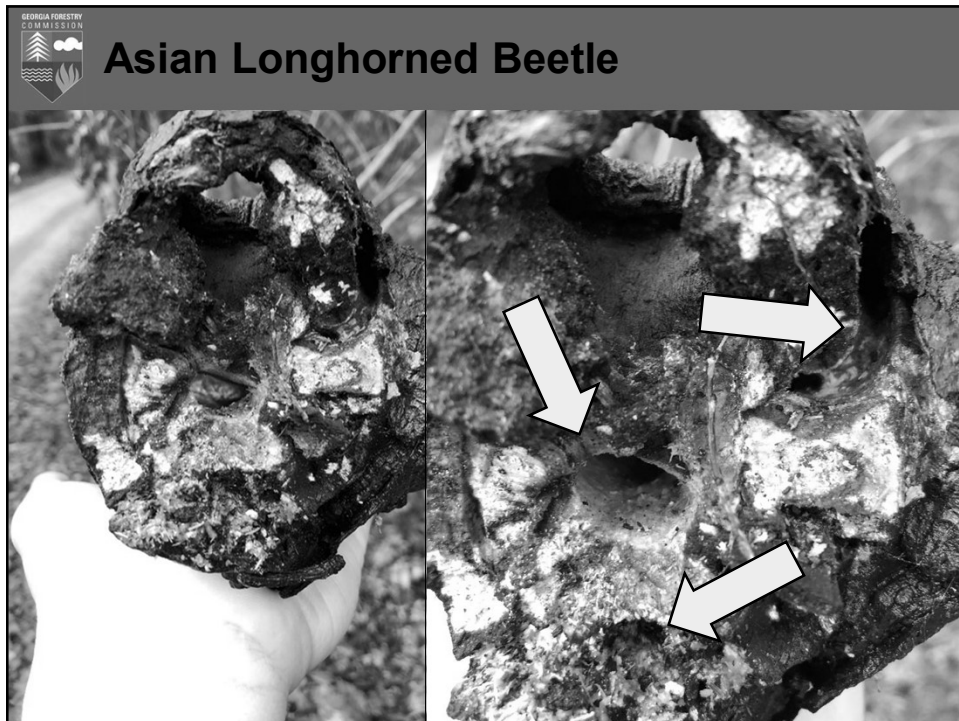
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 **Asian Longhorned Beetle**

Partners in South Carolina

 **REGULATORY SERVICES**


 *College of*
AGRICULTURE, FORESTRY AND LIFE SCIENCES

 **COOPERATIVE EXTENSION**
College of Agriculture, Forestry and Life Sciences

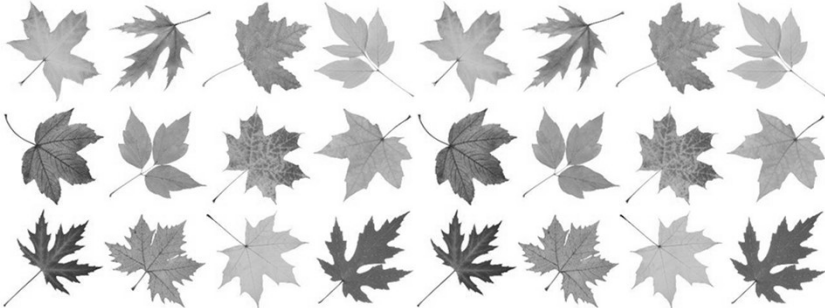





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 **Asian Longhorned Beetle**

Quarantine Area – 76 square miles
Trees surveyed – 156,000
Trees infested – 6,511
Trees removed – 6,817
~98% maple



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 **Forest Health**

- Always monitor stands
- Early Detection is Key for maintaining healthy forests
- Manage for Healthy Stands -
 - Thin
 - Prescribed Burn
 - Reduce competition
- Contact local GFC Forester:
<http://www.gatrees.org/about-us/contact-us/>

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 **Forest Health Program**


It is all about partnerships

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 **QUESTIONS ?**

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 **Other Insects and Diseases**

Spotted lanternfly



Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org

5563434 5574852 5579211

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Other Insects and Diseases

Oak leafminer



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Other Insects and Diseases

Elm leaf beetle





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GEORGIA FORESTRY COMMISSION

Other Insects and Diseases

Black dotted brown moth

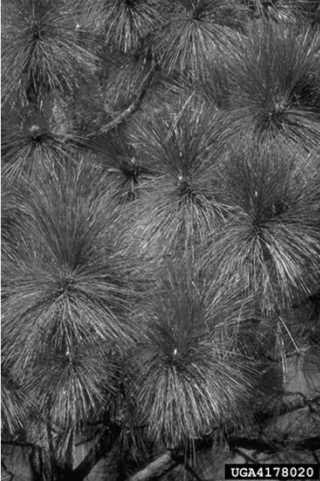



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GEORGIA FORESTRY COMMISSION

Other Insects and Diseases

Needlecast



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