

Fueling Our Fires



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**FAQ**

George Jensen  
 SWGA Prescribed Burn  
 Association Coordinator

BS-Wildland Fire Science-UWSP  
 MS-Forestry-Mizzou/Jones  
 Center at Ichauway  
*Longleaf Regeneration, Resilient  
 Silviculture Practices*




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**Speakers Intent**

- Fire is part of the culture of the Southeast
- Our forests reflect a relationship with fire sourced by both anthropogenic and natural sources
- The current prescribed fire culture is carried by the landowner, supported by the state
- This culture was disrupted but was never fully extinguished
- Lack of fire results in loss of southern forest types



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### A Background to the Background

- Southern forests (and fuels) can burn at higher fuel moistures than northern fuels
- “Our forests burn green”
- Flexibility on seasonality



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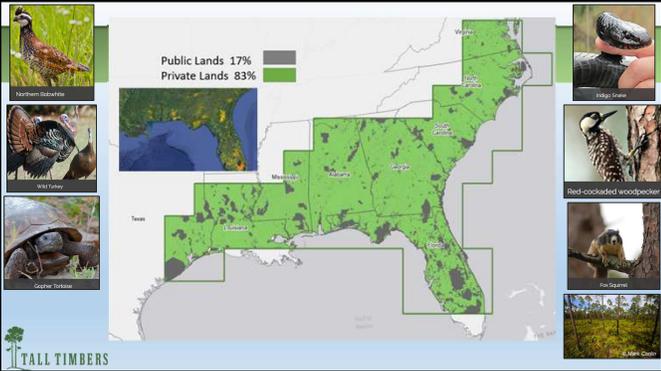
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Public Lands 17%  
Private Lands 83%

Texas, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana

Northern Bobwhite, Wild Turkey, Gopher Tortoise, Red-cockaded woodpecker, Turkey Vulture, Bird in hand

TALL TIMBERS

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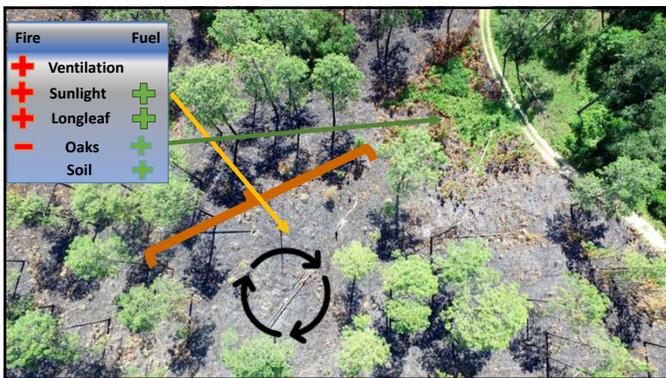
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A nexus of fine scale fuels alterations creates outcomes at the stand level.

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### More than just a yellow pine

Light surface fires

**Examples:**

1. Oak hickory
2. Longleaf pine
3. Shortleaf pine/Oak
4. Loblolly Pine




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| Longleaf   | Loblolly  | Shortleaf  | Slash*   |
|--|---|--|--|
| <ul style="list-style-type: none"> <li>• Most Flammable</li> <li>• Second most needle cast</li> <li>• Resilience to fire &gt; 1 year</li> <li>• Grass Stage</li> </ul> | <ul style="list-style-type: none"> <li>• Flammable</li> <li>• Very soil tolerant, good competition to hardwoods</li> <li>• Resilience to fire varied</li> </ul> | <ul style="list-style-type: none"> <li>• Very Flammable</li> <li>• Most needle cast per tree</li> <li>• Very good hardwood comp</li> <li>• Resilience to fire &gt; 1 year, sprouter</li> </ul> | <ul style="list-style-type: none"> <li>• Flammable</li> <li>• Mixed resilience to fire, seedlings (FL sub variety), mature</li> <li>• Grass stage</li> <li>• Quick growth</li> </ul> |



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Introduction

- Historically one of the most represented ecosystems in the US (37 million hectares)
- Fire and other disturbances essential for composition and structure
  - Fire is driven by needle cast and warm season grasses
  - Warm Season Grasses
- Very open stand Structure
  - Especially compared to other "climax communities"
  - Can be either homogenous longleaf or a mix



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Introduction

Longleaf ecosystem is among the most diverse ecosystems in the world

- Fire and climate propagate open structure with abundant vegetation
- Resistant to change, preserves ecological integrity via close relation with fire feedbacks



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Not all Longleaf is the same

- There is much nuance to this, these are just examples to get you thinking
- Different FRI regional- soil and topo, fuels




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NOT going to focus on fuels changes from 1700s, this will be more recent changes (1800s-2000s)

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We'll cover 2xx years, and in some cases, only 3 generations of trees

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Kisatchie National Forest, Western Gulf Coastal Plain, longleaf pine-bluestem ecosystem, in relatively rough topography adjacent to the Red River, Louisiana, USA.

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**THE ROAD SO FAR**

**Pre 1700's**



Southern Pine (Longleaf) had varying densities, and fuels managed by larger fires (Lighting + Native Americans)

- Fuels more flammable
- Contiguous
- Different Moisture Regime

**1700's**



Longleaf pine forests began to thin out with the arrival of European settlers in the 1700s.

- Homes and buildings.
- Naval stores. (England had cut down most of its forests. But it still had a great need for lumber and other products from trees to build ships.)

Human Impact,  
Forest and woodland fire behavior is a complex result of topography, weather, and fuels

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**Tribal Uses of Fire**



- Attract / Drive Game
- Agricultural Site Prep
- Pest Management
- Defense

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"...verie great fiers..."  
John Verarzanus, 1582  
Carolina coast

"...one special great fire, which are very ordinary all alongst this coast."  
Sir Francis Drake, 1586  
North Carolina

"...riding through high, open Pine forests, green lawns and flowery savannas...having lately been burnt...."  
William Bartram, 1774  
Florida

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### Post Civil War- Land on the cheap

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### Mid 1800 Rapid Changes

- With the invention of trains, pine trees were logged to build railroad tracks.
  - Railroad expansion from Southern Pines NC to \_\_\_\_\_
  - Railroads, another ignition source

- Longleaf pines quickly declined.
  - During this time, the loblolly pine began to replace the longleaf.
    - Also native to the area, but it is more tolerant of a variety of soils and faster growing.
- In the 20th century, the loblolly became important for the paper industry in the South.

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There needs to be trees in order to capture fire scars

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### Late 1800s

- Naval stores market crashed
- Timber still had huge demand
- Huge property owners got in pre-homestead act
- Four choices for property owners
  - Cut to Farming
  - Thin to Grazing
  - Fallow
  - Quail Properties




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### Thinning + Grazing



Fire used to:  
 Improve forage  
 Attract free-ranging herds to recently burned areas

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- Farming vs grazing
  - Farm fields open, many converted to long farming (production forestry)




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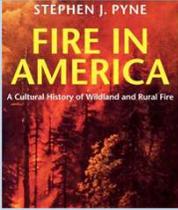
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“The ax and the plow were the greatest threat to the American Forest”



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Farming

- Compaction
  - Worse today
- Erosion



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Post Farm/Graze-Burned Stands Went One Direction, Unburned Stands Another



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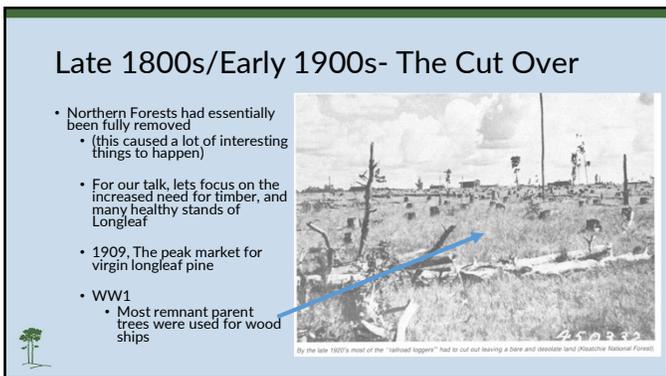
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Lets spend some time talking about maintaining understory fuels



Civilian Conservation Corps crews replanted some of the cutover land.



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Side note

Our current harvest practices impact fuels into the future of the stands



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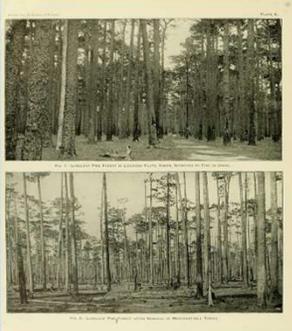
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1900s



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### 1920s The Second Forest

- Longleaf starting to regenerate in cutover stands
  - Poor regeneration/crop due to the way pines regenerate (gaps)
- First stands to really see the impacts of changed fuel at stand level
- Loblolly became important for the paper industry in the South.
  - Today, the paper industry contributes \$2 billion each year to the state's economy.



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### Side Note: How DO longleaf regenerate?



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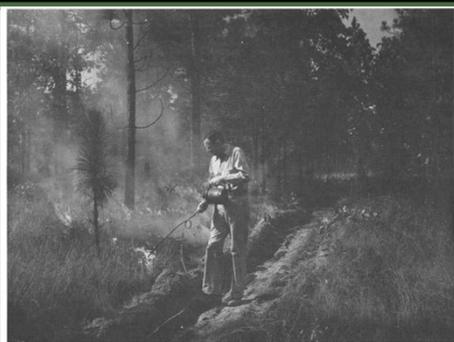
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### 1930s for some



*The bitter battle between the fire exclusionists and control burners was won by the burners in the 1930's. Afterwards prescribed burning became standard practice.*



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1930s for others

Evidence of the of those three decisions become more apparent with more photography



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“Oh Lord, where are all the quail”

Large reductions in quail populations resulted in the need to find out why.



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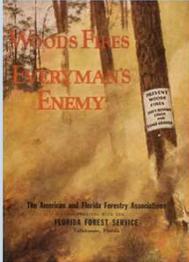
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WW2 and Beyond



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### New Forestry

- Refinement of pulp technology
- Intensive plantations, selective breeding & genetic improvement



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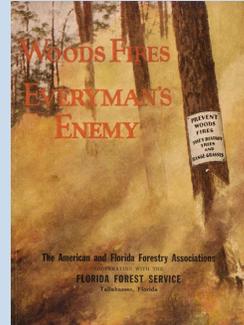
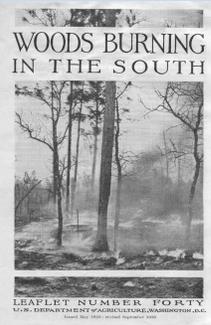
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**EQUIPPED WITH ACME!**

In its willing efforts to spread knowledge and develop interest in the preservation of our life, The American Forestry Association has issued in the above project a number of leaflets. A list of these leaflets, "Handbook on Woods," has been published by the Association and may be obtained, free of charge, by writing to the nearest office of the Association.

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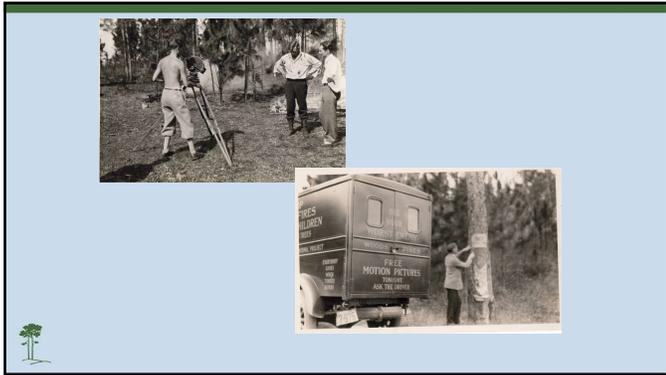
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“...the light and sound and odor of burning woods provide excitement for a people who dwell in an environment of low stimulation and who naturally crave excitement.... Their explanations that woods fires kill off snakes, boll weevil and serve other economic ends are something more than mere ignorance. They are the defensive beliefs of a disadvantaged culture group.”

John Shea, USFS psychologist 1940

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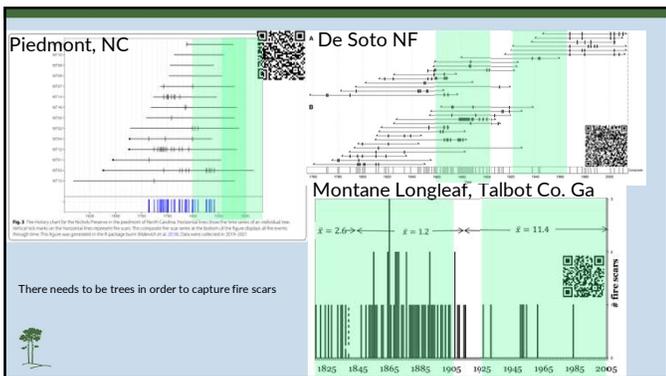
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### Mesophication

When fire is removed from a fire dependent ecosystem, such as pine/oak savannas or grasslands. This does not happen immediately but over multiple years of fire exclusion.

Fire suppression; canopy closure; increased shade

Dramatic increase of shade-tolerant, mesophytic trees

Decreased flammability due to mesophytic litter and cool, humid microclimate

Netwell, 2008

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### Pine stands burned every 2 years

Notice hardwood saplings

More shade

Lack of hardwood stems

More native grasses and forbs

Burned in different seasons one in the dormant season (left) the other in the growing (right). Bradley, 2023

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### Pine stand burned every 3 years

Large hardwood stems such as water oak and red maple

Understory of woody shrubs

Lack of hardwood stems in midstory

Burned in different seasons one in the dormant season (left) the other in the growing (right). Bradley, 2023

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## Slide 58

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2 Hey Steve, looking good! There is a formatted background that we have to use for TT, We can combine your slides with mine when I see you to get that background

George Jensen, 7/19/2023

2 awesome, having a set theme would keep these slides from look boring like they do now.

Stephen Wasp, 7/19/2023



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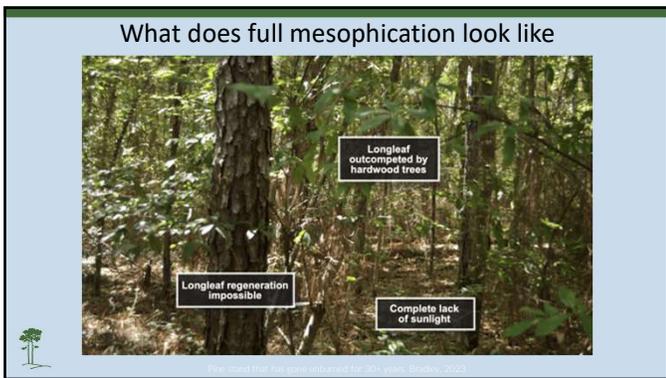
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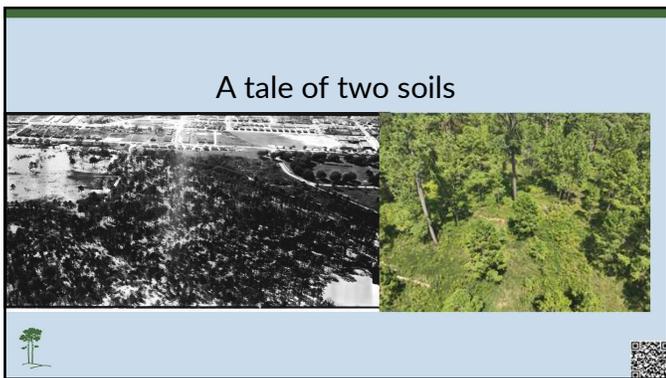
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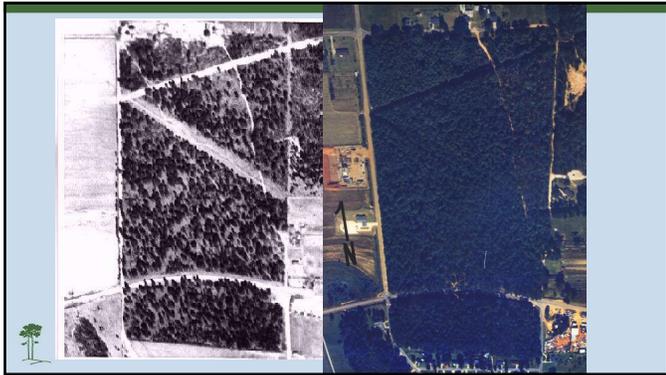
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Keeping the flame alive-Red Hills  
GA/FL  
(1950s)



- Stoddard-Neel System
  - Single-tree, small group selection harvest
  - Emulates natural mortality patterns
  - Incorporates biological legacies, intermediate disturbances, appropriate recovery periods
  - High value wood products
  - Wildlife habitat value
  - High biological diversity
- Continued use of frequent fire



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1959 > 1969 > 1975 > 2023



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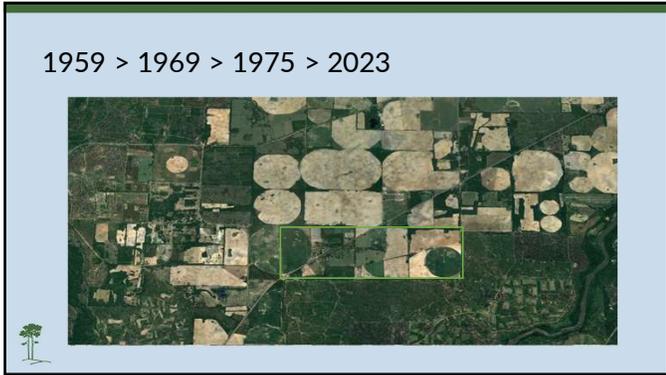
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"We were doing well until around the 1950's. With the application and ease of center pivot agriculture, we too fell to the wave of more ag and less forest, we lost remnant longleaf wiregrass 100 acre (fields) at a time"

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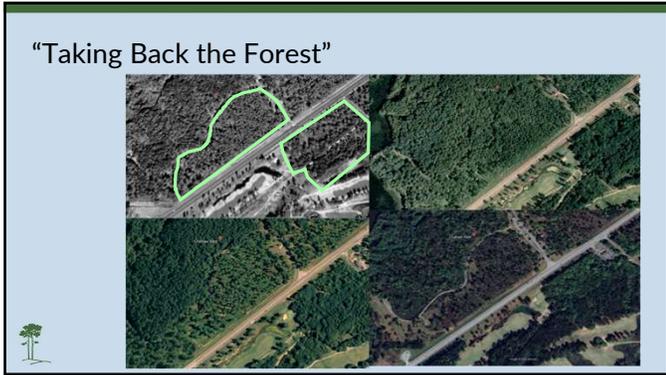
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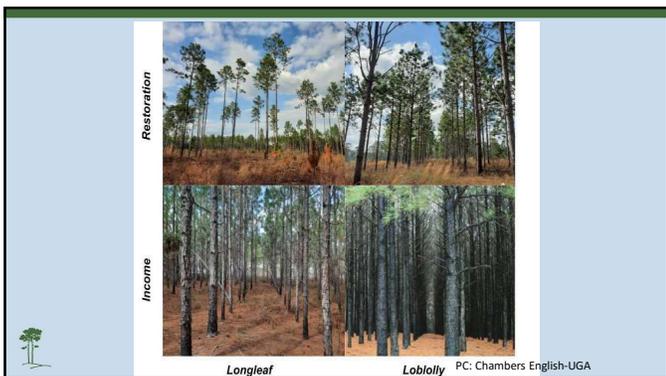
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Another Look



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Questions?



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- 4 Easy to follow along, thanks for doing this  
George Jensen, 7/18/2023