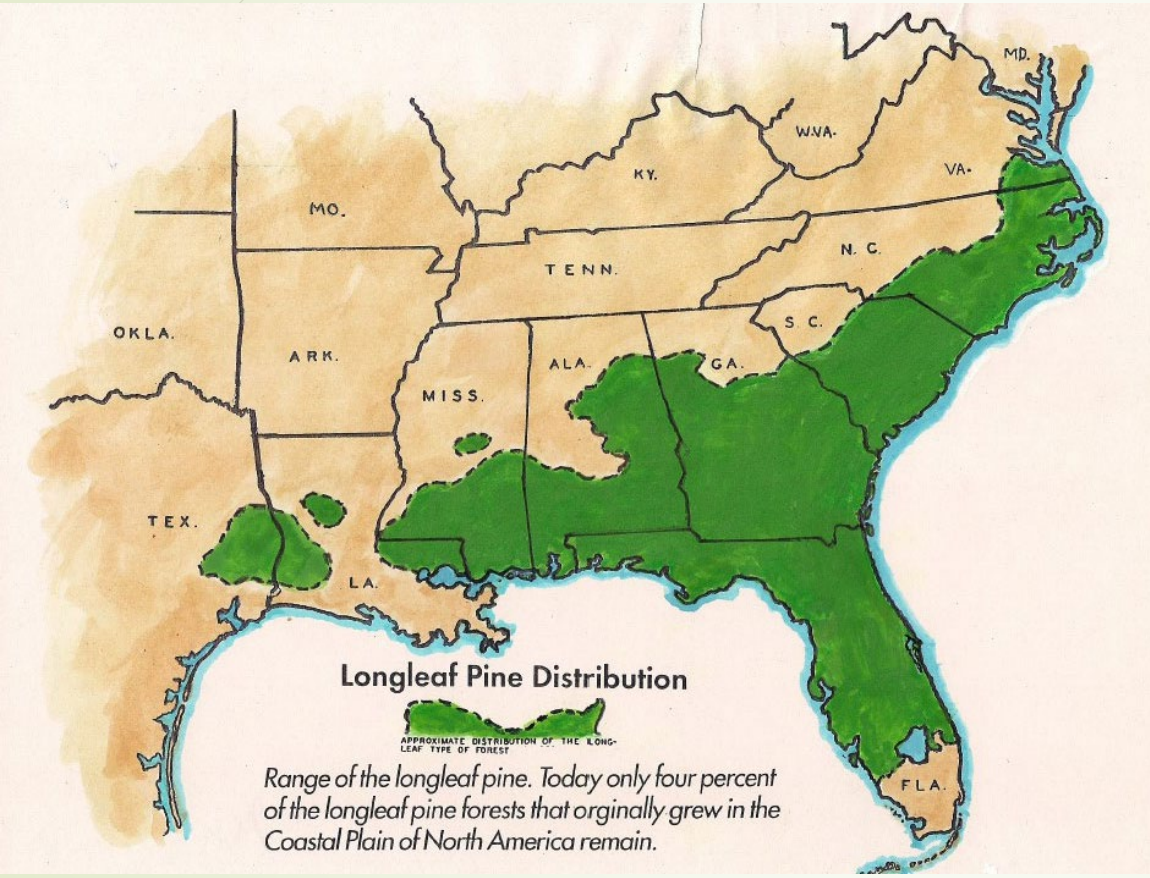
Longleaf Pine Restoration: Sand to Longleaf Pine

Why is longleaf pine important?

- Longleaf Pine (Pinus palustris), used to dominate over **90 million acres in the southeast.**
  - For a long time, Longleaf pines have been referred to as the “tree that built the South”.
- Longleaf ecosystems **provide as important habitats for a wide range of animals including birds.**
  - The ecosystem **provides the necessary habitat for 29 threatened/endangered species**.
    - Some of those threatened and endangered species are gopher tortoises, indigo snakes, and the red-cockaded woodpecker.
- As of today, this ecosystem is considered endangered with **less than 5% of the historic range remaining**.

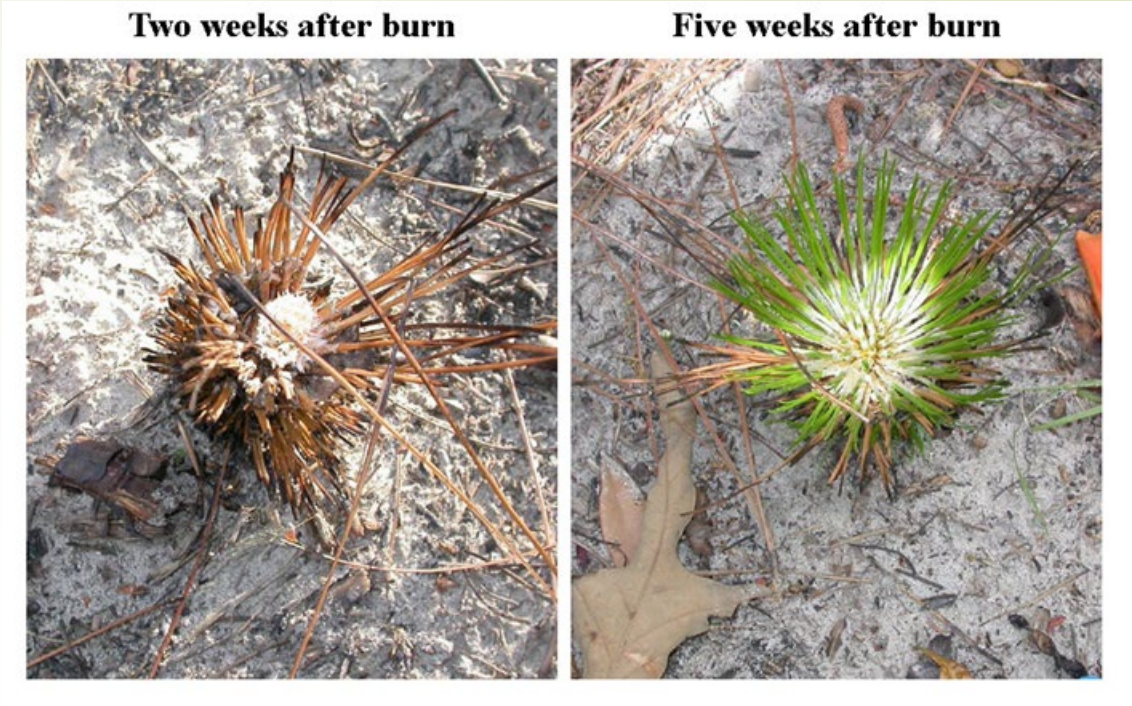
How Do We Know?



- We know where Longleaf grows best due to **historical records** and updated soil surveys of the state.
- In Florida, Longleaf grows and can survive in a range of habitats.
  - They prefer **sandy, dry, acidic soils** and are intolerant to shade, requiring sunlight to grow.
- **Frequent fires ignited by lightning and Native Americans** helped sustained this ecosystem, which at that time made it one of the most floristically diverse forests in North America

How are longleaf pines specifically adapted to their environment?

- They are a **fire-adapted species**.
  - When frequent fires sweep the forest, longleaf pines dominate and tend to form pure stands.
  - The seeds germinate well on bare soil; so, they need fire to reduce the understory vegetation where their seeds can fall on and between the grasses and pine needles.
- One other specific adaptation is called the **"grass stage"** in which the seedlings do not look tree-like, but more like clump grass.
  - **This adaptation helps the fires to carry through the forest, while the developing terminal bud of the tree stays protected by a moist, dense clump of needles.**


Two weeks after burn
Five weeks after burn

How are they beneficial to the environment?

Longleaf pine forests are **more resistant to insects, disease, fire, and wind damage from hurricanes** that other southern pine forests can't handle.

This economically important tree **enriches the soil, and it stores carbon over long periods of time**.

- Providing clean air and water sources.
- Regular application of fire allows their natural rhythms to be restored and become rich, stable ecosystems that can support a vast diversity of plants and wildlife.

Pines **protect your soil from erosion**

- The deep roots of these pines help hold the soil in place, in turn, preventing natural erosion from water and wind.
- The thick needles, in the ground, will also help keep the topsoil from being worn away by wind and rain

Management Actions: Overstory Removal

- Must start with the reduction of sand pine and basal area (average amount of stems in an area).
  - Reducing the basal area is to promote native vegetation back into the ecosystem.
- Remove sand pine to allow for areas to be reforestation, by planting longleaf pine.

Management Actions: Fire

- Reintroduce fire into the stand post selective thinning of the site.
  - This reduces competition for establishing longleaf seedlings.
- This is the beginning process of restoring an ecosystem back to longleaf.

Management Actions: Reforestation

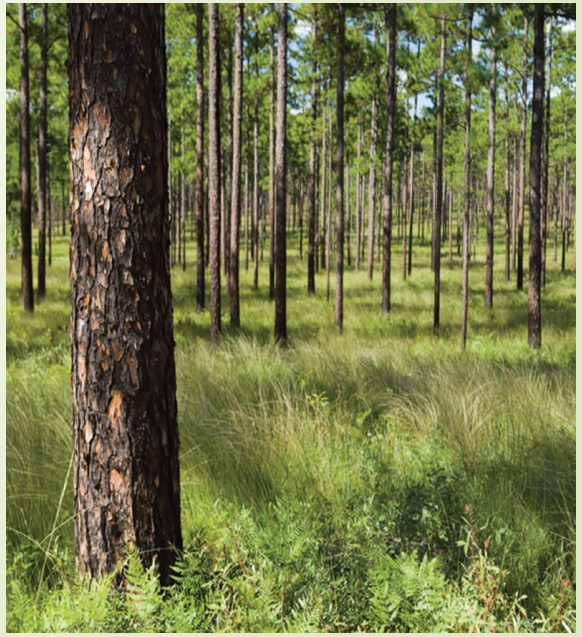
- Replant Longleaf in a variable manner where the establishment is needed.
- In areas with adequate overstory, no reforestation is necessary.
- Remember these trees take time to grow! But we are reaching for a greater timeline goal!

Management Actions: Fire Interval

- Continue with the fire regime once the seedlings are out of the grass stage and enter the “bolt” stage (approx. 3 years).
- The steady interval helps to reduce competition and continue to promote the native herbaceous and wildlife species.
- Remember these trees take time to grow! But we are reaching for a greater timeline goal!







Longleaf Pine Restoration –Questions?