

Fire at NATL: Mother Nature's Prescription

What is an Upland Pine Ecosystem?

This habitat is found in hilly areas in the northern, central and panhandle regions of Florida. A typical upland pine ecosystem consists of widely spaced longleaf pines, limited shrubs and dense grasses. The sandy soil is well drained which allows for movement of water into aquifers. Before European settlement, upland pine and other longleaf pine ecosystems covered an estimated 90 million acres in southeastern United States. Today only about 3% of these acres remain in longleaf pine, because after the extreme logging of 1870 to 1930, fires were suppressed and the land was converted to other uses.



Wiregrass: blooming after a controlled burn



Longleaf pine: grass stage



Longleaf pine: rocket stage

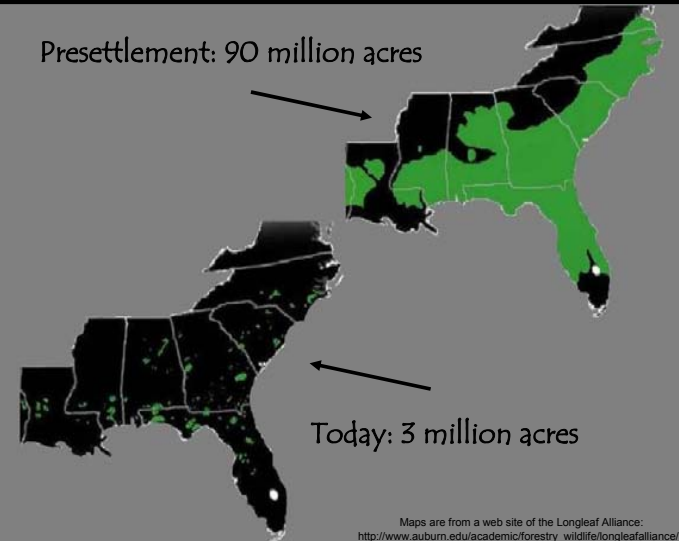
How is this ecosystem adapted to fire?

Longleaf pines and wiregrass depend on frequent fires to suppress competing plants. The shed needles of longleaf pine and the leaves of wiregrass are highly flammable and promote the needed fires. Longleaf pine development is keyed to frequent fires. For four or more years, seedling longleaf pines remain in a "grass stage" that resembles a bunch of grass. This stage is protected from fire because its bud remains in the ground. The "rocket stage" develops when the below ground parts have stored enough food to allow the bud to grow quickly to a safe height on a thick, fire-resistant stem.



Setting a fire with a drip torch during a controlled burn

Presettlement: 90 million acres



Today: 3 million acres

Maps are from a web site of the Longleaf Alliance: http://www.auburn.edu/academic/forestry_wildlife/longleafalliance/



Gopher tortoises make burrows in upland pine. These burrows average 15 feet long and 6 feet deep!

Role of Native Americans in setting fires?

Without doubt, the extensive longleaf pine woodlands of pre-Columbian America were maintained by frequent fires. Equally certain, many fires were set by lightning strikes and others by the natives. In dispute is how dependent was the ecosystem on native-set fires to keep it open and favorable for the game the natives hunted.

Unhealthy Effects of Fire Suppression

The health of upland pine depends on frequent, low-intensity fires. When fire is not allowed to burn this ecosystem, laurel oaks and other hammock species invade and create shade and deep leaf litter. These make it impossible for wiregrass to survive and for longleaf pines to reproduce. Most longleaf seeds do not germinate because there is little exposed soil, and seedlings perish for lack of sufficient sunlight. When NATL began in 1994, its upland pine consisted of mature longleaf pines projecting above a canopy of laurel oaks. No wiregrass or young longleaf pines grew beneath.



1990 aerial photo of NATL's public-area upland pine (outlined in green) After 50 years of fire suppression laurel oaks dominate

The Road to Recovery at NATL

Since 1995 volunteers have worked to restore NATL's upland pine ecosystem. Prescribed burns have killed hardwoods and other invading plants. Girdling and cutting have sped the process of removing laurel-oak trees. Afterwards, mechanical means and herbicides have reduced dense growths of laurel-oak root sprouts. This has allowed transplanted wiregrass and young longleaf pines to survive. Finally, early in 2006, thousands of longleaf seeds germinated naturally and some have survived and are growing.



Effects of fire suppression begin to show as pines and grasses are shaded-out



A volunteer plants wiregrass



Fire is allowed or prescribed



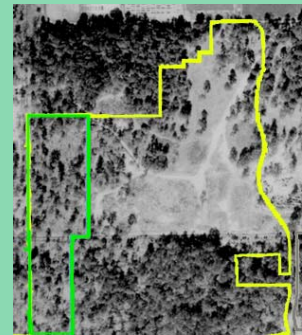
New growth of longleaf pine seedlings begins



Ecosystem nearly restored

Back to a Healthy State

The goal for NATL is to restore the upland pine habitat to its original state. Some areas will be left unburned for comparison with restored areas. Restoration procedures will be scheduled to maximize teaching opportunities. Once restored, the upland pine will be maintained by burning approximately 1/4 of its area each year. Burning at 1- to 4-year intervals should maintain the upland pine species. By having burns every year, NATL can better demonstrate the effects of burning and of the seasonal timing of burning.



Aerial photo showing the public-area upland pine (outlined in green) prior to its takeover by laurel oaks.



Conditions worsen as hardwoods take over



Fire is suppressed