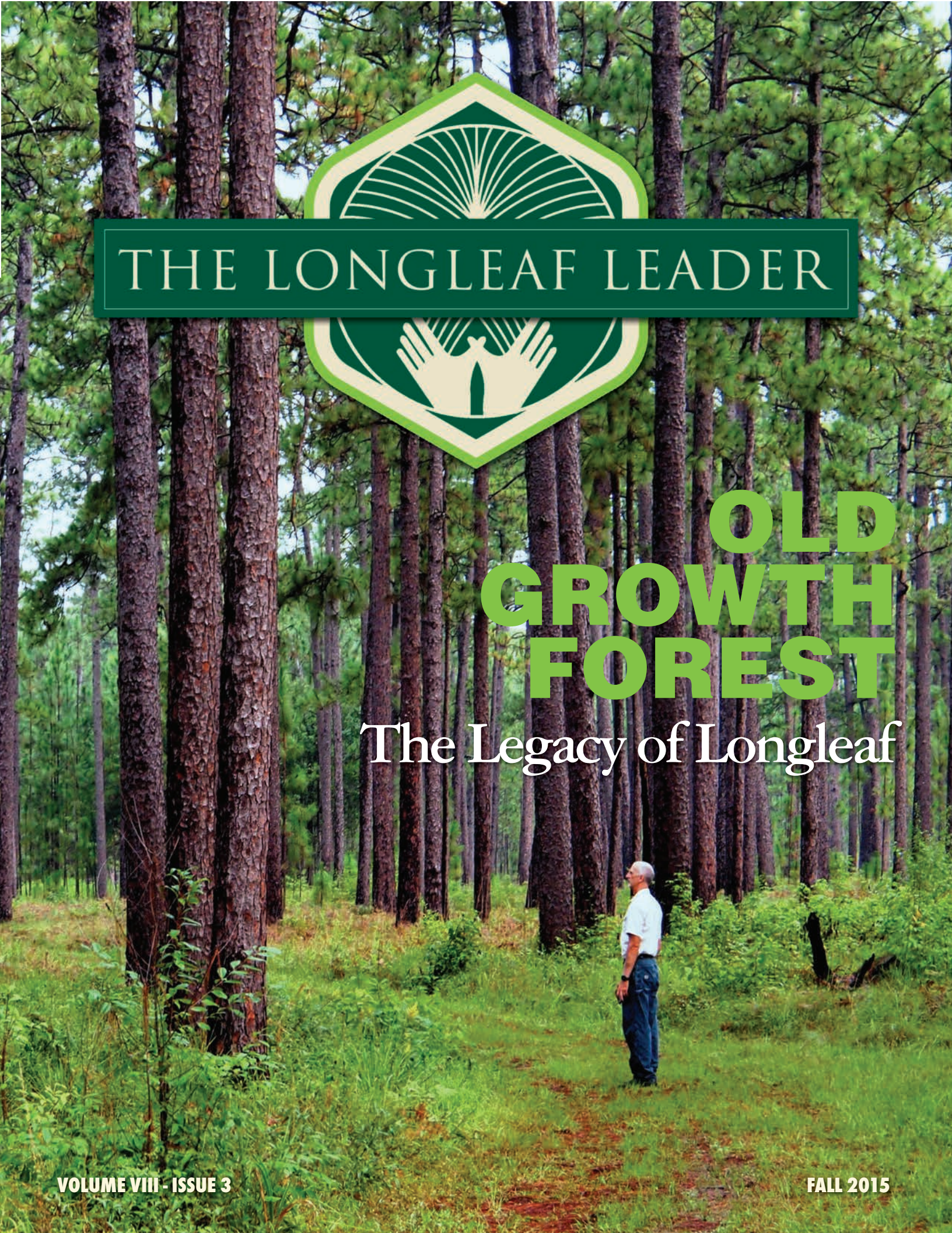
THE LONGLEAF LEADER
OLD GROWTH FOREST
The Legacy of Longleaf
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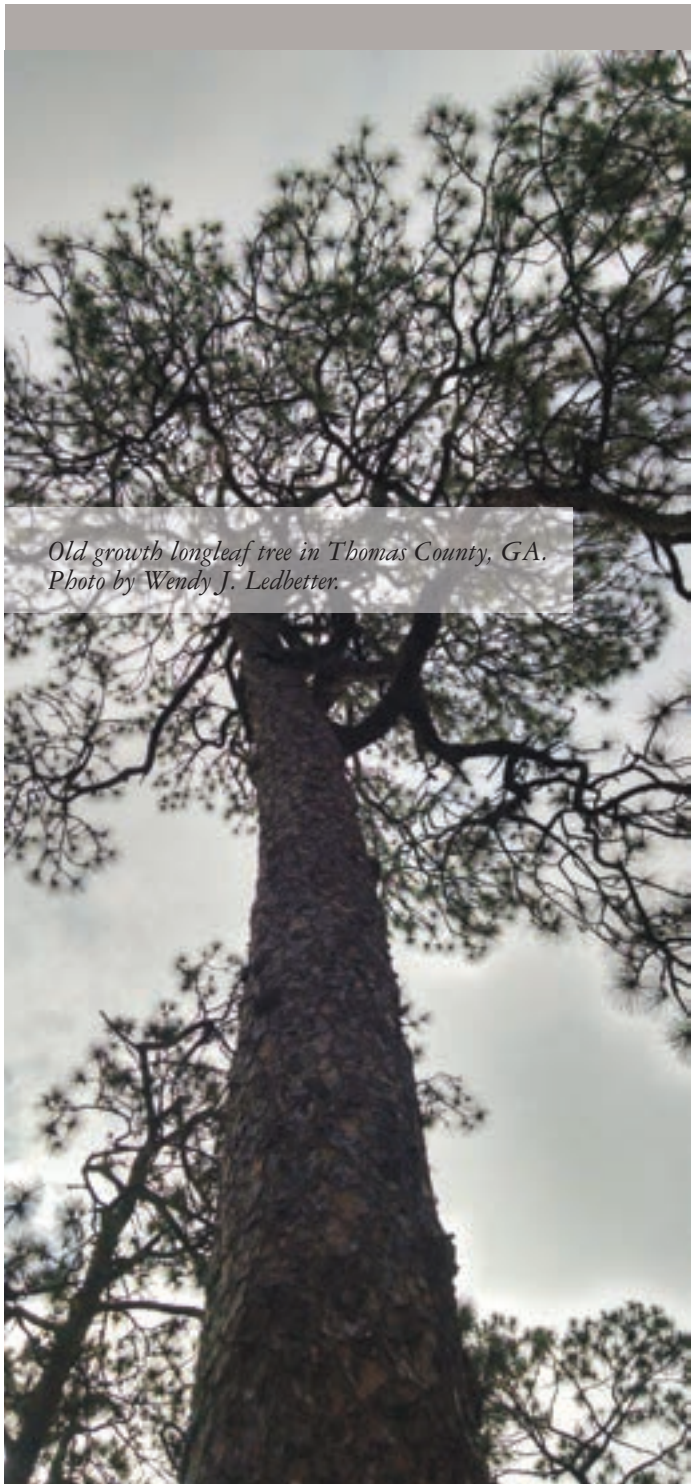
By Carol Denhof, The Longleaf Alliance

SEARCHING FOR OLD GROWTH

"We find ourselves on the entrance of a vast plain which extends west sixty or seventy miles.... This plain is mostly a forest of the great long-leaved pine, the earth covered with grass, interspersed with an infinite variety of herbaceous plants, and embellished with extensive savannas, always green, sparkling with ponds of water, and ornamented with clumps of evergreen, and other trees and shrubs…" William Bartram, 1791 Travels through North and South Carolina, Georgia,…

We all know the story. Prior to European settlement, longleaf forests dominated the landscape of the southeastern United States. What once covered approximately 90 million acres, now can only be found on at last count around 4.7 million acres. The good news is that this acreage is on the rise, due to the efforts of the active partnerships working to bring back this great forest. In each issue of The Longleaf Leader we place the spotlight on areas where you can go to see longleaf; but what about the remaining "Old Growth" forests that are in such limited supply? With this article, we'd like to shed some light on what defines an old growth forest and where they can still be found within our region.



Old growth longleaf tree in Thomas County, GA. Photo by Wendy J. Ledbetter.

Longleaf pine is the longest lived of the southern pine species. Throughout most of its range, individual longleaf pines can reach 250 years in age (with trees in excess of 450 years old having been documented). To reach that point of old age the life history of longleaf pine can be described in several stages. These stages include seed, grass, bottlebrush, sapling, mature, and old growth. More than 100 years is needed to reach the final climax stage of old growth.

Trees are defined as mature somewhere around 30 years after height growth initiation. As the forest begins to mature, lower limbs may be shed or pruned off by fire. The trunk of the tree begins to fill out into a straight, relatively branch-free tree that resembles a living telephone pole (in fact, many longleaf pines are sold for telephone poles). On more fertile soils, the tree may continue to grow in height up to 120 feet. On the poorest soils, the tree may only grow to 40 feet. After about 70 -100 years longleaf essentially ceases height growth. During the later stages of this period, trees may begin to show signs of decay and rot. In particular, longleaf pine reaching 80 years in age may become infected with a fungus called red heart that causes the otherwise dense heart of the tree to become punky, soft, and full of small channels and resins.

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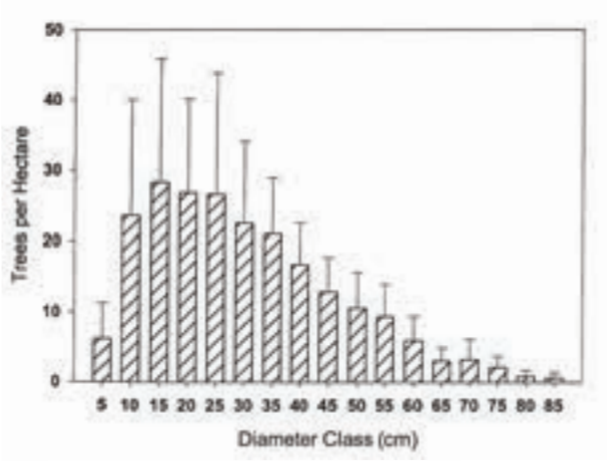
As a forest transitions from mature to old growth, most trees have reached a steady state. Large diameter trees with flat-topped crowns dominate the forest. Historical accounts describe longleaf pines in excess of 120 feet tall and 3 feet in diameter. Conventional wisdom suggests that old-growth longleaf pine trees stop growing in size at these advanced ages. However, many instances exist where old-growth longleaf pine trees had actually increased growth rates at 200 years (+) when resources became available. At older ages, more and more trees begin to show signs of internal rot from red-heart fungus. In some localities, as many as half the trees per acre can be affected with red-heart in the boles.

Although mature stands of longleaf do resemble old growth, there are some structural differences of the canopy that set them apart. Old-growth stands contain many large pines (> 50 cm dbh) with only a few primary branches and substantial percentages of woody biomass in heartwood (Wahlenberg 1946). These stands also consist of persistent large snags and large downed woody debris (Schwarz 1907, Hermann 1993, Landers and Boyer 1999, Varner et al. 2003b). Due to the frequent occurrence of small-scale disturbances, the forest as a whole is transitioning at all times through at least one of the longleaf stages of growth simultaneously. Research has shown that although a longleaf forest looks like and is defined as an "old-growth" stand (i.e., large, scattered, old trees) it still has approximately 2/3 of its population at less than 50 years old. The table below from Varner & Kush 2004 illustrates the "Reverse J" structure of the old growth forest.

When determining if a forest is old growth, attention should also be given to the groundcover that is present in the stand. Species diversity in this layer will be high in these sites, with many long-lived species represented that are not tolerant to ground disturbance. In many second growth forests that have at some point been cultivated, a different suite of species will be found as compared to undisturbed sites (Kirkman et al, 2004).



Diameter distributions (+/- 95% confidence intervals) of 14 old-growth longleaf pine stands taken from published data in Schwarz 1907, Forbes 1930, Varner et al. 1999, and Varner et al. 2003. Old-growth longleaf pinelands contain many large pines (>50 cm DBH) and many age classes, with peaks of individuals exceeding 200 years old.

There are few remnant old-growth longleaf stands that can be seen today. Existing forests are threatened by urban interface issues, duff fire danger, non-native species invasions, and uncertain management. Other major threats include fragmentation and groundcover degradation, which to some degree threatens all remaining sites (Varner & Kush 2004.)

Map showing significant known old-growth longleaf pine sites within the southeastern US using sites listed in Varner & Kush 2004.

Site #	Site Name	State	Acres
1	Eglin Air Force Base	Florida	9019.33
2	Mountain Longleaf National Wildlife Refuge	Alabama	111.20
3	Gunnywood Longleaf Forest	Georgia	494.21
4	Wade Tract	Georgia	205.10
5	Thomasville Plantation	Georgia	988.42
6	Goethe State Forest	Florida	185.33
7	Moody Tract	Georgia	296.53
8	Brooksville	Florida	420.08
9	Platt Branch	Florida	395.37
10	Veazy Flatwoods	Florida	98.84
11	Bord Tract	North Carolina	59.31
12	Bonnie Doon Tract	North Carolina	160.62
13	Camp Lejeune Tract	North Carolina	49.42
14	Croatan National Forest	North Carolina	49.42
TOTAL ACREAGE			12533.17

However, if you wish to experience a walk through what once was, there are some amazing old growth longleaf stands that you can visit. The map shown above shows the locations of some of the most significant remaining old growth stands. Each has its own character, reflecting the many different kinds of longleaf forests that developed when this most adaptable pine occurred across various habitat types. There are quite a few amazing second growth forests out there that are approaching the old growth stage, but for the purposes of this article, only those sites identified as old growth in Varner & Kush 2004 were included. Forests were considered old growth if they contained two or more age classes with trees in excess of 150 years and individuals exceeding 200 years.

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COVER Vernon Compton appreciating an old growth longleaf forest in Thomas County, GA. Photo by Randy Tate.

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