An Old-Growth Longleaf Stand in South Alabama: A Study of an Endangered Ecosystem

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ROLAND HARPER, THE STATE GEOGRAPHER for Alabama in the first half of this century, wrote in his Economic Botany of Alabama (1928) "longleaf pine might have once been the most abundant tree in the United States and was certainly the most abundant tree in Alabama." He went on to say "longleaf had more uses than any other tree in North America, if not the whole world."

Longleaf pine stands once covered an estimated 80 to 90 million acres of the southeastern United States and today occupy less than three million acres, This decline in acreage is far worse than that in wetlands, which are so often talked about in the news. A study conducted of natural habitats of America by the National Biological Survey reported that longleaf pine once covered 40.4% of the presettlement southeastern coastal plain with wetlands occupying 34.8%. In 1986, longleaf pine had been reduced to 0.7% of the region while wetlands still occupied 25.2%.

Only a few examples of the presettlement longleaf pine forest exist. A small remnant of these forests remains in Flomaton. The Flomaton Natural Area, a 60-acre tract owned by Champion International Corporation, is being used to study the dynamics of a virgin, old-growth longleaf pine stand undergoing restoration efforts.

William Bartram in his 1791 Travels through North and South Carolina, Georgia, and East and West Florida described the coastal plain of the Southeast as "this plain is mostly a forest of the great long-leaved pine (*Pinus palustris*), the earth covered with grass, interspersed with an infinite variety of herbaceous plants, and embellished with extensive savannas." These forests were fairly open, primarily uneven aged (several age classes)

Figure 1 (above). Example of the presettlement longleaf pine forest.

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stands with trees of varying sizes and maintained by frequent ground fires (Figure 1). The open canopy was not due to an arid climate or soil infertility, but rather the frequent lightning ignited fires and fires set by Native Americans, fires that killed less fire-tolerant vegetation, leaving longleaf pine and its herbaceous understory to thrive. The largest trees in these forests were 35 to 40 inches in diameter with the oldest trees 350 to 400 years old.

The Flomaton Natural Area is a good representation of virgin stands of longleaf pine described by early authors (Figure 2). Data about the distribution, size, and age of longleaf pine have been collected from the Flomaton Natural Area. These data suggest that the conditions present at Flomaton today are similar to the historic range of variability for old-growth longleaf pine stand structure. As part of the research, trees have been cored to examine the relationship between tree age and size (Figure 3). There are two features of note. First, there is. a large clumping of trees between 20 and 50 years that vary widely in size. The second is the range in ages found in the stand: 20 to 280 years old.

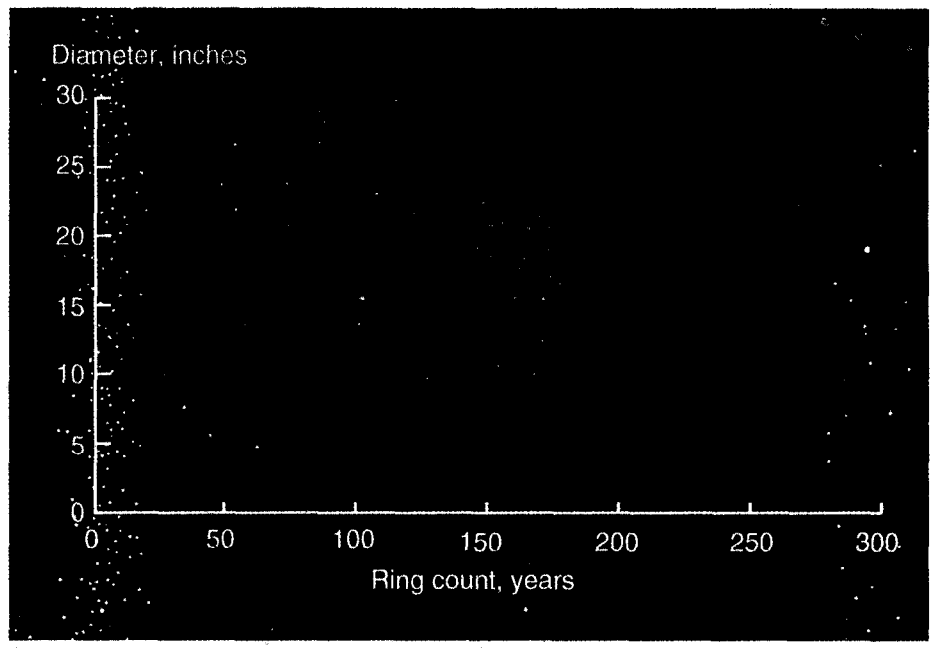

Figure 3. Diameter-tree relationship for the Flomaton Natural Area.

Research has indicated that a frequently burned longleaf pine forest is home to more herbaceous species than any other ecosystem in the Western Hemisphere, including the tropics. Due to a more than 40-year absence of fire from the Flomaton Natural Area, only one herbaceous species and no longleaf pine regeneration were found in the stand. Fire was reintroduced in 1995 and there have been two prescribed fires since. In 1997 a summer survey of the stand found 27 herbaceous species and nearly 2,700 longleaf pine seedlings per acre. The stand will be monitored to observe changes in herbaceous species composition and longleaf pine regeneration.

Efforts such as these being conducted at the Flomaton Natural Area are helping to preserve a small reminder of an important part of the southern and U.S. heritage. Plans are to use the Flomaton Natural Area for research, educational, and demonstration purposes. Interpretive trails may be developed to provide visitors with a glimpse of the past. Visitors are welcome to walk through the stand any time. The stand is located on U.S. Highway 29/31 just east of the intersection between U.S. Highway 29/31 and Alabama Highway 113 in Flomaton.

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