



Policy Adopted by the SGSF April, 2015  
Southern Group of State Foresters Position Paper Related to  
'Southern Pine Decline'

Prepared and Reviewed by SGSF Forest Health and Forest Management Committees

Purpose: To address and put in context the controversial and misunderstood issue of 'southern pine decline' and reassure forestry professionals and the public that the southern pine resource is thriving.

Southern pine decline is a term used by some to describe a gradual reduction in tree health due to a complex of abiotic and biotic stress agents. While loblolly pine is the primary species affected, shortleaf and longleaf pines also reportedly suffer from pine decline. While a standardized definition of southern pine decline remains controversial, it is generally described using the 'forest decline concept' developed by forest pathologist Paul Manion (1991), in which a succession of predisposing, inciting, and contributing factors causes trees to enter a spiral of declining health, with death being the end result. Primary predisposing factors in this syndrome have been identified as mature stands over 30-40 years of age with site factors such as poor soils that are highly eroded, have hardpans or are low in nutrients. Inciting factors commonly include disturbances such as drought, wind events, or fire regimes. Finally, contributing factors may include secondary root colonizing fungi, most notably various species of *Leptographium*, and several species of root-feeding weevils that are known to vector root fungi. One common factor linking different 'decline' syndromes is that no single causal agent can be confidently identified as the sole contributor to tree death.

Although various terms have been used to describe this syndrome, southern pine decline has been recognized in the scientific literature since the 1960s. Stands are characterized by thinning and yellowing crowns, reduced radial growth, deterioration of fine roots, and eventual mortality. Many symptoms overlap with those caused by Annosum root rot or little leaf disease, but often there is no evidence of those particular disease-causing pathogens in the soil. While pine decline has been described from many locations across the Southeast, the majority of cases currently seem to occur near the Fall Line in parts of west-central Georgia and east-central Alabama.

While research on pine decline addresses a multi-faceted and complex issue that warrants further study, some foresters, landowners, and other practitioners have recently come to view this poorly understood phenomenon as a serious disease (caused by one or more invasive pathogens) that threatens the southern pine resource. In the past several years, some publications that otherwise provide a good summary of the overall issue conclude with statements that suggest dieback and premature decline of southern pines is a widespread, serious and fatal problem that deserves urgent attention. Such statements, however, when based on incomplete understanding or imprecise theory, may lead to major misunderstandings about the state of the southern pine resource, and could - through incorrect recommendations - compromise state and federal efforts to encourage sound forest management practices. For loblolly pine, these practices often include

the use of genetically improved trees with superior growth rates, appropriate site preparation, herbicide release or prescribed burning, fertilization, regular and timely thinnings (pre-commercial and/or commercial), and shorter rotation times when economics are the primary consideration. Some of the above practices, alone or in combination, may also be beneficial for loblolly, shortleaf, or longleaf pines when economics is a less important consideration than wildlife, recreation, biodiversity, or habitat restoration.

We argue that the ongoing management practices described above, which have been recommended by forestry professionals for decades, are the foundation for one of the healthiest, most sustainable and most productive landscapes of native pine forests in the world. In addition, we dispute recent suggestions that southern pine decline is placing our pine resources in a novel dilemma; rather, it has been an ongoing issue that continues to be a relatively minor problem in the Southeast.

A recent University of Georgia and USDA Forest Service analysis supports our position (Coyle et al., in review). Forest Inventory and Analysis (FIA) data for loblolly pine in the Southeast showed that out of approximately 5,400 plots across 12 states, only 181 (3.4%) had negative net pine growth. Of these, almost all were associated with insect activity or damaging weather events. Furthermore, the plots with negative growth were not concentrated in any particular area but were scattered across the entire Southeastern region. In many southern states, loblolly pine volumes increased dramatically over the last several FIA measurement cycles.

In addition to these data, southern pine beetle activity has been at historic lows across most of the southern pine growing region for much of the last 20 years. The exceptions to this have been isolated infestations of short duration, where stands are generally older, unmanaged, and contain high pine basal areas. Whereas some recent literature has suggested that thinnings may contribute to pine decline, we counter that timely thinning has been the cornerstone of southern pine beetle prevention efforts and southern pine productivity. It is well known that at typical stocking rates for loblolly pine, unthinned stands stagnate and decline at much younger ages than thinned stands.

While we do not dispute that there are many unanswered questions with regard to pine ecosystem health and sustainability in the Southeast that warrant further study, we maintain that the overall health of southern pines is strong and resilient. Productivity in loblolly pine continues to increase, while major efforts to restore longleaf and shortleaf pine habitat on appropriate sites are ongoing. The pine decline issue should be used by forest health specialists to discuss forest health and resiliency issues with managers, consolidate what we know and don't know about southern pine management and springboard thoughtful research to tackle difficult questions. It should not be used to spread fear and uncertainty about time-tested silvicultural practices that have had demonstrably positive impacts on forestland throughout the Southeastern United States.

Manion, P.D. 1991. *Tree Disease Concepts*. 2<sup>nd</sup> ed. Prentice-Hall, Englewood Cliffs, N.J. 402 pp.

Coyle, D. R., K. D. Klepzig, F. H. Koch, L. A. Morris, J. T. Nowak, S. W. Oak, W. J. Orosina, W. D. Smith, K. J.K. Gandhi. In Review. A holistic review and critique of southern pine decline in North America. *Forest Ecology and Management*.