

FREQUENT FIRE AND THE REDUCTION OF LOBLOLLY PINE X SHORTLEAF PINE INTROGRESSION

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A recent study showed that the hybridization rate between shortleaf pine (*Pinus echinata*) and loblolly pine (*P. taeda*) has increased during the last 60 years, creating a cause for concern about the future of shortleaf pine in particular. Whereas shortleaf pine seedlings have strong basal crook as a fire adaptation, loblolly pine seedlings do not, and hybrids have intermediate crooks that do not appear to provide adequate protection from fire for their dormant buds. Thus, regular fire could select against hybrids in shortleaf pine habitat. The Tall Timbers Research Station (TTRS) conducts biennial burns in open canopy pine and grass savanna but also keeps closed canopy woodland adjacent to the burned sites. We used 25 microsatellite markers to estimate the hybrid character of 184 saplings and 111 overstory trees from 4 paired burned and unburned sites at the TTRS. We found that the overstory was an undifferentiated mix of loblolly pine, shortleaf pine, and hybrids and that there was no difference in the frequencies among those samples ($P = 0.36$). Along the edges of unburned areas, all three classifications appeared in frequencies similar to the overstory population. However, we sampled no loblolly pine seedlings and only one shortleaf pine x loblolly pine seedling in the regularly burned sites, and the hybrid frequencies of the burned and unburned sites were significantly different ($P = 0.006$). Thus, introgression of shortleaf pine by loblolly pine may be controlled by regular controlled burning of open sites. These results are the first to show that frequent fire can prevent introgression in two co-occurring native species, preserving the genetic integrity of at least one of those species. These results were also recently published in the Journal of Conservation Genetics, and we present them to an audience different from that journal.

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