

IMPACTS OF DIFFERENTIAL BROWSING OF SHORLEAF PINE AND MULTIPLE HARDWOOD SPECIES IN RESTORATION PLANTINGS

Joshua J. Granger, David S. Buckley, Cole Browning, Krishna Poudel, and Courtney Siegert

The westernmost part of the Appalachian physiographic province, the Cumberland Plateau, is home to a diverse array of plant and animal species and is considered the largest forested plateau in the world. Unfortunately, the historic ecosystems and habitats of the Cumberland Plateau are under immense pressure due to anthropogenic changes in land use, invasive species, and shifts in climate. Historically, the forests of the Cumberland Plateau included loblolly-shortleaf pine (*Pinus taeda*-*P. echinata*), oak-hickory, and oak-shortleaf pine, but changes in disturbance regimes (i.e., wildfire suppression) have resulted in open savanna-like oak-pine forests shifting to more closed forests. Additionally, the widespread preference for growing loblolly pine in plantation monocultures has significantly increased its range in the region. The conversion of loblolly pine plantations into oak or oak-pine dominated forest types may be achievable through underplanting. However, native white-tailed deer (*Odocoileus virginianus*) populations can significantly hinder planting success with seedlings being subjected to repeated browsing. We established 1-0 bare root shortleaf pine and 2-0 bare root white oak (*Quercus alba*), post oak (*Q. stellata*), southern red oak (*Q. falcata*), northern red oak (*Q. rubra*), shingle oak (*Q. imbricaria*), red maple (*Acer rubrum*), and sweetgum (*Liquidambar styraciflua*) to evaluate deer preferences and impacts on underplanting in existing loblolly pine stands. All seedlings were planted in spring 2021 and inventoried annually for survival, growth, and presence of deer damage. By fall of 2023, all species indicated some level damage from deer. However, sweetgum appeared the least damaged with species such as white oak and northern red oak having the greatest level of damage.

Joshua J. Granger, Department of Forestry, Mississippi State University, Starkville, MS 39762, USA
David S. Buckley, School of Natural Resources, University of Tennessee, Knoxville, TN 37996, USA
Cole Browning, Department of Forestry, Mississippi State University, Starkville, MS 39762, USA
Krishna Poudel, Department of Forestry, Mississippi State University, Starkville, MS 39762, USA
Courtney Siegert, Department of Forestry, Mississippi State University, Starkville, MS 39762, USA