

CARBON STORAGE POTENTIAL OF RESTORED OAK SAVANNAS IN NORTHWESTERN TENNESSEE

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Oak savannas are important ecosystems that provide a range of ecosystem services, including supporting complex food webs and high biodiversity, contributing to landscape resilience and health, and serving as effective carbon (C) sinks, making them vital for conservation and climate change mitigation. In Tennessee, there are several ongoing efforts to restore currently closed-canopy forests to oak savannas, but questions remain about the capacity of the restored savannas to provide C storage services similar to those in remnant savannas. Thus, the main questions addressed in this research are: a) what are the current C storage levels in remnant oak savannas before restoration? and b) how do C storage levels change with time since oak savanna restoration? To address these questions, we are establishing plots in several oak savanna sites across northwestern Tennessee and measuring C stored in live and dead trees, understory vegetation, leaf litter, organic soils, and the top 30 cm of mineral soils by using a combination of allometric equations and harvesting techniques. We hope this research will enhance our understanding of the ecological role of oak savannas in C cycling and highlight the importance of restoration efforts by documenting C storage levels in restored and remnant oak savannas, ultimately informing effective conservation and management strategies.

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