

THE RELATIONSHIP BETWEEN SOIL PROPERTIES AND OAK REGENERATION IN EASTERN KENTUCKY

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Oaks (*Quercus* spp.) are a keystone tree species in Kentucky, both ecologically and economically. However, that dominant status is at risk due to persistent and well-documented regeneration struggles in the absence of active management targeted at perpetuating oak into the next generation of forests. Oak regeneration problems typically vary in degree with soil and site characteristics, and the risk to oak regeneration is especially high on productive sites where oak is often overtaken by fast-growing competitor species. This project aims to examine the utility of soil physical and chemical properties in modeling the abundance of oak regeneration in eastern Kentucky, using both fine-scale and broad-scale data. Fine-scale models will be developed using soil and vegetation data collected within the study area, an approximately 200-acre watershed located in Improvement Hollow in Robinson Forest, Breathitt County, KY. Broad-scale models will be developed using soil and vegetation data from national databases such as the U.S. Department of Agriculture, Forest Service, Forest Inventory Analysis and the Soil Survey Geographic (SSURGO) databases. This poster highlights the prominent soil and forest characteristics of the study site and preliminary results of their relationships. As a result of this research, our understanding of the relationships between soil properties and oak regeneration will improve and, in turn, so will the precision in which we can identify areas that may benefit from silvicultural intervention.

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