

WOODY SPECIES AND FOREST STRUCTURE IN NORTHERN MISSOURI  
RIPARIAN FORESTS WITH DIFFERENT AGES AND WATERSHED SIZES

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**ABSTRACT**

A chronosequence (1 to 250+ years) of 160 woody species plots was established throughout northern Missouri riparian forests to explain the influence of site hydrology and stand age on species distribution and forest structure. Stand age was found to be the dominant factor affecting species distribution and forest structure across the chronosequence. Watershed size was found to influence only species distribution; forest structure (tree height, coarse woody debris, size and age distributions) was not affected by watershed size.

There were seven significant trends in the tree-watershed data: 1) very flood tolerant species importance values increased in larger watersheds; 2) shade tolerance was the dominant mechanism structuring riparian communities; 3) watershed size influenced species distribution; 4) early successional species differed among watershed sizes; 5) species richness decreased with increasing watershed size; 6) mortality rates were fairly uniform among watershed sizes; and 7) forest structure was not influenced by watershed size. In the incised alluvial channels of northern Missouri, the increases in flood tolerance, decreases in species richness, and the lack of influence on forest structure could be the result of groundwater dynamics or less habitat heterogeneity in larger watersheds rather than differences in flood duration; in addition, flooding interacts with seedling germination and patch size to create highly diverse forests.