VALIDATING MISSOURI LANDTYPE ASSOCIATIONS USING TREE SPECIES COMPOSITION, FOREST STRUCTURE, AND PRODUCTIVITY

Shawn K. White

Dr. Hong S. He, Thesis Supervisor

ABSTRACT

Missouri's Landtype Associations (LTAs) were delineated from 1995-1998, and are currently being used by natural resource managers, but these LTAs have never undergone a validation showing that they can encompass patterns in natural systems. The Eastwide Forest Inventory Database was used as an independent source for a validation of Missouri's LTAs. Adjacent LTAs were compared using Forest Type Similarity, Species Composition Similarity, Species Diversity, Species Richness, Stand Age, Site Index, Density of all trees 1 inch dbh and greater, and Density of all trees 5 inches dbh and greater. Analysis of these measures resulted in the validation of 618 of the 625 compared adjacencies, showing a significant difference in at least one measure. A neutral model approach was used to validate the methods used in the study, and it was shown that Stand Age and the two Density measures validated LTA adjacencies no more often than randomly delineated LTAs. Therefore, these three measures were removed from the analysis, and one adjacency was added to the list of those left un-validated by this study (resulting in a total of eight). LTA Types were examined, and this study suggests that species composition is more similar within LTA Type than among LTA Types, however, it is improbable that LTA Type could be predicted by species composition. Electivity was used to show tree species' affinities for LTAs based upon abundance ratios.