

Public Abstract

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M.S.

Forestry

Modeling forest transition pathways for decision making in private forestry

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In the Central Hardwoods Region, 90% of forested lands are privately owned and the majority of harvested hardwoods come from non-industrial private forests. However, many landowners seek little professional advice when managing their forests and do not fully appreciate the consequences of management decisions on their land. This project developed a decision support tool summarizing a forest growth and yield model to explain simple forest stand dynamics to private non-industrial forest landowners in the Ozark Highlands of Missouri.

To simplify forest growth modeling, predictions were limited to a 20 year period (long enough for potential forest change and short enough for landowners to have a vested interest in the land). Type-Size-Density classes were used to describe different forest structures. A set of FIA plots were grown in the Forest Vegetation Simulator (FVS); the initial and final Type-Size-Density classes were determined and simple transition probabilities calculated.

Various forest management options were employed (no treatment, thinning from below, and diameter limit cut) and a multitude of forest attributes were assigned relative values for all Type-Size-Density classes. The categories of forest attributes developed include commercial timber products, non-commercial timber products, wildlife habitat, and risk. A database was developed to guide users from initial Type-Size-Density to likely future Type-Size-Density classes dependent upon the management option selected. The database further provides a representative photograph of each Type-Size-Density class along with scale bars indicating whether that class is good or poor at providing for each forest attribute.