A MULTIFACTOR CLASSIFICATION OF UPLAND HARDWOOD FOREST ECOSYSTEMS OF THE KICKAPOO RIVER WATERSHED, SOUTHWESTERN WISCONSIN[1,2]

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A multifactor classification of upland hardwood forest ecosystems has been developed for the Kickapoo River watershed. Because the forests of southwestern Wisconsin have been significantly altered by past cutting and grazing, an ecological approach was used that integrates landform, soil, and vegetation. Twenty-one ecosystem units have been characterized based on a sample of 87 plots. Each ecosystem unit can be distinguished by its unique combination of aspect, slope position and steepness, parent material depth and type, and vegetation (canopy tree species and groups of ground cover species). These ecosystem units ranged in estimated productivity (average site index in feet for northern red oak) from good (69) to poor (41), with most units intermediate or average (49-56). Most ecosystem units are dominated by combinations of northern red oak (*Quercus rubra* L.), white oak (*Q. alba* L.), and sugar maple (*Acer saccharum* Marsh.). Northern red oak tends to dominate the most productive units. Ecosystem units with northeast aspects are dominated by sugar maple and basswood (*Tilia americana* L.), while white oak is most common on southwest-facing units of intermediate productivity. Discriminant analysis of the eleven most common ecosystem units using a combination of environmental and vegetational variables correctly classified the ecosystem unit in 97% of the cases. The classification is being used as a research framework, i.e., advance regeneration and early stand development patterns are being evaluated within selected ecosystem units.

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