LANDSCAPE SCALE STUDY OF FOREST FRAGMENTS IN ILLINOIS, 2000

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ABSTRACT

The process of forest fragmentation has both ecological and economic impacts on the habitat of wildlife and livelihood of people living in the landscape. Conservationists claim that existing taxation policies, land ownership, population density, farm income and many socioeconomic factors contribute to forest fragmentation. The purpose of this study is to examine the county level pattern of forest fragments in Illinois and also determine whether or not a relationship exists between these patterns and some socioeconomic factors. The Illinois land cover for 2000 was used along with human and agriculture census data aggregated at the county level. Software called Patch Analyst 3.1 was used to compute the patch statistics whereas the visualization and interpretation of observed pattern was done using GIS mapping. Results show that the patchiness of forest landscape in counties of Illinois is not uniform. Significant variation in terms of patch density, size, and edge density was observed among the counties whereas the shape complexity did not indicate much variation. The interpretation of patch characteristics indicate that the patches in the counties of southern and western Illinois are more favorable for supporting biodiversity as compared to those in east and central part. The multiple regression analysis showed that the socioeconomic factors are strong predictors of the variation in forest patchiness. However, the farm related employment did not have a significant effect; the net farm return from agriculture was found to have a negative, or inverse, effect on forest patchiness. Other independent variables including the population density, forest area under private ownership and area under built-up and urban land were found to have significant and positive, that is direct impacts, on forests landscape.