Modeling elk movement through a heterogeneous landscape in eastern Kentucky using GIS.

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Elk were extirpated from Kentucky by 1850. To restore a native species, such as elk, to its former range it is important to understand the dynamics of dispersion from the release site and colonization patterns. The object of this study was to identify which landscape features that influence the dispersion pattern of a reintroduced elk (Cervus elaphus) in eastern Kentucky. GPS radio collars were fitted on reintroduced elk during 1998, 1999, and 2000 to study elk movement from the release site. Locations were obtained on each elk every six hours during the first six months following release. A total of 800-1800 locations were obtained for each animal, although the equipment experienced a fail rate of over 50% over 2 years. Topography, hydrology, land use, urban areas, mining sites, and road data layers were imported into ArcView GIS for overlay with elk movement data. To date, most elk appear to develop an affinity for the release site, whereas others have moved >100 miles from it. Landscape features such as rugged topography, rivers, and highways seem to have little influence on the movement of individuals that chose to leave the release site.