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Resource selection of black-footed ferrets based on black-tailed prairie dog distributions

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This study investigates how black-footed ferrets (*Mustela nigripes*) select their habitat in relation to the distribution of black-tailed prairie dogs (*Cynomys ludovicianus*). Ferrets are one of the rarest and most endangered mammals in North America. An intensive captive breeding program has allowed for reintroduction of ferrets on the Charles M. Russell National Wildlife Refuge in Central Montana, the study site of this project. However, despite over two hundred individual ferrets released in the last ten years, a self-sustaining population has not been established. Because 90% of a ferret's diet consists of prairie dogs and prairie dog burrows provide exclusive shelter sites for ferrets, understanding how ferrets select their habitat within a prairie dog colony could have important management implications. I hypothesize that ferrets will select patches of high prairie dog density. The first component of data collection involved GPS (Global Positioning System) mapping of 26,000 prairie dog burrows within the prairie dog colony. Ferrets were located within the prairie dog colony by spotlighting for their reflective eye shine at night. Once located, a PIT (passive integrated transponder) reading identified each individual ferret, and GPS coordinates were recorded. In the 10 week spotlighting period 60 GPS ferret observations were recorded. A Kernel analysis was done to determine the level of habitat utilization by ferrets within the prairie dog colony. This information was overlaid on the prairie dog colony map that identified patches of different burrow densities using GIS (Geographic Information System) software. A Chi-squared test was then performed to analyze the relationship between prairie dog distribution and ferret habitat selection. The results of this study can hopefully help wildlife managers better manage ferrets and possibly adjust or modify their ferret management plan based on prairie dog colony structure.