Effects of Experimental Manipulation of Coterie Size on Demography of Black-Tailed Prairie Dogs in South Dakota

by

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ABSTRACT

Life-history traits can be affected by density, especially in species restricted in range. Black-tailed prairie dogs (*Cynomys ludovicianus*) are restricted to an area occupied by three or four related females, one breeding male, and their offspring, which live within social groups called coteries. To test whether increasing or decreasing numbers affected growth, survival, reproduction, and dispersal, the number of juveniles in24 coteries within four colonies in Badlands and Wind Cave National Parks were manipulated by adding or removing juveniles or left as controls during the springs of 2002 and 2003. Growth was assessed by measuring the mass of juveniles and yearlings throughout subsequent summers. Daily mass gain for 346 juveniles did not differ significantly among treatments (increased: 4.18 g/day (S.D. = 1.47, n = 161); decreased: 4.23 g/day (S.D. = 1.34, n = 58); control: 4.21 g/day (S.D. = 1.49, n = 127)). Similarly, daily mass gain for 39 yearlings was not significantly different among treatments (increased: 1.08 g/day (S.D. = 1.12, n = 12); decreased: 1.46 g/day (S.D. = 1.42, n = 8); control: 1.205 g/day (S.D. = 1.51, n = 19)). Likewise the number of juveniles that survived into their next year was not significantly different among treatments (increased: 32% (n = 108); decreased: 36% (n = 53); control: 34% (n = 145)). Also, there were no significant differences among treatments in the number of adults or yearlings that were lactating the following year (adults - increased: 62% (n = 13), decreased: 68% (n = 19), control: 73% 9n = 15); yearlings - increased: 44% (n = 9), decreased: 30% (n = 10), control: 20% (n = 15)). Dispersal of yearling males was not affected by manipulation. Though high variance in coterie densities yielded no statistically significant effects, juvenile and yearling growth, and yearling survival exhibited expected trends with growth and survival being lower in increased coteries and higher in decreased coteries. Density differences due to these manipulations may not have been pronounced enough to have significant effects on these demographic parameters. Future studies should increase differences among treatments to determine if these demographic parameters are density-dependent.