Does Enzootic Plague Affect Black-Footed Ferret Survival?

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Black-footed ferrets (*Mustela nigripes*) were first reintroduced in Montana in 1994 on the UL Bend National Wildlife Refuge and later on the Fort Belknap Indian Reservation and on Bureau of Land Management lands in Phillips ounty. More than 500 ferrets have been released and over 250 wild-born kits have been observed. Sixteen ferrets were known alive in Montana in October, 2006. Fundamentally, small and fragmented complexes of black-tailed prairie dog (*Cynomys ludovicianus*) colonies provide limited habitat. Sylvatic plague, caused by the bacteria Yersina pestis and vectored by fleas, can cause significant mortality in both prairie dogs and ferrets. The effects of epizootic plague are often dramatic with near 100 percent prairie dog mortality across hundreds of acres within weeks, eliminating both prey and habitat for ferrets. We hypothesized that enzootic plague, i.e. low, background levels of the disease, may also affect ferret survival. We conducted a manipulative, experimental investigation utilizing Deltamethrin dust to reduce flea populations and an experimental plague vaccine in ferrets. Survival of released ferrets and resident wild-born animals was monitored on comparable dusted and non-dusted prairie dog colonies. Half of all resident ferrets and half of all released animals were vaccinated against plague. Results from logistic regression analysis of data from 137 ferrets, spanning 222 survival intervals, provided the first direct evidence that enzootic plague decreases ferret survival. Plague and maintenance of sufficient habitat continue to present significant challenges for recovery of endangered black-footed ferrets.