Bison and Brucellosis: Integrating Research and Management [TWS]

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Previous management efforts designed to minimize the risk of transmission of brucellosis from free-ranging bison and preserve Montana's brucellosis free status have been hampered by the lack of specific scientific information. Interim management strategies were conservative and sometimes extreme because of the uncertainty associated with management decisions in the absence of quality risk management data. Early management discussions and even public debates were based on various untested hypothesis and subjective scientific opinions in the absence of specific research data. Answers to basic questions about pathogenesis, epidemiology, and possible treatment/risk management strategies were not available and research to address these topics was not in place. Recent efforts by multiple agencies to examine the pathogenesis and epidemiology were begun in 1995. Additional research into vaccine safety and efficacy were also initiated and are nearing completion. Recent discoveries from these studies include tissue localization of *Brucella abortus* following exposure and active infection, serology-culture relationships, serologic conversion rates, age specific infection rate, manifestations of the disease in bison, shedding of brucellosis in the environment, persistence of brucellosis in the environment, possible mechanisms of transmission, potential vaccines, and vaccine safety in non-target species. Additional research projects are proposed or underway to further define persistence of brucella in the environment, determine disappearance rates of fetuses in the Greater Yellowstone Area, monitor the infectiousness of sero-negative pregnant bison, explore vaccine delivery using biobullet technology and determine if latency of infection occurs in sero-negative calves. The final state-federal bison management plan was approved in December, 2000. The management plan describes an adaptive management strategy that incorporates specific research projects and monitoring to help define parameters to be incorporated into the decision process. Results from recently completed and ongoing research efforts are providing detailed definition to a complex management problem and provide critical information for advanced risk modeling. This presentation describes current progress in brucellosis research and application of these findings to management strategies outlined in the long-term state/federal bison management plan. Much progress has been made in understanding and further defining a complex problem, which provides a significant step toward managing the problem.