

IBMP Briefing Statement

Agency: Yellowstone National Park
Issue: Bison Monitoring and Surveillance Plan
Date: August 28, 2008

Background:

- The goals of the IBMP are to conserve a free-ranging bison population and reduce the risk of brucellosis transmission from bison to cattle.
- The GAO recommended the IBMP partners develop specific management objectives, conduct surveillance to evaluate the effects and effectiveness of management actions, and outline methods for adjusting the IBMP based on these assessments.
- Yellowstone National Park has developed a bison monitoring and surveillance plan to identify a comprehensive suite of long-term monitoring and research parameters that meet the mission of the NPS, inform IBMP adaptive management, and address concerns of the GAO.

Current Status:

- The following activities were collated according to three primary themes of conservation and disease management for bison at Yellowstone (see Figure 1 below):

Conservation (Preserve a Functional, Free-Ranging Bison Population)

1. Estimate the abundance, demographic rates, and limiting factors for the overall bison population and two primary subpopulations (central and northern).
2. Describe migratory and nomadic movements by bison at a variety of temporal and spatial scales in and outside the park.
3. Estimate the existing heterozygosity, allelic diversity, and long-term probabilities of genetic conservation for the overall bison population and identified subpopulations.

Risk Management (Prevent Brucellosis Transmission from Bison to Livestock)

4. Estimate the probabilities (i.e., risks) of brucellosis transmission within and between species (i.e., bison, cattle, elk) and areas (e.g., elk feed grounds in Wyoming and the northern Greater Yellowstone Area).
5. Estimate age-specific rates of bison testing seropositive and seronegative for brucellosis that are also culture positive and the proportion of seropositive bison that react positively on serologic tests due to exposure to cross-reactive agents other than *B. abortus* (e.g., *Yersinia*).
6. Determine rates of recrudescence (i.e., latent carriers of *Brucella* that relapse to an infectious state) in bison.
7. Determine how the interactive effects of pregnancy, stress, and nutritional condition influence the vulnerability of bison to brucellosis infection and transmission.
8. Estimate the timing and proportion of removals from each of the two primary subpopulations each winter, including the proportion of removals from each age and sex class and the proportion of calf-cow pairs.
9. Document bison use of risk management zones outside the northern and western boundaries of Yellowstone and commingling with livestock during the likely brucellosis-induced abortion period for bison each spring.
10. Estimate the effects of hazing or temporarily holding bison in capture pens at the boundary of Yellowstone (for spring release back into the park) on subsequent bison movements or possible habituation to feeding.

Brucellosis Suppression (Reduce Disease Prevalence)

11. Determine the strength and duration of the immune response in bison following parenteral (e.g. syringe delivery) vaccination for brucellosis.
12. Determine the strength and duration of immune response in bison following remote delivery (e.g. bio-bullet) vaccination for brucellosis.
13. Document long-term trends in the prevalence of brucellosis in bison, and the underpinning effects of remote and/or parenteral vaccination, other risk management actions (e.g., harvest, culling), and prevailing ecological conditions (e.g. winter-kill, predation) on these trends.

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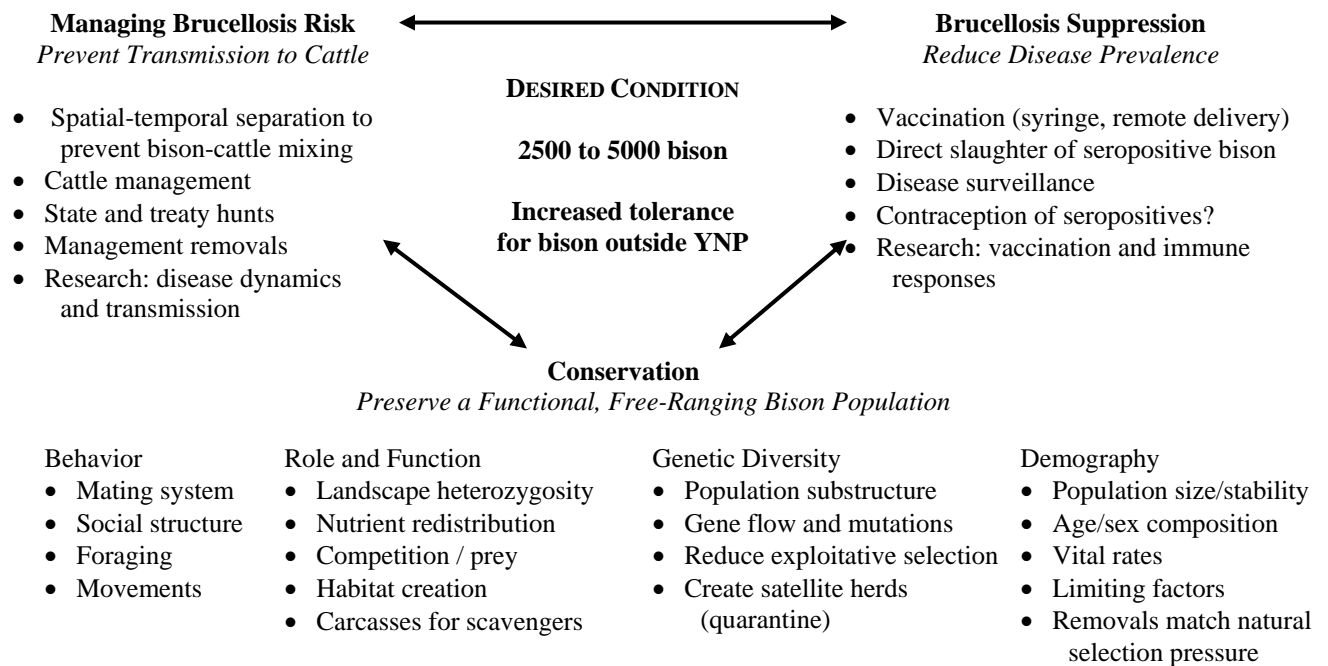


Figure 1. Conceptual model of Yellowstone bison conservation and disease management.