

Results

National Academy of Science Committee on
Revisiting Brucellosis in the GYA
May 2017



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<http://www.nap.edu/24750>



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Conclusions

Conclusion #1:

- * Elk now viewed as the primary source for new cases of brucellosis
- * Brucellosis control efforts--sharply focus on approaches that reduce transmission from elk to cattle and domestic bison

Conclusion #2:

- * No single management approach can independently result in reducing risk to a level that will prevent transmission of *B. abortus* among wildlife and domestic species.

Conclusion #3:

- * Reducing elk group sizes and/or density may decrease elk seroprevalence over time, and potentially decrease the risk of elk transmission.



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Conclusions

Conclusion #4:

*If reduction of brucellosis prevalence is a goal, removal of bison will need to target brucellosis infected individuals whenever possible.

Conclusion #5

*Reduced use or incremental closure of feedgrounds could benefit elk health in the long-term, and could reduce the overall prevalence of brucellosis in elk on a broad population basis.

Conclusion #6:

*Reduced use or incremental closure of feedgrounds is not a stand-alone solution to control of brucellosis in the GYA--other management actions needed to address the problem at a systems level.



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Conclusions

Conclusion #7:

*The lack of data-based guidance and uniformity in conducting wildlife surveillance outside the DSA, the absence of a GYA focused approach for national surveillance, and the infrequent oversight of state brucellosis management plans in the midst of expanding seroprevalence of elk has increased the risk for spread of brucellosis in cattle and domestic bison outside the DSA boundaries and beyond the GYA

Conclusion #8:

*The significant reduction in risk of transmission among vaccinated cattle provides sufficient reason to continue calfhooed and adult vaccination of high-risk cattle when coupled with other risk reduction approaches.



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Recommendations

Conclusion #9:

*A coupled systems/bioeconomic framework is vital for evaluating the socioeconomic costs and benefits of reducing brucellosis in the GYA-- also needed to identify appropriate management actions to target spatial-temporal risks, including risks beyond the GYA.

Conclusion#10

*Managing an ecosystem as complex as the Greater Yellowstone Ecosystem will require coordination and cooperation from multiple stakeholders and expertise across many disciplines.



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Conclusions

Conclusion #11:

*A strategic plan is needed to coordinate future efforts, fill in critical knowledge and information gaps, and determine the most appropriate management actions under a decision-making framework that is flexible and accounts for risks and costs.

Conclusion #12:

*Thus, coordinated efforts across federal, state, and tribal jurisdictions are needed, recognizing firstly that *B. abortus* in wildlife spreads without regard to political boundaries, and secondly that the current spread of brucellosis will have serious future implications if it moves outside of the GYA



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Recommendations

Recommendation 1:

- *Prioritize efforts on preventing *B. abortus* transmission by elk.
- *Modeling should be used to characterize and quantify the risk of disease transmission and spread from and among elk.

Recommendation 2:

- *For reducing the risk of *B. abortus* transmission from elk, federal and state agencies should use an active adaptive management approach:
 - *iterative hypothesis testing
 - *mandated periodic scientific assessments
- *Management actions should include multiple, complementary strategies over a long period of time, and should set goals.



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Recommendations

Recommendation 3:

- * Use of supplemental feedgrounds should be gradually reduced.
- * A strategic, stepwise, and science-based approach should be undertaken to analyze and evaluate the impacts of feedground reductions.

Recommendation 4:

- * Agencies involved in implementing the IBMP should continue to maintain a separation of bison from cattle when bison are outside YNP boundaries.



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Recommendations

Recommendation 5:

*USDA-APHIS should take the following measures:

5A: Work with appropriate wildlife agencies to establish an elk wildlife surveillance program that uses a modeling framework.

5B: Establish uniform, risk-based standards for expanding the DSA boundaries in response to finding seropositive wildlife.

*The use of multiple concentric DSA zones with, for example, different surveillance, herd management, biosecurity, testing, and/or movement requirements should be considered based on differing levels of risk.

5C: Revise the national brucellosis surveillance plan to include and focus on slaughter and market surveillance streams for cattle in and around the GYA.



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Recommendations

Recommendation 6:

* All federal, state, and tribal agencies with jurisdiction in wildlife management and in cattle and domestic bison disease control should work in a coordinated, transparent manner to address brucellosis in multiple areas and across multiple jurisdictions.

* Effectiveness is dependent on political will, a respected leader who can guide the process with goals, timelines, measured outcomes, and a sufficient budget for quantifiable success. Therefore, participation of leadership at the highest federal (Secretary) and state (Governor) levels for initiating and coordinating agency and stakeholder discussions and actions, and in sharing information is critical.



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Recommendations

Recommendation 7:

*The research community should address the knowledge and data gaps--
B. abortus transmission to cattle and domestic bison from wildlife.

7A: Top priority should be placed on research to better understand brucellosis disease ecology and epidemiology in elk and bison.

7B: To inform elk management decisions, high priority should be given to studies that would provide a better understanding of economic risks and benefits.

7C: Studies and assessments should be conducted to better understand the drivers of land use change and their effects on B. abortus transmission risk.



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Recommendations

Recommendation 7: cont.:

7D: Priority should be given to developing assays for more accurate detection of *B. abortus* infected elk, optimally to be performed “animal-side”.

7E: Research should be conducted to better understand the infection biology of *B. abortus*. (*repository)

7F: To aid in the development of an efficacious vaccine for elk, studies should be conducted to understand elk functional genomics regulating immunity to *B. abortus*.

7G: The research community should (1) develop an improved brucellosis vaccine for cattle and bison to protect against infection as well as abortion, and (2) develop a vaccine and vaccine delivery system for elk



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Statements

“Lack of openly accessible data has limited the amount of scientific progress on controlling brucellosis, slowed the learning process, and limited critical information necessary for making decisions.”

“A forum to coordinate scientific approaches toward brucellosis control among all states and agencies with jurisdiction in the GYA would be a valuable mechanism to ensure that science informs policy.

Such a body would share information, prioritize research projects, limit duplication of efforts, advise on management actions, and serve as a potential venue for communicating scientifically sound and agreed-upon messages and policies to the public.”



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