2015 Targeted Elk Brucellosis Surveillance

Post-capture Summary

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Montana Fish, Wildlife and Parks (MFWP) is conducting a multi-year targeted surveillance and research effort evaluating the prevalence and spatial extent of brucellosis exposure in southwest Montana elk populations. This effort consists of capturing and testing elk from areas in and adjacent to the previously documented distribution of brucellosis in wildlife. The purpose is to better define the geographic distribution and level of exposure of the disease in elk populations. Epidemiologic and animal movement data are also being gathered to improve our understanding of factors that may influence prevalence and distribution of brucellosis in elk populations. This information provides support for decisions regarding elk to livestock transmission risk management in areas where elk are exposed to brucellosis. During 2011-2014, the project targeted surveillance efforts in the Blacktail/Sweetwater, Sage Creek, Pioneer Mountains, Tobacco Root Mountains, and Black's Ford areas. This report is a summary of the 2015 surveillance portion of the targeted surveillance and research project focused on the Mill Creek and North Absaroka areas.

Study Areas and Methods

Elk from the Mill Creek area of hunting district (HD) 317 and the North Absaroka area of HD 560 were captured and tested for exposure to *Brucella abortus* during January 30 – Feb 3, 2015 (Figure 1). Elk were captured using a net gun fired from a helicopter. Captured elk were blindfolded, hobbled, placed in a bag and transported to a nearby site for processing. At the processing site, elk age was estimated based on tooth eruption and wear techniques and permanent identifiable tags were attached to each ear. A blood sample was collected and centrifuged to collect the serum. Serum was screened in the field for exposure to *B. abortus* utilizing the Card and Fluorescence Polarization Assay (FPA) tests. Elk were held until field screening results were obtained.

Elk identified as being seropositive in the field (positive on blood tests conducted at the capture site) were fitted with a permanent GPS radiocollar and examined for pregnancy by rectal palpation. If pregnant, they received a vaginal implant transmitter (VIT) in order to determine when and where an abortion or live birth occurs and to determine if *Brucella abortus* bacteria can be found at these sites. An additional sample of elk identified as being seronegative in the field were fitted with GPS radiocollars programmed to release after 62 weeks. Elk radiocollar location data will be used to better understand elk movements, and potential for elk – elk and elk-livestock transmissions. All elk were released at the processing site.


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Serum samples were tested at the Montana Department of Livestock Diagnostic Laboratory (Diagnostic Laboratory) after completion of the capture operation in order to determine sero-status. Samples were screened utilizing the Rapid Automated Presumptive (RAP) and FPA plate tests. Suspect or reactors to these screening tests were further tested with the FPA tube test. Final determination of sero-status was based on test results from the Diagnostic Laboratory.

Results and Discussion

Thirty adult female elk were captured and tested for exposure to *B. abortus* in the Mill Creek area of HD 317 (Figure 1). Sixteen of the 30 elk (53.3%) in HD 317 tested positive for exposure to *B. abortus* (Table 1) in the final testing performed by the Diagnostic Laboratory. Thirteen of the 16 seropositive elk field-tested positive and were fitted with a permanent radiocollar. Two of the 16 seropositive elk were fitted with radiocollars programmed to release in April 2016, and we will attempt to recapture these animals next winter and replace releasable radiocollars with permanent radiocollars. One seropositive elk tested negative in the field and was not collared. Eleven of the 16 seropositive elk were pregnant and fitted with a vaginal implant transmitter. The fate of their pregnancies will be monitored throughout the pregnancy and calving period. An additional 8 seronegative elk were fitted with a radiocollar, for a total of 21 radiocollars deployed.

Sixty-three adult female elk were tested for exposure to *B. abortus* in the North Absaroka area of HD 560 (Figure 1). Two of the 63 elk (3.2%) in HD 560 tested positive for exposure to *B. abortus* (Table 1) in the final testing performed by the Diagnostic Laboratory. Two 7-month old elk calves were captured and both tested seronegative. The two seropositive elk field-tested positive and were each fitted with a permanent radiocollar. Both these elk were pregnant and fitted with VITs. Two additional elk were screened as positive in the field, but confirmatory testing at the Diagnostic Laboratory determined these elk were negative. Twenty-two seronegative elk were fitted with radiocollars in this area, for a total of 24 radiocollars deployed.

Table 1. The number of adult female elk that tested seropositive and seronegative for exposure to *Brucella abortus* in the North Absaroka (HD 560) and Mill Creek (HD 317) areas in January and February 2015, along with the number of seropositive, pregnant elk fitted with vaginal implant transmitters (VIT) for tracking reproductive events.

Area	Number Seropositive	Number Seronegative	Number VITs
North Absaroka (HD 560)	**2**	**61**	**2**
Mill Creek (HD 317)	**16**	**14**	**11**

Figure 1. The 2015 targeted elk brucellosis surveillance and research project capture and testing areas (blue shaded areas) were located in the Mill Creek area of hunting district 317 and the North Absaroka area of hunting district 560.