MONTANA FISH, WILDLIFE & PARKS

Targeted Elk Brucellosis Surveillance Project
March 2020 Update

BRUCELLOSIS SURVEILLANCE

In an effort to increase understanding of brucellosis in elk populations, MFWP initiated a targeted elk brucellosis surveillance project in 2011. Sampling efforts are focused on 1 – 2 elk populations every year. Elk in targeted herds are captured and sampled to evaluate the prevalence and spatial extent of brucellosis exposure in elk populations. GPS radio collars are deployed on a subset of elk to document elk movements, the extent of spatial overlap with livestock, and interchange between elk herds. Elk capture and sampling efforts for the Targeted Elk Brucellosis Surveillance project occurred January 24th through January 27th in the Ruby Mountains (HD322) and February 29th and March 1st in the Bangtail Mountains (HD393, Figure 1). Blood was collected from captured elk and screened for exposure to brucellosis at the Montana Department of Livestock (DOL) Diagnostic Laboratory. Brucellosis seroprevalence estimates from this project are reported at the hunt district level based on capture location.

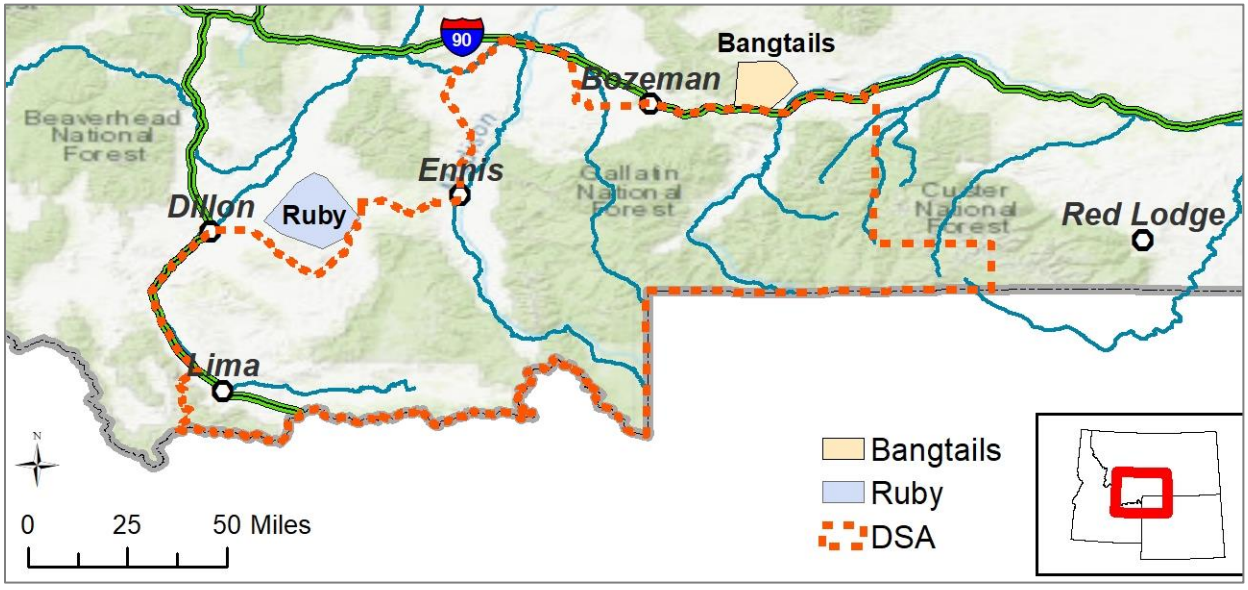

Figure 1. Elk brucellosis surveillance was conducted in the Ruby Mountains (HD322) and Bangtail Mountains (HD393). The Montana Department of Livestock brucellosis designated surveillance area (DSA) is shown as an orange dotted line.

Ninety-eight adult female elk in the Ruby Mountains (HD322) northeast of Dillon were captured and screened for exposure to brucellosis (Figure 2). In addition, 2 blood samples from hunter harvested elk were tested, increasing our sample size in the Ruby Mountains to 100 elk. Two elk tested seropositive for brucellosis giving the population an estimated seroprevalence of 0.02 (95% confidence interval: 0.01 – 0.07; Table 1). GPS collars were deployed on 43 elk and programmed to record locations (Figure 3) every hour for 2 years when an automatic release mechanism will drop the collars for retrieval and redeployment in another herd.

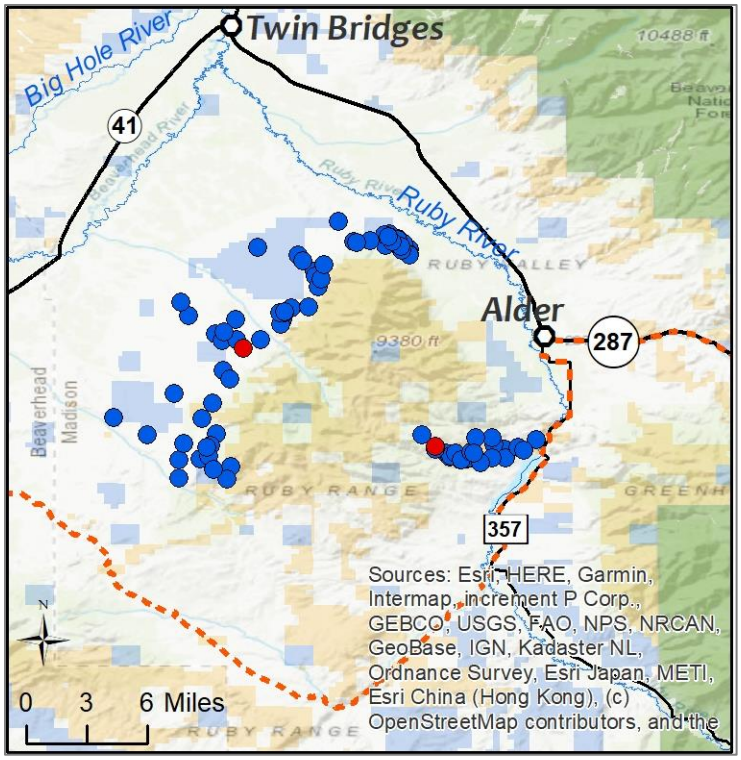

Figure 2. Capture locations of seronegative (blue) and seropositive (red) elk in the Ruby Mountains northeast of Dillon, MT during January 2020.

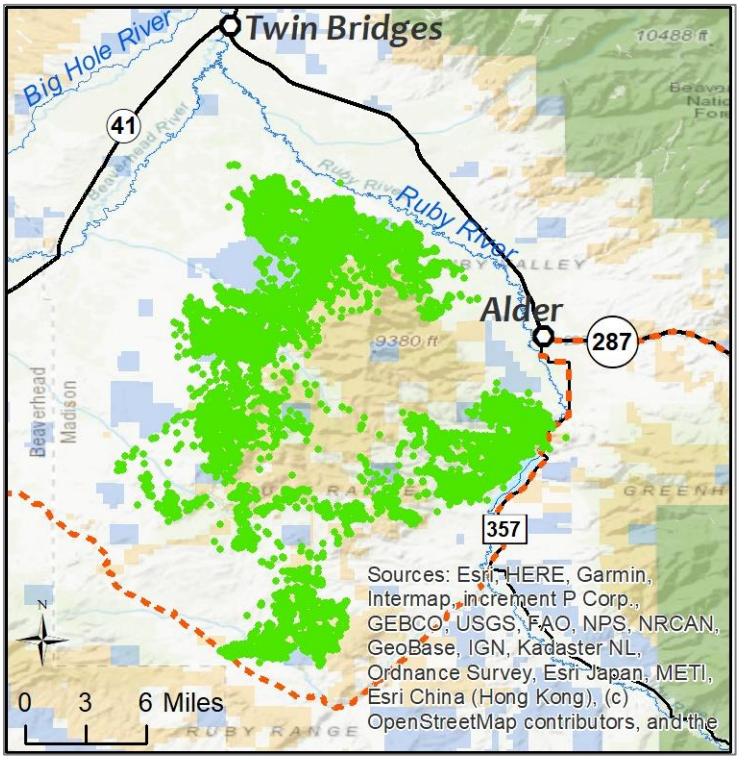

Figure 3. Locations since capture of collared elk in the Ruby Mountains northeast of Dillon, MT.

Table 1. The total number of elk sampled for exposure to brucellosis, the number of seropositive elk, estimated seroprevalence, and the number of GPS collars deployed in the HD322 elk population in the Ruby Mountains in 2020. The numbers in parentheses represent the lower and upper bounds of the 95% confidence interval on the seroprevalence estimate.

Population	Total Elk	Seropositive	Seroprevalence	GPS Collars
HD322	100	2	0.02 (0.01, 0.07)	43

Capture and surveillance in the southern Bangtail Mountains in HD 393 northwest of Livingston occurred in both 2019 and 2020 (Figure 4). In 2019, we captured and sampled 49 adult female elk and sampled 7 blood samples from hunter harvested elk for a total of 56 elk sampled. The purpose of the 2020 effort was to increase sample size. In 2020, we captured and sampled 51 adult female elk. All samples were screened for exposure to brucellosis. For both years combined, 0 out of 107 elk tested seropositive giving the population an estimated seroprevalence of 0 (95% confidence interval: 0.00 – 0.03; Table 2). In 2019 and 2020, a total of 32 elk were outfitted with GPS collars programmed to record locations (Figure 5) every hour for 62 weeks when an automatic release mechanism will drop the collars for retrieval and redeployment in another herd.

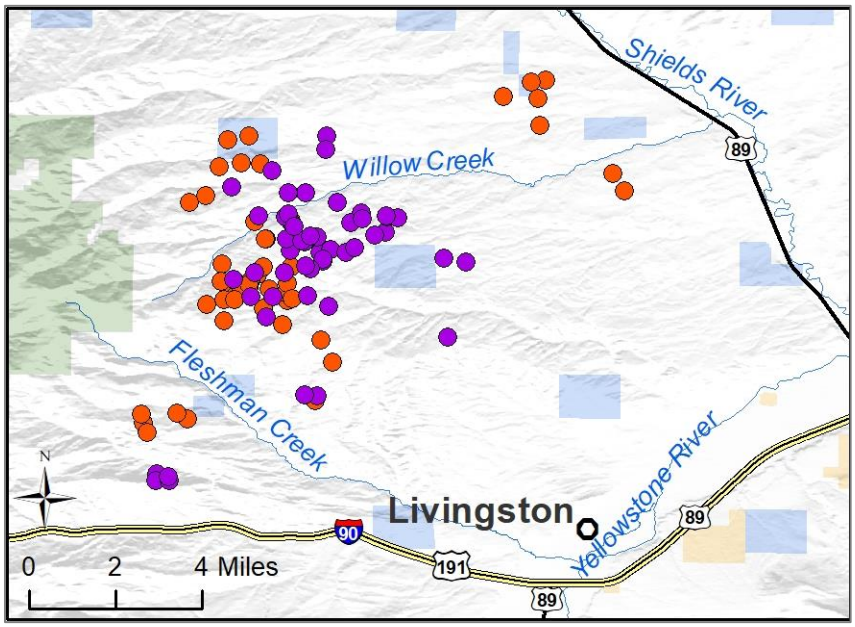

Figure 4. Capture locations of elk in the Bangtail Mountains in HD393 northwest of Livingston, MT from 2020 (purple) and 2019 (orange).

Table 2. The total number of elk sampled for exposure to brucellosis (including hunter samples), the number of seropositive elk, estimated seroprevalence, and the number of GPS collars deployed in HD 393 in the Bangtail Mountains in 2019 and 2020. The numbers in parentheses represent the lower and upper bounds of the 95% confidence interval on the seroprevalence estimate.

Year	Total Elk	Seropositive	Seroprevalence	GPS Collars
2020	51	0	0 (0.00, 0.07)	17
2019	56	0	0 (0.00, 0.06)	15
2020 & 2019	107	0	0 (0.00, 0.03)	32

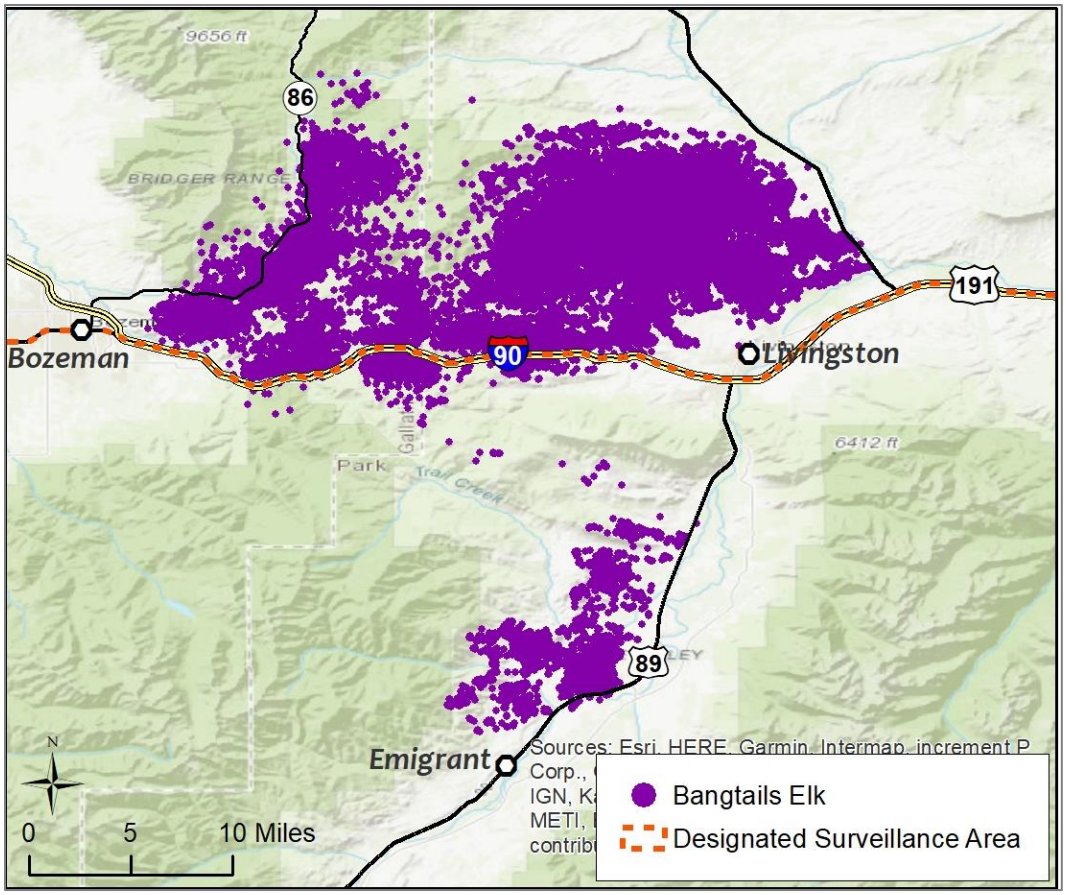

Figure 5. Annual locations of elk from the Bangtail Mountain population in HD393, 2019-2020.

A sincere thank you to all FWP personnel, the Quicksilver helicopter capture crew, and landowners within the study areas. Funding was provided by Montana Fish, Wildlife and Parks, Montana Department of Livestock, and the Rocky Mountain Elk Foundation. This project would not be possible without your efforts and support.
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