



Wyoming Game and Fish Department 2025 Brucellosis Surveillance in Non-Feedground Elk Herds



Overview:

Each year the Wyoming Game and Fish Department (WGFD) monitors the distribution and seroprevalence of brucellosis (*Brucella abortus*) within the state's elk populations with blood samples collected mostly by hunters and occasionally department personnel. Between 8,000 and 9,000 blood collection kits are mailed to elk hunters successful in acquiring limited quota licenses within targeted surveillance areas and additional kits are handed out by field personnel. Annual surveillance is conducted in herds that surround the brucellosis designated surveillance area (DSA) and in herds that do not utilize state or federal feedgrounds (Figure 1). Additional surveillance occurs in a quarter of the hunt areas located outside of the DSA, annually, providing coverage of the entire brucellosis non-endemic area every 4 years. More than 25,000 elk blood samples have been analyzed since this program's inception in 1991.

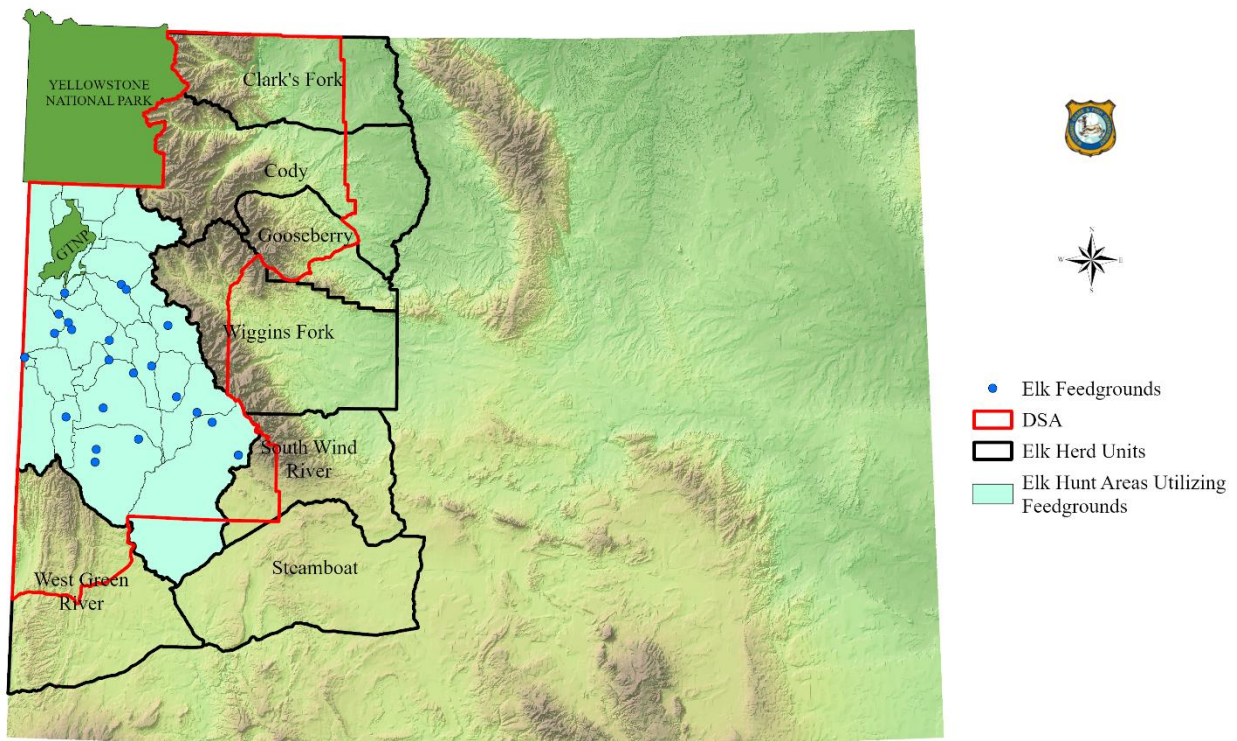


Figure 1. Locations of Wyoming feedgrounds (blue dots), elk hunt areas utilizing feedgrounds (sea foam) surrounding non-feedground elk herd units (bolded black line), and the DSA (red line).

2025 Surveillance:

Methods:

For the 2025 hunting season, an estimated 8,500 blood collection kits were mailed or directly handed out to elk hunters. Surveillance included the western slope of the Bighorn Mountains, the

eastern and southern border of the DSA, the Cody elk herd and the eastern edge of the state (Figure 2). The blood collection kits consisted of a 15 ml sterile polypropylene conical tube, a paper towel, an instruction/data sheet, and a prepaid mailing label for return shipping. Samples were also obtained opportunistically in association with various research efforts.

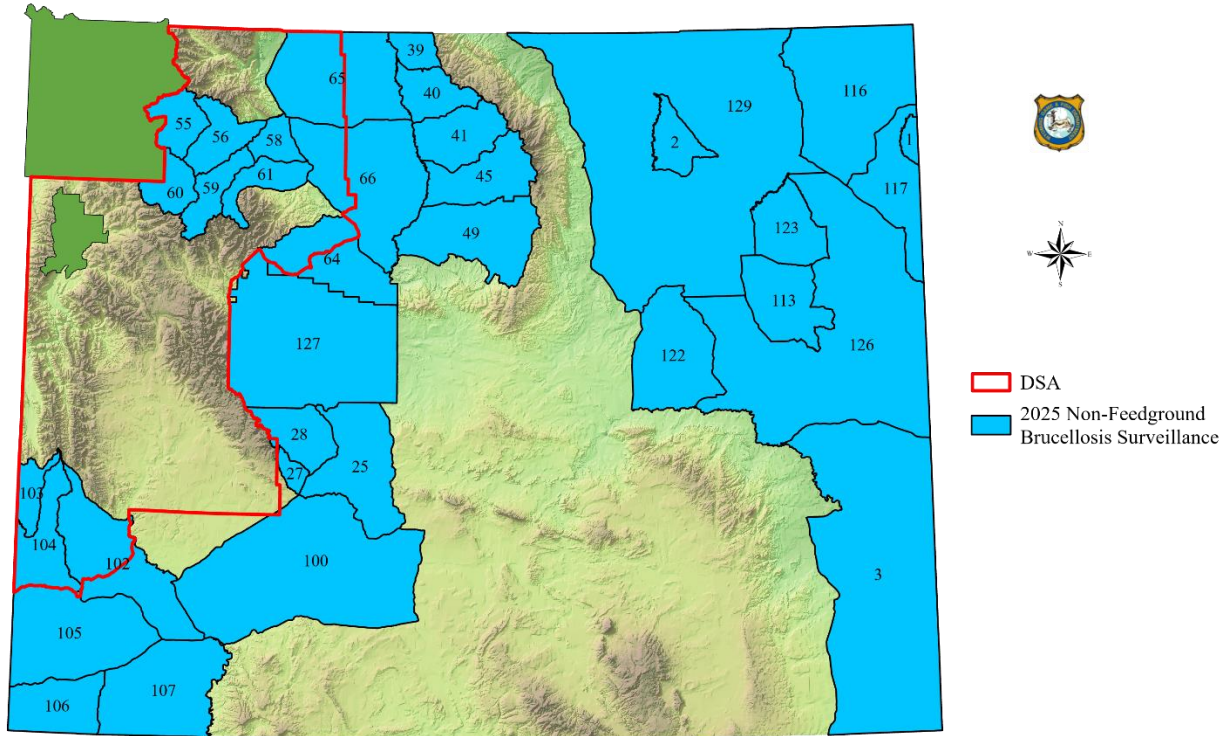


Figure 2. 2025 brucellosis surveillance in Wyoming non-feedground Elk (aqua) and the DSA (red line).

All useable samples were analyzed at the WGF D Wildlife Health Laboratory (WHL). Serologic assays for exposure to *B. abortus* were conducted and interpreted using current assay kit protocols for the fluorescence polarization assay (FPA) plate test and National Veterinary Services Laboratories (NVSL) protocols for FPA tube test. The FPA plate test was used to screen samples, and all positive or suspect reactions on the plate assay were confirmed with the FPA tube test. Any samples outside of the DSA (Figure 3) testing positive were sent to NVSL for confirmation. Seroprevalence of elk within the known endemic or exposure areas are based on yearling and adult females; males and juveniles are included in surveillance data outside of the known endemic or exposure areas. Including serologic data from males and juveniles offers improved detection of brucellosis in areas where this disease is not known to occur.

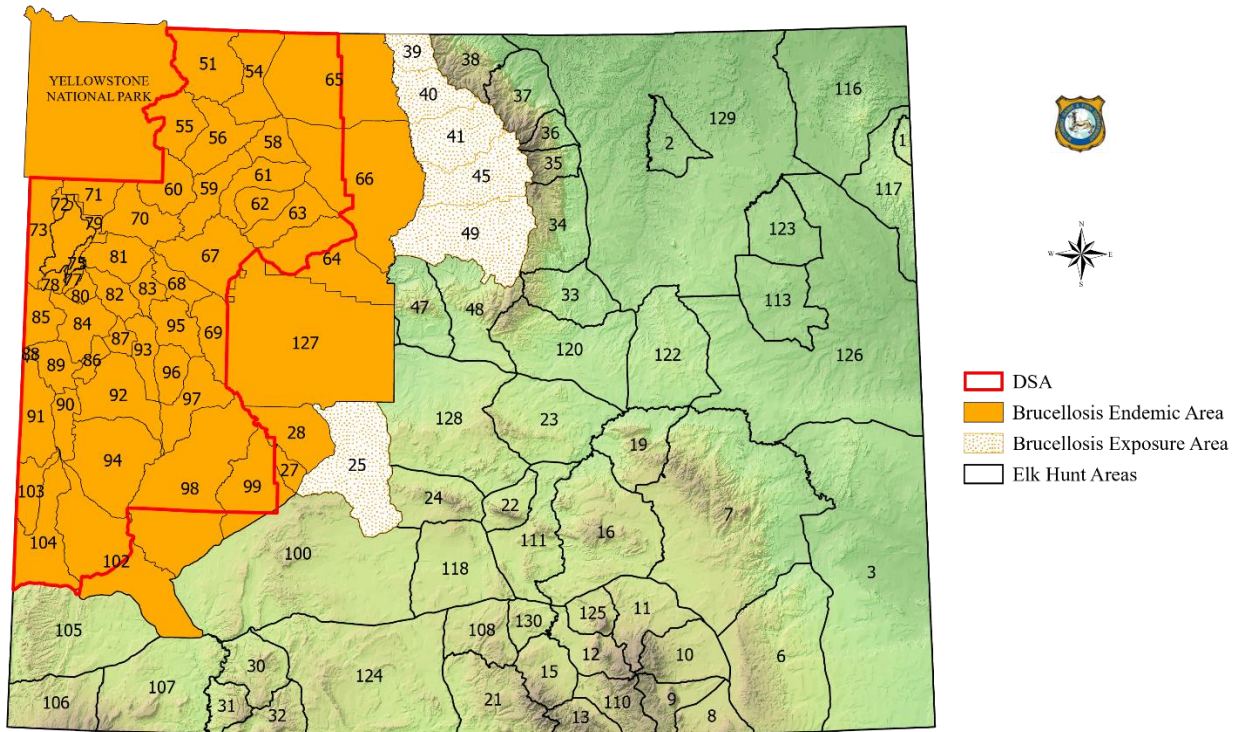


Figure 3. Wyoming elk hunt areas with brucellosis status; brucellosis endemic areas (orange), brucellosis exposure areas (white with orange dots), and DSA (red line).

Serologic tests have improved and become less subjective and most hemolyzed serum samples have become suitable for testing and can contribute to the sample size of areas where brucellosis has not been detected (Jennings-Gaines et al., 2021). Hemolyzed serum samples received from within the DSA are discarded.

The number of hunt areas surveyed and the number of blood collection kits mailed to hunters was based on the priorities of the WGFD and the Wyoming Livestock Board, while balancing the capacity of the WHL. Enhanced surveillance efforts were conducted in the Green River and Lander regions, focusing primarily on elk areas 102, 103, 104, and 25 and in the Cody elk herd within WGFD’s Cody region. The 2025 surveillance effort was supported by WGFD and by a cooperative agreement with USDA/APHIS.

Results and Discussion:

For the 2025 surveillance (February 1st, 2025 – January 31st, 2026), 8,500 kits were mailed/handed out and 777 elk blood samples were then received by the WHL. Of those, 753 were suitable for testing. Testable sample numbers in 2025 were lower than average returns seen in previous years, with a four-year average testable rate of 1,040 from 2021-2024. From the 753 blood samples tested for *B. abortus* specific antibodies, 22 were seropositive; one seropositive cow elk was harvested outside of the DSA (hunt area 25).

Bighorn Mountains Brucellosis Surveillance:

Since 2015, 4,966 samples have been tested from the Bighorn Mountains (Figure 4). The first seropositive samples were detected in 2012 from two harvested elk (bull and cow; hunt area 40).

From 2013-2016, there were nine seropositive elk samples, from four hunt areas in this region (3 bulls and 6 cows; 39, 40, 41, and 49). From 2017-2021, there were no additional detections.

Due to the lack of seropositive samples, in 2021, it was decided to only focus on the western slope of the Bighorn Mountains (hunt areas 39, 40, 41, 45 and 49). In both 2022 (bull; hunt area 45) and 2023 (cow; hunt area 45) there was one seropositive sample received. There were no seropositive elk detections in the Bighorn Mountains in 2024 or 2025.

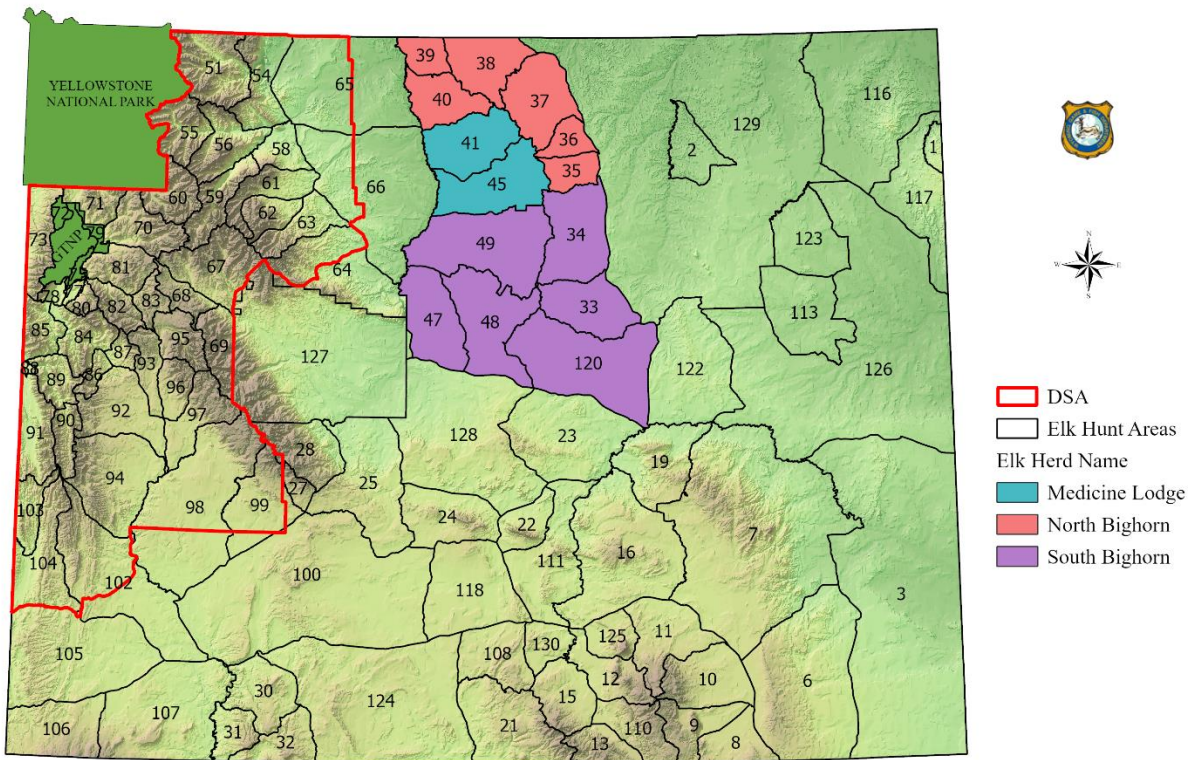


Figure 4. Herd Units and Hunt Areas within the Bighorn Mountains region of Wyoming; Medicine Lodge (teal), North Bighorn (coral), South Bighorn (purple) and the DSA (red line).

Northern DSA Surveillance:

Brucellosis surveillance in cow elk, in the combined northern herd units (Clark’s Fork, Cody, Gooseberry, and Wiggins Fork; Figure 1) of the DSA reported an increase in seroprevalence over the past five years (18.1%; 95% CIs: 15.1% - 21.4%; n=603) compared to the 2016-2020 five-year average (14.4%; 95% CIs: 12.2% - 16.7%; n=967).

The five-year average seroprevalence varied between the four northern herd units (Figure 5). It is important to note that sample sizes are generally low and affect the accuracy of prevalence estimates for the individual herd units. Therefore, prevalence’s are combined into five-year averages to improve sample size and allow for statistical analysis.

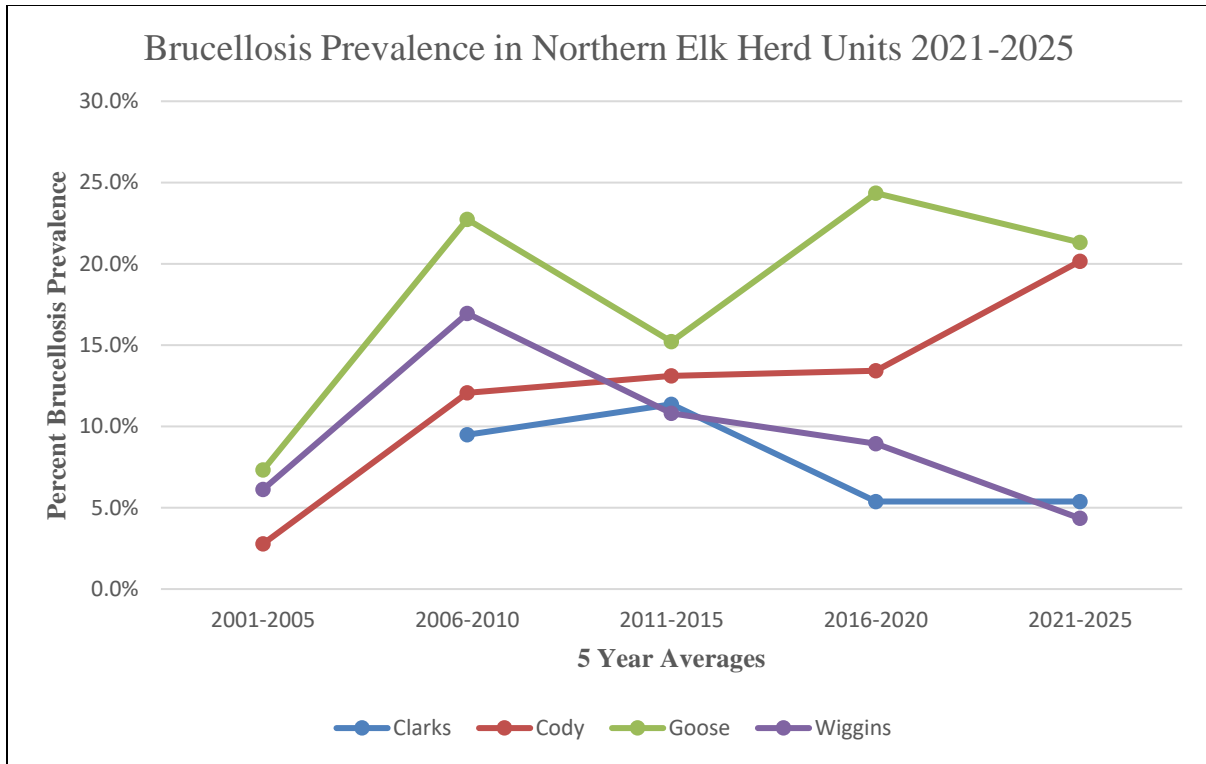


Figure 5. Seroprevalence over time in cow elk from the northern elk herd units (no samples received from Clark’s Fork herd 2001-2005).

Southern DSA Surveillance:

The brucellosis seroprevalence of yearling and adult cow elk of the southern DSA herd units (South Wind River and West Green River; Figure 1) was 0.5% (95% CIs: 0.1% - 1.7%; n = 418) from 2021-2025; the previous five-year average (2016-2020) was 0.5%; 95% CIs: 0.0% - 3.0%; n=185).

In 2018, enhanced surveillance efforts were initiated in the southern herd units bordering the DSA. Two seropositive samples (bull, cow; hunt areas 25 and 27) were detected in 2019, and there was one seropositive case in the southern DSA herd units (cow, bull; hunt area 28 and 25) in both 2022 and 2023. From the South Wind River and the West Green River herd units, 139 samples (male and female; all ages) were tested in 2025, with one seropositive cow detected (hunt area 25).

Rotating Statewide Surveillance:

There were 345 usable samples submitted from the statewide rotating surveillance program in non-endemic elk areas (1, 2, 3, 113, 116, 117, 122, 123, 126, and 129). No seropositives were detected from these non-endemic areas in 2025. In non-endemic areas, it is important to continue this rotating surveillance to identify early detections as this disease is difficult to manage in free-ranging populations and can have significant economic impacts statewide.

