



Wyoming Game and Fish Department 2021 Chronic Wasting Disease Surveillance Report March 2021

Overview

Chronic wasting disease (CWD) is a fatal disease of the central nervous system of cervids caused by abnormally folded infectious proteins called prions. This disease was first identified in Wyoming in 1985 in a free-ranging deer from the southeastern corner of the state, and has since slowly spread north and west; now covering the majority of the state (Fig. 1). In consideration of the wide distribution of CWD across Wyoming, the surveillance program was shifted from detection based, to a monitoring based program in those hunt areas where CWD has been detected. Continued monitoring of this disease over time is necessary to understand the potential population impacts as well as evaluate future management actions. To achieve adequate sample sizes, surveillance is focused in only two to three herd units within each of the eight Wyoming Game and Fish Department (WGFD) regions each year, allowing for coverage of the entire state every four to five years. This approach focuses on adequate sample sizes to monitor the disease without exceeding the WGFD's Wildlife Health Laboratory (WHL) testing capacity. Monitoring efforts are concentrated on hunter-harvested adult male deer or adult elk (both sexes), with a sample target of 200 (collected within 1-3 consecutive years) in most deer and elk herd units. In areas where CWD has not been detected in deer, active surveillance continues and utilizes hunter-harvested, road-killed, and targeted animals (those showing signs of the disease).

2021 CWD Surveillance

Hunter harvested deer, elk, and moose samples were collected at points of concentration (i.e., meat processors, check stations, and regional offices). Samples were also collected from road-killed and targeted animals, and from any deer or elk taken with a WGFD issued lethal take permit. In addition, teeth were collected whenever possible to evaluate age structure, and age specific CWD prevalence within herd units. Predominantly retropharyngeal lymph nodes were sampled due to their ease of extraction and suitability as a diagnostic tissue. The WHL is an accredited laboratory for CWD diagnostics and utilized enzyme-linked immunosorbent assays (ELISA) as the primary diagnostic tool. Immunohistochemistry is also used through an outside accredited laboratory when necessary. Results were reported to hunters in less than three weeks of sample submission, and hunters could obtain results through the WGFD's website. Hunters having deer or elk test positive for CWD were individually notified by a letter or email within 48 hours of confirmatory test results.

Wyoming Distribution of Chronic Wasting Disease: All Species

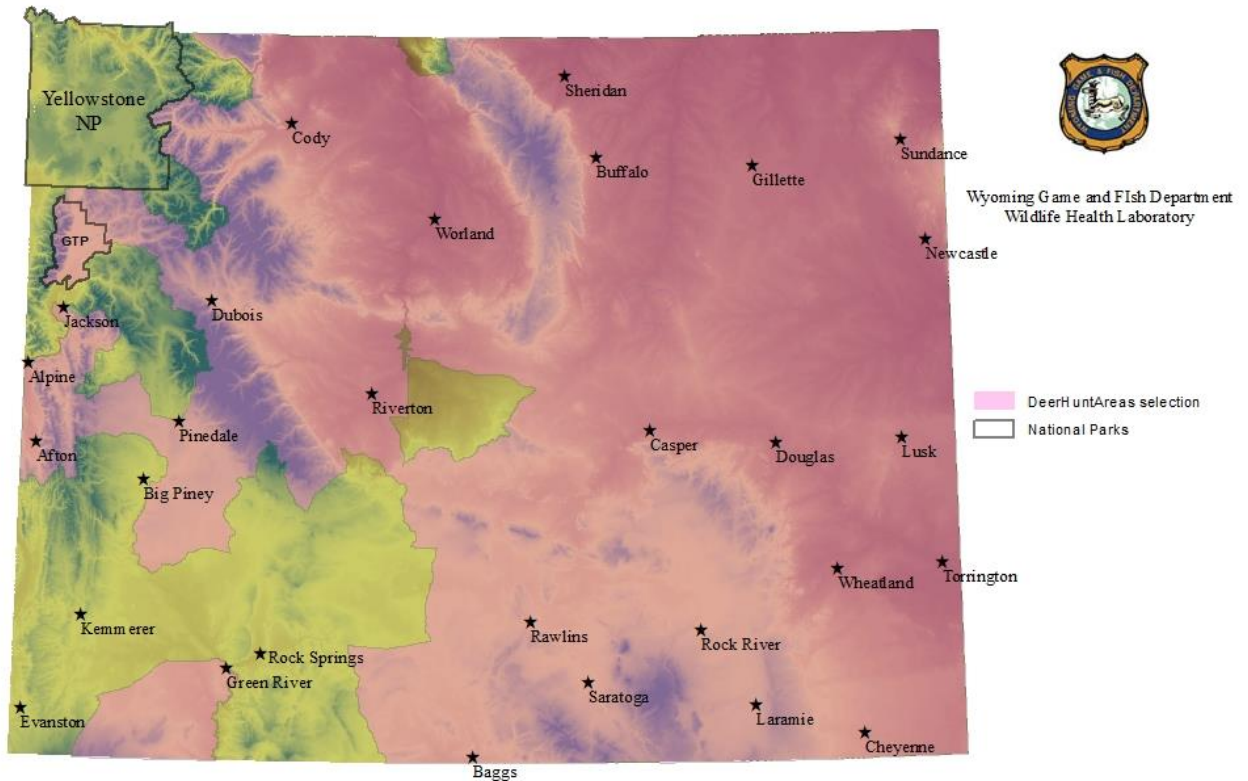


Fig. 1. Statewide CWD distribution as of 01/01/2022

2021 Results and Discussion

A total of 6,884 deer, elk, and moose samples were analyzed for CWD by the WHL, with 839 being CWD positive. This total includes samples from all surveillance categories (hunter-harvest, targeted, and road-killed), all age classes, as well as all CWD positive results (Table 1). Total samples received and testing outcomes are further broken down in Table 2, which outlines samples received from hunter-harvest adult (≥ 2 years old) male deer, and adult elk and moose (both sexes). Data in Table 2 are used to determine prevalence estimates used throughout this report.

The 2021 surveillance effort identified four new CWD positive deer hunt areas (HA): HA 109 near Cody, HA 138 South of Pinedale, HA 144 along the Wyoming Range, and HA 148 South of Yellowstone National Park (Fig. 2). Chronic wasting disease was also documented for the first time in five elk HAs: HA 36, NW of Buffalo, HA 41 East of Basin, HA 98 East of Big Piney, HA 113 SE of Wright, and HA 129 which encompasses areas around Gillette, Sheridan and Kaycee, WY (Fig. 3).

Table 1. 2021 CWD surveillance totals by species and category

Surveillance Category	Mule Deer		White-tailed Deer		Elk		Moose		Total	
	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos
Hunter-harvest	2,340	329	1,491	259	1,973	35	58	0	5,862	623
Targeted	233	113	87	27	77	9	23	0	420	149
Road-kill	399	48	81	10	106	9	16	0	602	67
Total	2,972	490	1,659	296	2,156	53	97	0	6,884	839

Table 2. Distribution of hunter-harvest samples from adults and proportion of positives according to species

Adult Male Mule Deer		Adult Male White- Tailed Deer		Adult Elk		Adult Moose		Total	
Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos
1782	282	728	158	1630	32	56	0	4196	472

New CWD Positive Mule Deer (MD) Hunt Areas in 2021

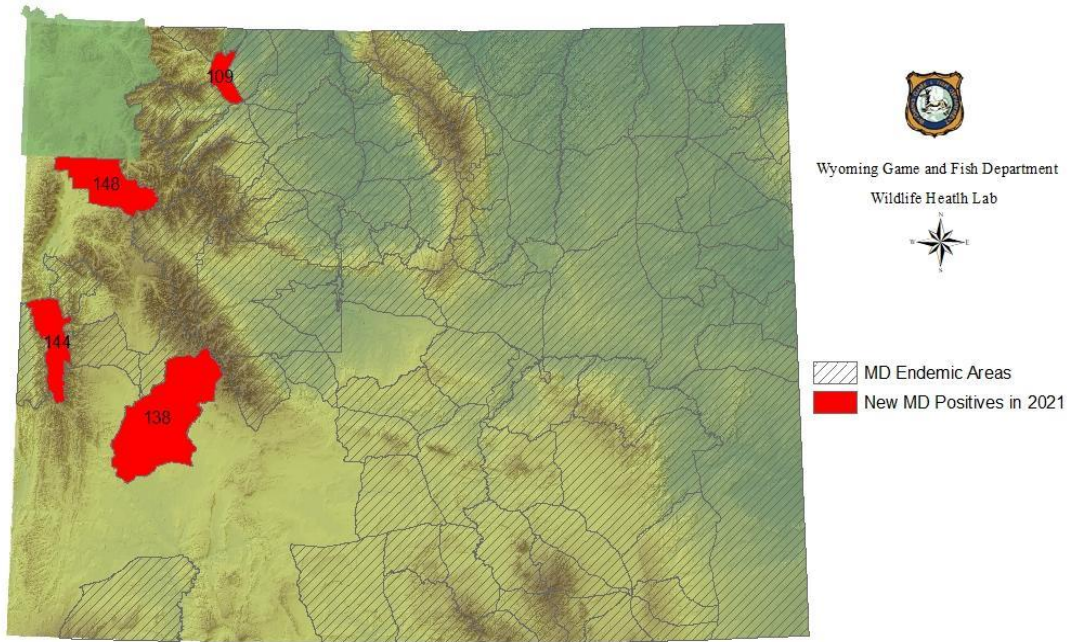


Fig. 2. 2021 New and endemic CWD deer hunt areas

New CWD Positive Elk Hunt Areas in 2021

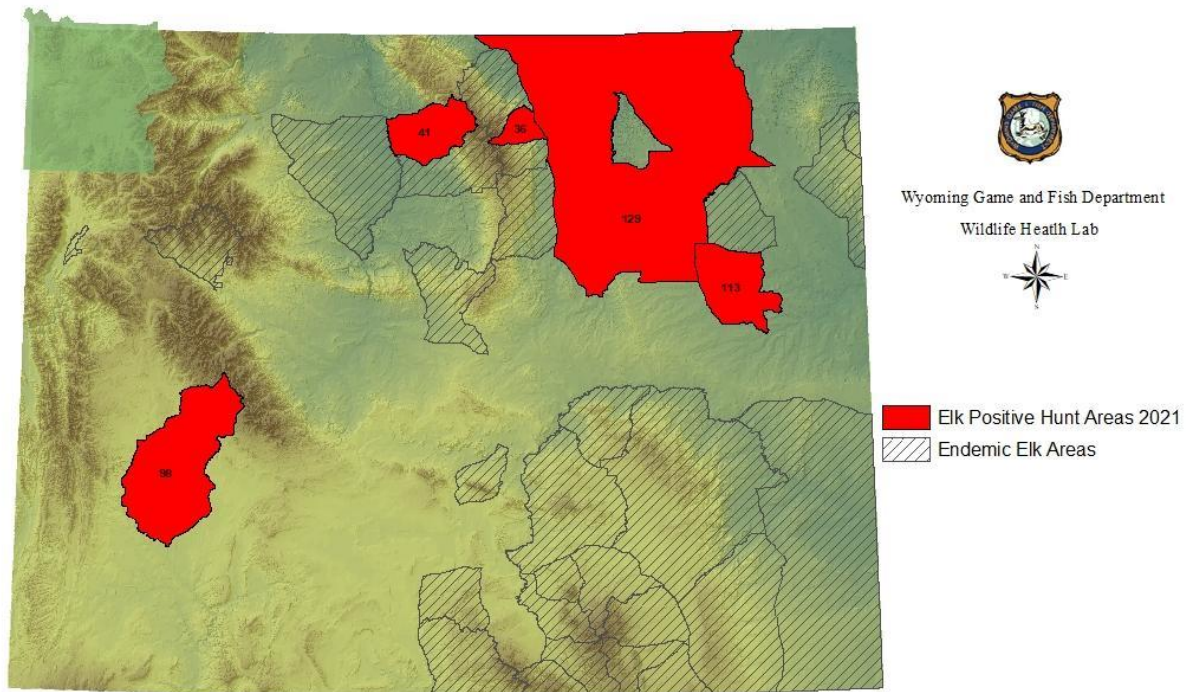


Fig. 3. 2021 New and endemic CWD elk hunt areas

Target Deer and Elk Herd Units for 2021

The 2021 CWD surveillance effort focused on 12 mule deer herd units, one white-tailed deer herd unit, and eight elk herd units within the State. Of the 21 focal herd units, 14 completed their three-year surveillance effort in 2021. Ten of those herd units were able to meet the surveillance goal of 200 samples, and the remainder obtained at least 85% of the goal (Table 3). The Wyoming Range and Sublette mule deer herds, along with the Afton, Fall Creek, and Jackson elk herds are annually sampled at an adequate level and do not fall within the three-year limitation.

Table 3. Total CWD samples tested from hunter harvested adult mule deer bucks, white-tailed deer bucks (WTD) and adult elk. Percent of total surveillance goal out of 200 in parenthesis. See Figures 5 & 6 for herd unit locations.

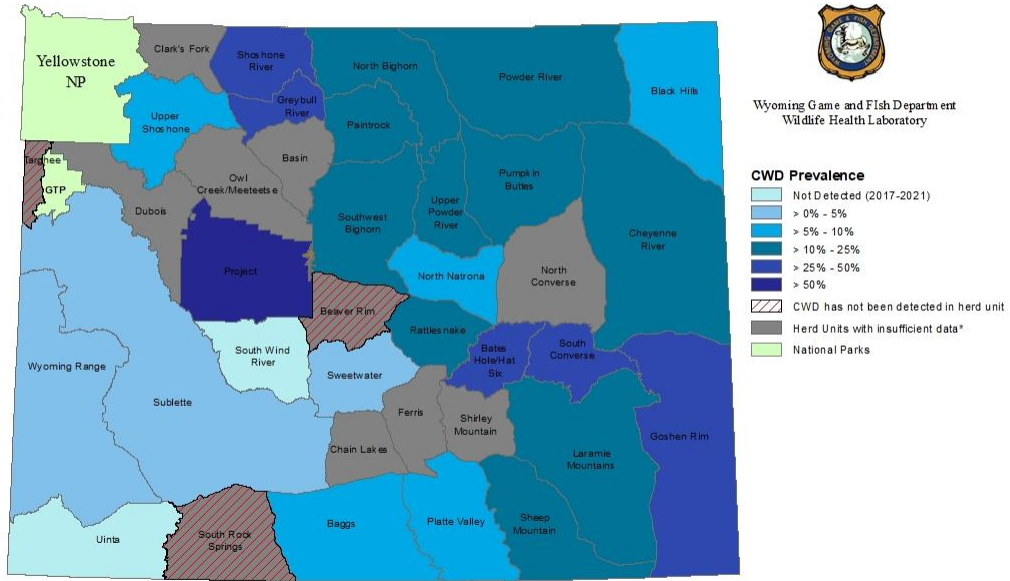
Herd Unit Name	Year of Targeted Surveillance (1-3)	Samples Tested from Targeted Years (percent of 200 goal)	3 year CWD Prevalence (2019-2021)
Deer			
Bates Hole/Hat Six	1	29 (15%)	25.7%
Black Hills	1	89 (45%)	7.9%
Black Hills (WTD)	3	270 (135%)	7.4%
Greybull River	2	101 (51%)	43.7%
North Bighorn	3	203 (102%)	12.3%
Paintrock	3	212 (106%)	18.4%
Upper Powder River	3	231 (116%)	18.6%
Project	2	90 (45%)	65.7%
Pumpkin Buttes	3	170 (85%)	14.1%
Sheep Mountain	3	170 (85%)	14.7%
Sublette	3	329 (165%)	0.9%
Sweetwater	3	195 (98%)	4.6%
Wyoming Range	3	300 (150%)	0.3%
Elk			
**Afton	3	204 (102%)	0.0%
**Fall Creek	3	216 (108%)	0.0%
**Jackson	3	815 (408%)	0.1%
Medicine Lodge	1	80 (40%)	1.7%
Pinedale	3	189 (95%)	0.5%
Sierra Madre	3	312 (156%)	0.6%
West Green River	2	154 (77%)	0.0%
Wiggins Fork	1	83 (42%)	1.6%

**Annually sampled herd units

Monitoring CWD Prevalence

The WGFD continues to monitor CWD prevalence in all deer and elk herds around the state. The overall five-year CWD prevalence estimates of Wyoming's mule deer herds are in Fig. 4 and elk in Fig. 5. It is important to note that hunter harvest of mule deer is primarily male and therefore prevalence estimates do not account for prevalence in females. Chronic wasting disease prevalence in female mule deer is incomplete in many herd units, but has been shown to be lower than that of males in several herd units where females are harvested, as well as in road-killed surveillance data. Chronic wasting disease prevalence estimates in elk include both adult males and females.

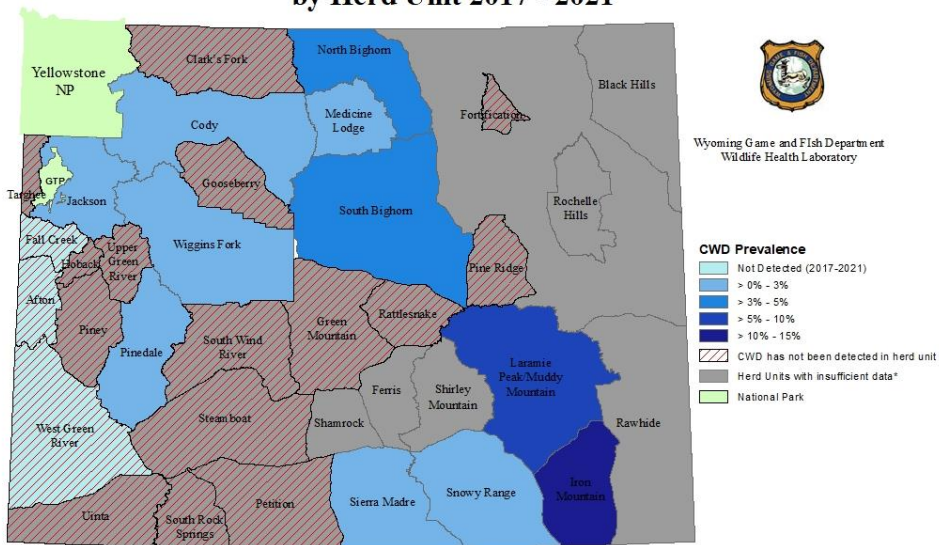
Chronic Wasting Disease (CWD) Prevalence in Hunter Harvested Adult Male Mule Deer by Herd Unit 2017 - 2021



* Data insufficient if less than 100 samples in a three year period

Fig 4. Chronic wasting disease prevalence in hunter harvested adult male mule deer by herd unit 2017-2021

Chronic Wasting Disease (CWD) Prevalence in Hunter Harvested Adult Elk by Herd Unit 2017 - 2021



* Data insufficient if less than 100 samples in a three year period

Fig 5. Chronic wasting disease prevalence in hunter harvested adult elk

by herd unit 2017 – 2021

CWD in Western Wyoming

As sampling efforts have increased from year to year so have chronic wasting disease detections in new hunt areas. The eastern half of the state has two deer hunt areas where CWD has not been detected, while the western half has several areas, mostly concentrated in Sweetwater, Uinta and Teton counties. Unfortunately, this disease continues to spread into the western areas of the state and was detected in three deer hunt areas, and one elk hunt area in 2021. Over the past five years, CWD has been detected in eight deer and three elk that were collected in and around the elk feedground herd units. This raises considerable concern that this disease is becoming firmly established in feedground populations, and how it may affect deer and elk populations in the future.

Sampling Effort in Non-Endemic Hunt Areas

Non-endemic hunt areas are defined as those having no positive detections of chronic wasting disease (CWD). Annual surveillance for the disease continues in the non-endemic areas, utilizing hunter-harvested, road-killed and targeted animals. Currently 21% of deer hunt areas and 71% of elk hunt areas are considered non-endemic. Adequate sample sizes in the non-endemic areas are critical for early detection of the disease as management strategies can change with the status of CWD prevalence. Surveillance numbers from CWD non-endemic hunt areas are reported in Table 4.

Table 4. Chronic wasting disease surveillance in non-endemic hunt areas of adult animals by species and surveillance type

	Hunter-harvest	Road Killed	Targeted	Total
Adult deer*	242	45	6	293
Adult elk	851	38	47	936
Adult moose	50	9	19	78
Total	1143	92	72	1307

*Includes both mule deer and white-tailed

For complete information on CWD in Wyoming please go to: <https://wgfd.wyo.gov/Wildlife-in-Wyoming/More-Wildlife/Wildlife-Disease/Chronic-Wasting-Disease>