Wyoming Game and Fish Department
2020 Chronic Wasting Disease Surveillance Report
May 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, CWD surveillance is focused in only two to three herd units within each Wyoming Game and Fish Department (WGFD) region 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 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).

In 2019, the CWD testing capacity of the WHL was increased from 8,000 to 15,000 samples per year by splitting the laboratory into two sections. From October 1st through December 31st, A processing laboratory within the WGFD Wildlife Forensics/Fish Health Laboratory is used for sample processing, data entry, and mapping. Sample analysis continues in the main laboratory housed within the Wyoming State Veterinary Laboratory complex.

2020 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 an enzyme-linked immunosorbent assay (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.

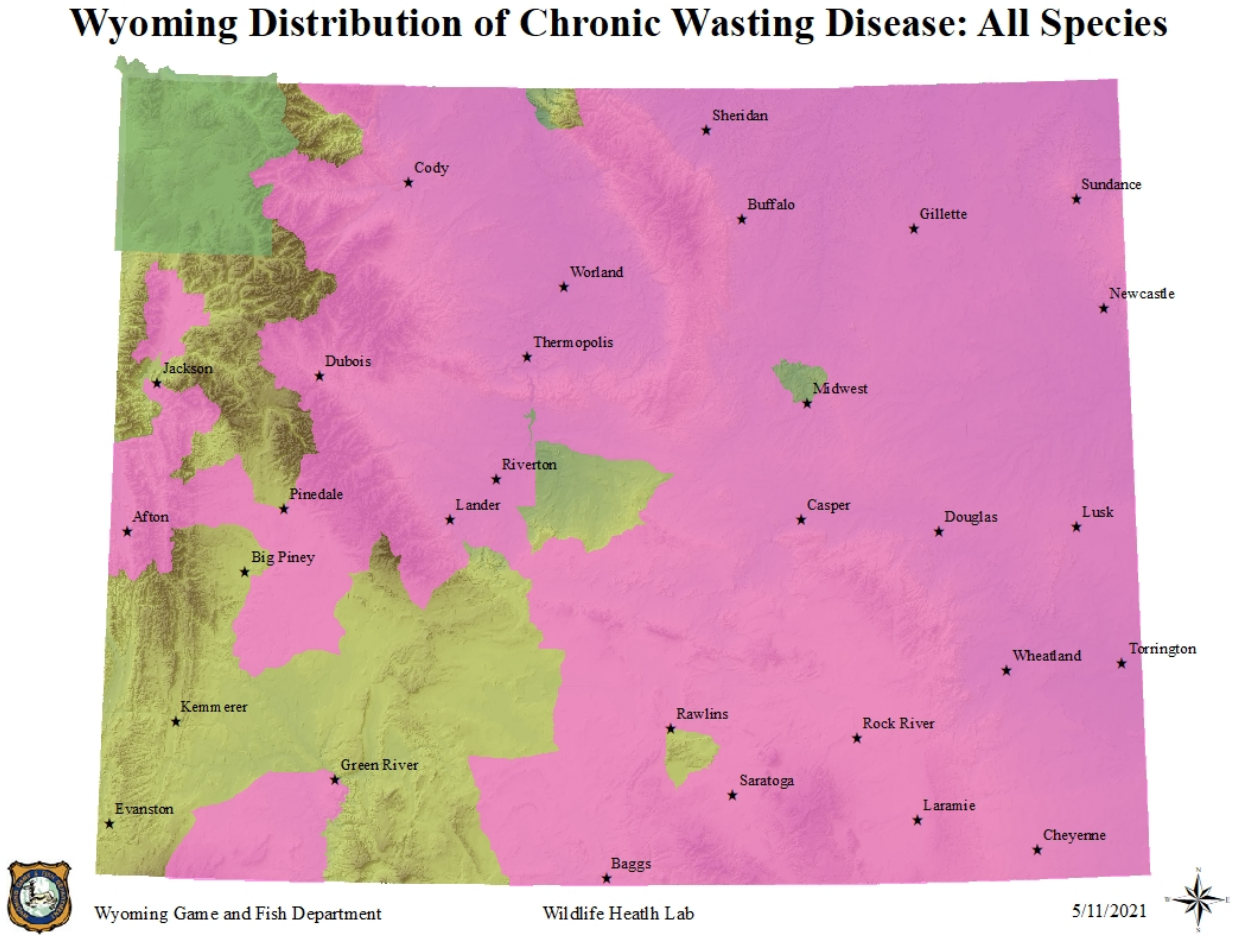

Fig. 1. Statewide CWD distribution as of 05/11/2021

2020 Results and Discussion

A total of 6,496 deer, elk, and moose samples were analyzed for CWD by the WHL, with 829 being CWD positive. This total includes samples from all surveillance categories (hunter-harvest, targeted, and road-killed) and from all age classes and 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 2020 surveillance effort identified four new CWD positive deer hunt areas (HA): HA 25 in the northern Bighorn Mountains, HA 96 southeast of Lander, HA 117 west of Meeteetse, and HA 142 west of Pinedale (Fig. 2). Chronic wasting disease was also documented for the first time in five elk HAs: 45 north of Worland, 67, near Dubois, 75 in Grand Teton National Park, 114 near Laramie, and 123 near Wright (Fig. 3).

Table 1. 2020 CWD surveillance totals by species and category

Surveillance	Mule Deer		White-tailed Deer		Elk		Moose		Total	
Category	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos
Hunter-harvest	2,426	350	1,405	277	1,942	43	40	0	5,813	670
Targeted	194	83	53	28	98	12	13	0	358	123
Road-kill	204	24	60	12	46	0	15	0	325	36
Total	2,824	457	1,518	317	2,086	55	68	0	6,496	829

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
1,805	297	644	172	1563	38	35	0	4,047	507

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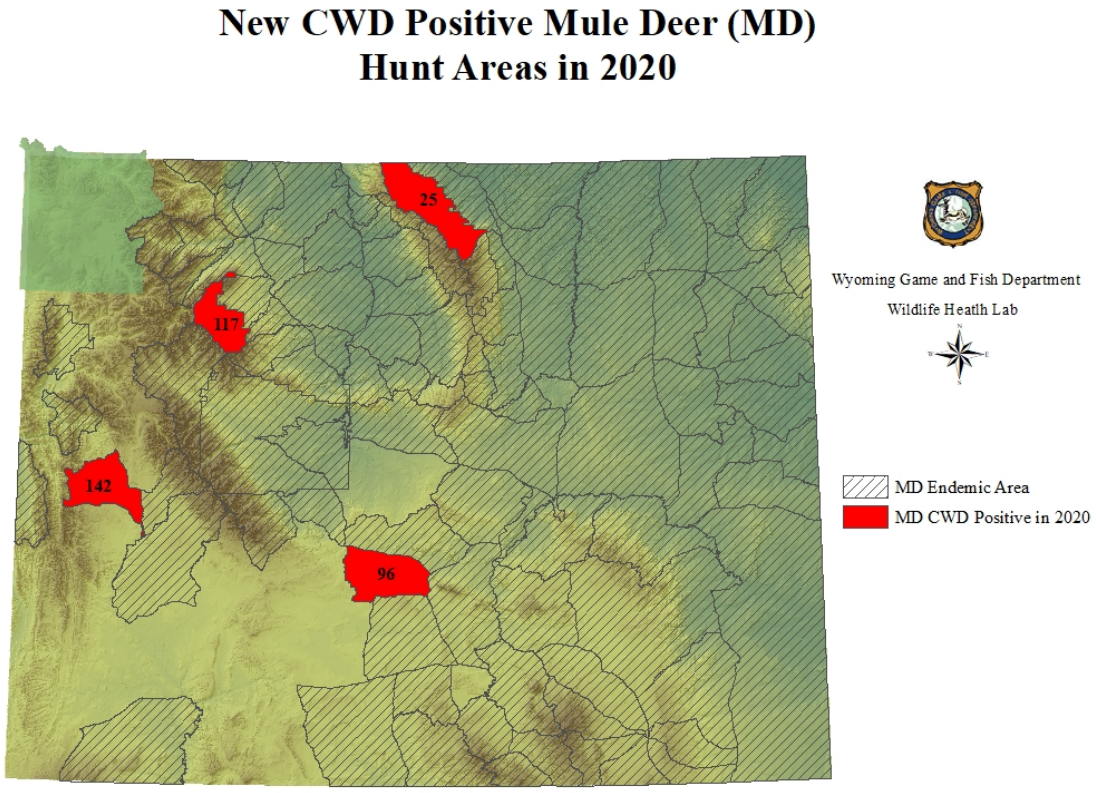

Fig. 2. 2020 New and endemic CWD deer hunt areas

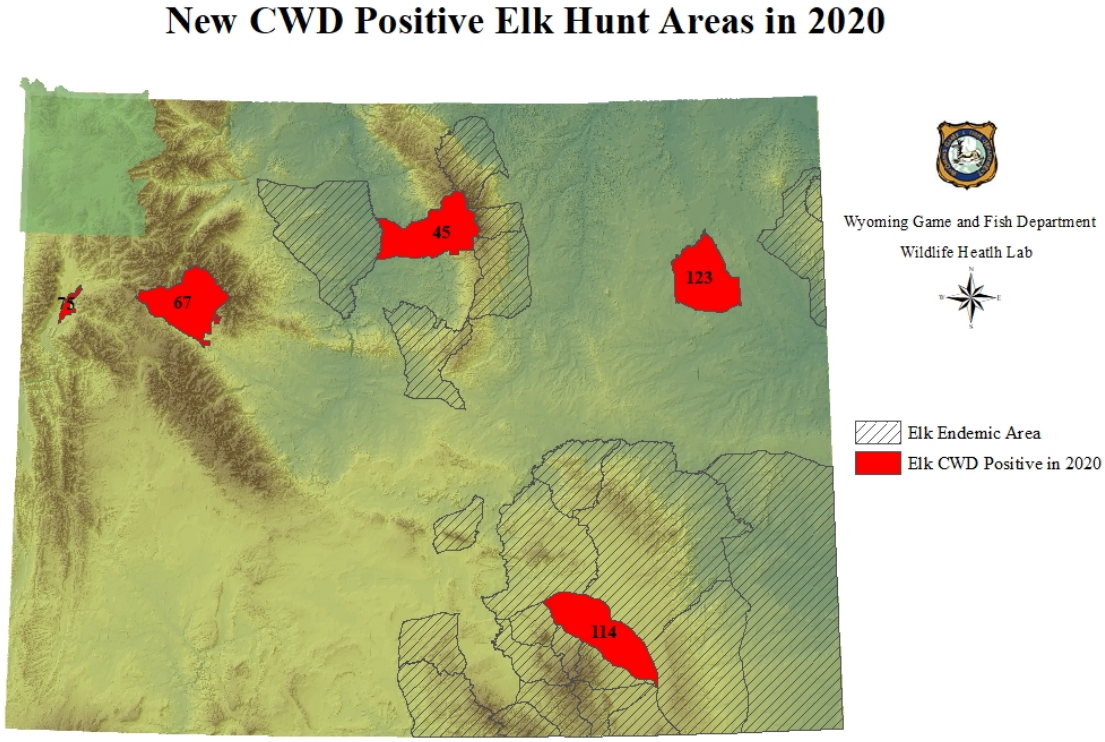

Fig. 3. 2020 New and endemic CWD elk hunt areas

Target Deer Herd Units for 2020

The 2020 CWD surveillance effort focused on 15 mule deer herd units and seven elk herd units within the State. Of the 21 focal herd units, nine herds completed their surveillance effort in 2020, but only three of those herd units were able to meet the surveillance goal of 200 samples, with three additional herds obtaining at least 75% of the goal (Table 3). Surveillance efforts will continue to be concentrated in eight herds for the next one or two years to meet the three-year goal. Three herds in the Jackson region 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 and adult elk. Percent of total surveillance goal in parenthesis. CWD prevalence in priority mule deer and elk herd units is shown in the far right column. Please see Figures 5 & 6 for herd unit locations.

Herd Unit	Samples Collected 2018-2020 (percent of 200 goal)	CWD Prevalence (2018-2020)
Mule Deer		
Cheyenne River	267 (134%)	12%
North Natrona	157 (79%)	6%
Rattlesnake	105(53%)	14%
Clark's Fork	76 (38%)	8%

Greybull River*	90 (45%)	40%
Shoshone River	216 (108%)	31%
Southwest Bighorns	187 (94%)	18%
Uinta	113 (57%)	0%
Project	126 (63%)	63%
Sweetwater*	76 (38%)	2%
Goshen Rim*	105 (53%)	38%
Sheep Mountain*	90 (45%)	9%
North Bighorn*	94 (47%)	8%
Pumpkin Buttes*	125 (63%)	15%
Upper Powder River*	131 (66%)	18%
Elk		
Cody	182 (91%)	2%
West Green River*	82 (41%)	0%
Afton**	118 (59%)	0%
Fall Creek**	87 (44%)	0%
Jackson**	466 (233%)	0.1%
Pinedale*	125 (63%)	0%
North Bighorn	206 (103%)	3%

**Herd units where focused surveillance will continue in 2021. **Annually sampled herd units*

Monitoring CWD Prevalence

The WGFD monitors CWD prevalence in all deer and elk herds where sufficient surveillance data exists for meaningful evaluations. Although statistically significant data is absent for many herds, several do have useful data from the 2014-2016 timeframe to allow for an equivalent comparison of prevalence to 2018-2020.

Trends in CWD prevalence varied greatly between several herd units when comparing prevalence between these two relatively short timeframes (Fig. 4). The Goshen Rim, Paintrock, Southwest Bighorns and the Upper Powder River mule deer herd units saw substantial increases in prevalence, whereas the Baggs, Bates Hole, and Upper Shoshone observed only moderate increases. Prevalence remained steady in the Laramie Mountains herd, but declined slightly in the North Bighorn, Sheep Mountain, and the South Wind River mule deer herds. Unfortunately, sample sizes were limited in 2014-17 for the Goshen Rim, Sheep Mountain, Southwest Bighorns, and the Upper Powder River herds, and trends should be interpreted with caution.

The overall five-year CWD prevalence estimates of Wyoming's mule deer herds are in Fig. 4. 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.

The prevalence of CWD in white-tailed deer and mule deer within the same hunt area varies considerably. Prevalence in white-tailed deer can meet or exceed the prevalence in mule deer in some areas, whereas prevalence may remain much lower in white-tailed deer in other areas.

Although this report is centered on prevalence in mule deer bucks and adult elk, the WGFD continues to monitor prevalence in all white-tailed deer populations for this disease.

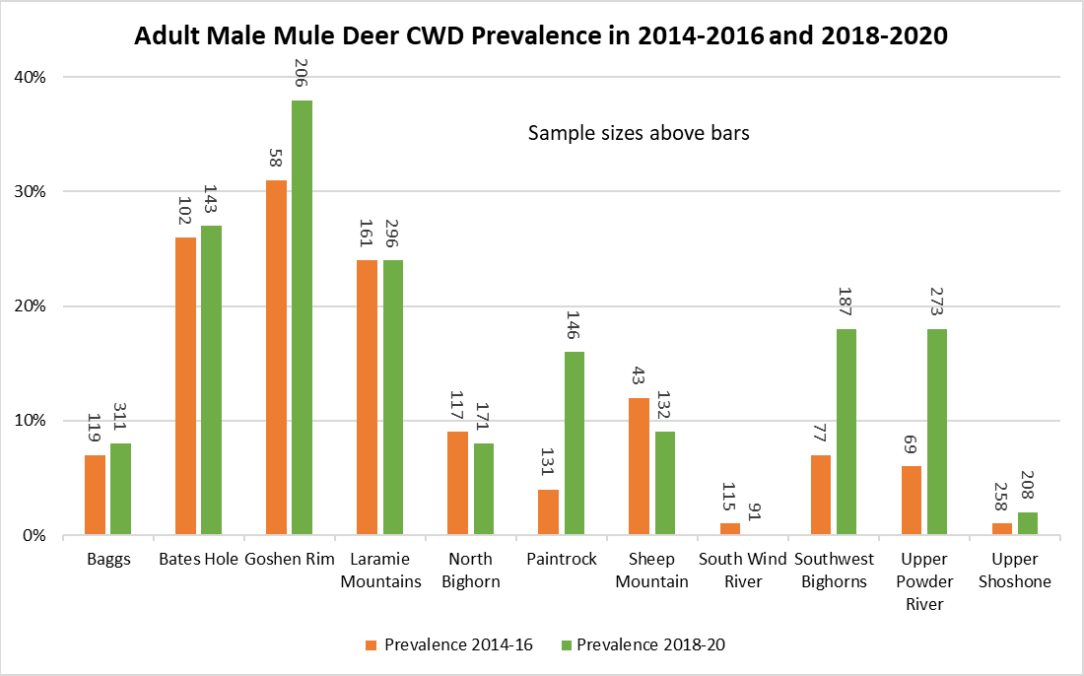

Fig 4. Herd unit CWD prevalence in 2014-2016 vs 2018-2020 in hunter harvested adult male mule deer

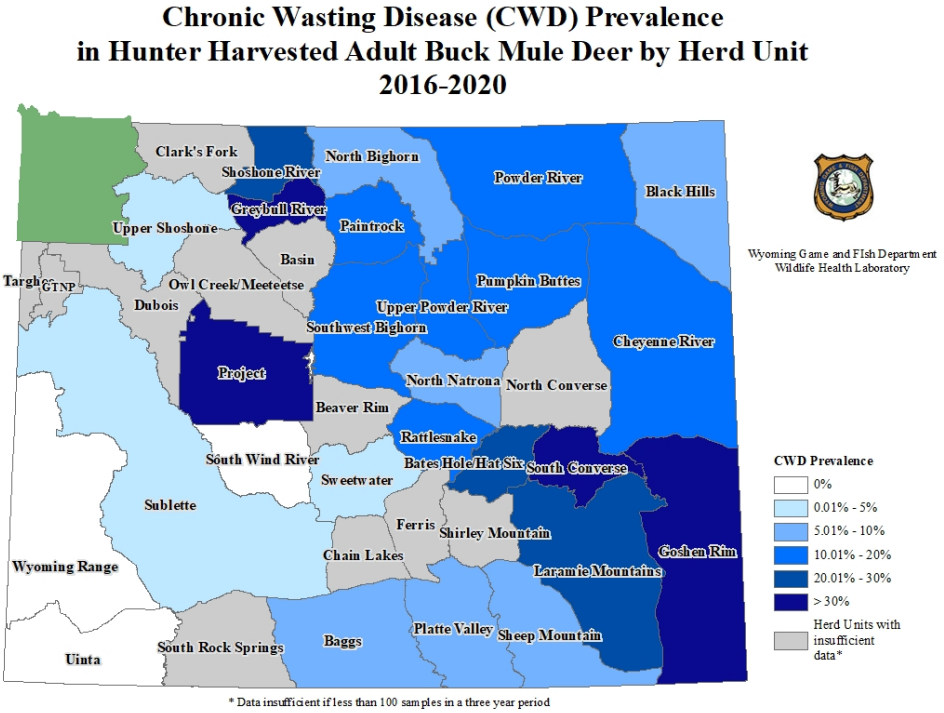

Fig 5. Chronic wasting disease prevalence in hunter harvested adult buck mule deer by herd unit 2016-2020

Historic Endemic Area Elk

Trends in CWD prevalence in elk herds within the historic endemic area were also examined. Prevalence remained steady in the Laramie Peak/Muddy Mountain elk herd at 6% (2014-2016 n=300, 2018-2020 (n=419). The Iron Mountain elk herd doubled from 7% in 2014-16 (n=105) to 14% in 2018-20 (n=249). The overall five-year CWD prevalence in Wyoming elk herds shown in Fig. 6.

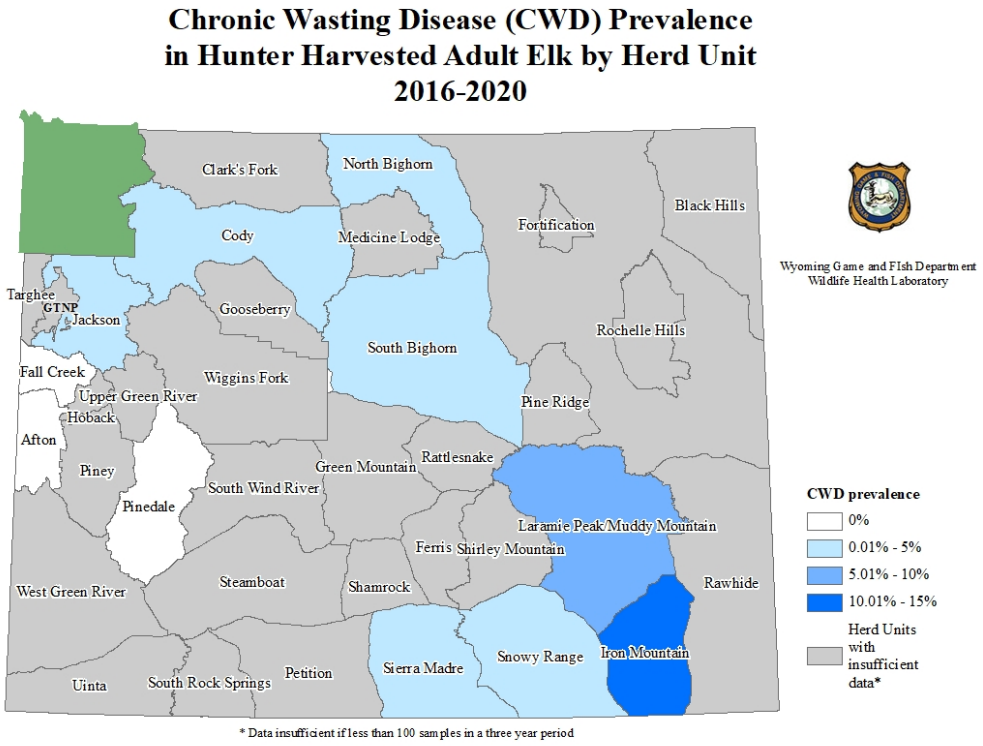

Fig 6. Chronic wasting disease prevalence in hunter harvested adult elk by herd unit 2016 – 2020

CWD in Northwestern Wyoming

Chronic wasting disease was found in two new deer HAs as well as two elk hunt areas in northwestern Wyoming. Deer HA 117 near Meeteetse was one of the last deer hunt areas in the Bighorn Basin to become endemic for this disease, while deer HA 142 west of Pinedale, is one of just a few new HAs in the southern Bridger -Teton National Forest. Chronic wasting disease was also found for the first time in elk HA 67 near Dubois as well as elk HA 75 in Grand Teton National Park. Over the past five years, CWD has been detected in six deer and two elk that were collected in and around the elk feedground herd units. This raises considerable concern that this disease is becoming firmly established in northwestern Wyoming (Fig. 2 & 3), and how it may affect deer and elk populations in the future.

Sampling Effort in Non-Endemic Hunt Areas

Chronic wasting disease has not been detected in 30 deer hunt areas in Wyoming. Annual surveillance for the disease continues in these areas, utilizing hunter-harvested, road-killed and

targeted animals. Surveillance totals animals collected from CWD non-endemic hunt areas are reported (Table 4). It is a WGFD priority to notify sportspersons when CWD is detected in a new area through press releases, emails, and social media.

Table 4. Non-Hunter harvested chronic wasting disease surveillance in non-endemic areas by species, age, and sex

	Hunter-harvest	Road Killed	Targeted	Total
Adult male mule deer	178	3	5	186
Yearling male mule deer	30	2	1	33
Adult female mule deer	14	14	6	34
Adult male white-tailed deer	1	0	1	2
Yearling male white-tailed deer	0	0	0	0
Adult female white-tailed deer	0	0	0	0
Adult elk	225	26	56	307
Adult moose	9	13	6	28
Total	457	58	75	590

Continuation of Chronic Wasting Disease Surveillance and Monitoring

Surveillance efforts will continue for 2021 priority herds for the next one or two years until the three-year sampling goals are achieved. Four new mule deer herd units (Bates Hole, Black Hills, Paintrock, and Sublette), one white-tailed deer herd unit (Black Hills), and three elk herd units (Medicine Lodge, Sierra Madre, and Wiggins Fork) will be prioritized.

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