



Wyoming Game and Fish Department 2016 Chronic Wasting Disease Surveillance February 2017

Overview:

Chronic wasting disease (CWD) is a fatal disease of the central nervous system of cervids caused by abnormal proteins called prions. This disease was first identified in free-ranging populations in the southeastern corner of Wyoming in 1985 and has since slowly spread north and west; now covering the majority of the state. Recent research in Wyoming and Colorado suggests that CWD can lead to declines in some deer and elk populations. The threat of population impacts has prompted the Wyoming Game and Fish Department (WGFD) to increase surveillance efforts in order to better understand statewide distribution, as well as prevalence within the “core endemic area” where this disease has been established for at least 30 years. To obtain these goals, the 2016 surveillance effort was focused on the western edge of the known endemic area; encompassing the Green River, Jackson, Lander, and Pinedale Regions. Sampling efforts were also concentrated in the core endemic area of the Laramie Range, to include the Laramie Mountain mule deer herd (hunt areas (HA) 59, 60, and 64), the South Converse deer herd (HA 65), as well as the Laramie Peak elk herd (HAs 7 and 19). The Black Hills deer herd (HAs 1-6) was also targeted to reexamine prevalence in this herd that has been exposed to CWD since 2006. Samples from other areas of the state were collected opportunistically.

Hunter harvested deer, elk, and moose samples were collected at points of concentration, i.e., meat processors and check stations. Samples were also collected from road-killed and targeted (those showing signs of the disease) animals. Only retropharyngeal lymph nodes were sampled due to their ease of extraction and suitability as a diagnostic tissue. The WGFD used an enzyme-linked immunosorbent assay (ELISA) to analyze lymph node samples. Results were reported to hunters in less than three weeks of sample submission, and hunters could obtain results by accessing the WGFD’s website. Hunters having deer or elk test positive for CWD were also individually notified by a letter within 48 hours of confirmation of test results.

Results and Discussion:

A total of 3,351 deer, elk, and moose samples were analyzed by the WGFD’s Wildlife Health Laboratory in Laramie. Of these samples, 153 tested positive for CWD representing 119 mule deer, 23 white-tailed deer, and 11 elk (see Table 1). All moose tested for CWD were negative. This year’s surveillance effort identified nine new deer hunt areas: HAs 7 and 17 in the northeastern corner of the state, HA 92 near Lander, HAs 110, 111, 113, and 121 near Cody, HA 128 near Dubois, and HA 145 in the Afton area (see maps below). Of the 3,351 total samples received, 83% were derived from hunter-killed animals, 7% from targeted, and 10% from road-killed deer, elk, and moose. It should be noted that the majority of road-killed surveillance occurs

outside of the known endemic area for CWD, while targeted animals are submitted from within as well as outside the endemic area.

	Mule Deer		White-Tailed Deer		Elk		Moose		Total	
	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos	Total	CWD Pos
Hunter-kill	1,480	92	345	18	923	5	29	0	2,777	115
Targeted	141	25	21	4	54	6	18	0	234	35
Road-kill	260	2	32	1	33	0	15	0	340	3
Total	1,881	119	398	23	1,010	11	62	0	3,351	153

Table 1. Distribution of samples and proportion of positives according to surveillance category

Significantly more samples were collected in 2016 when compared to surveillance efforts over the past four years (averaged~ 1,790 samples each year from 2012-2015). Although the increased sampling effort was distributed across many parts of the state, the Black Hills and Upper Powder River deer herds saw twice as many samples collected in 2016 than the total number of samples collected over the past four years from those herd units. Sample sizes more than doubled from 2015 collections in the Clark’s Fork, North Bighorn, Southwest Bighorn, Sublette, Upper Powder River, and the Wyoming Range deer herd units. For elk, the largest increase was seen in the Jackson herd unit, where the sample totals increased from 338 in 2015 to 510 in 2016. Sampling for CWD in this herd unit is successful in a large part due to a collaborative effort between the WGFD and the USFWS to sample animals harvested on and adjacent to National Elk Refuge.

The discovery of a CWD positive targeted mule deer doe in HA145 in early April of 2016 came as a surprise as this area is in northwest Wyoming, west of the Continental Divides and a significant distance from other known positives (see maps below). The detection of this positive doe along with the steady expansion of this disease towards northwest Wyoming motivated the Department to greatly expand CWD surveillance efforts within the Jackson and Pinedale Regions. This included maximizing sample collection from hunter harvested, road-killed, and targeted deer, elk and moose.

In addition to increasing surveillance efforts during the hunting season, the Department hired two seasonal biologists to closely monitor elk on state feedgrounds. The core responsibilities of these positions are to collect samples from natural mortalities as well as to remove and sample elk that are demonstrating signs of CWD as outlined in the State’s Chronic Wasting Disease Plan. Removal of these animals will help limit environmental contamination by CWD prions and spreading of this disease to other elk on the feedground. Further responsibilities of these positions include opportunistically sampling targeted, road-killed, as well as other mortality events (e.g. winter-kill) involving elk, deer, and moose. Information regarding the work and results of the seasonal CWD elk feedground biologists will be available in the 2017 CWD surveillance report.

Prevalence within Laramie Mountain mule deer herd of the core endemic area, rose slightly in mule deer from 22.6% in 2015 (n=53) to 23.4% in 2016 (n=94). Sample size in the South Converse mule deer herd (n=14) in 2016 was too low to estimate prevalence with precision; however, the estimate (42.9%) is similar to the 5 year average for this herd (41.4%). The 2015

sampling in this herd unit was also insufficient (n=4). Due to a decline in the population, harvest in the South Converse mule deer herd is low, making it difficult to collect sufficient sample sizes through voluntary CWD surveillance. In general, prevalence in the South Converse mule deer herd has shown an increasing trend over time. The prevalence estimate for the Black Hills white-tailed deer herd was 1.2% (n=165), whereas no CWD was detected in the sympatric mule deer population (n=52); again, sample sizes were too low to be meaningful. It is important to note that hunter harvest of mule deer is primarily male and therefore prevalence estimates only reflect male prevalence. Chronic wasting disease prevalence in female mule deer is largely unknown across Wyoming, but is assumed to be lower than that of males as demonstrated in other states where CWD is endemic.

Prevalence in the Laramie Peak elk herd was 5.9% (n=68) in 2016, which is lower than the 2015 level of 8.3% (n=84). Unfortunately, prevalence estimates vary wildly from year to year for this herd due to low prevalence and sample size. The prevalence of chronic wasting disease listed in Table 2 below is based on multi-year averages, and likely underestimates prevalence in areas where CWD is increasing over time.

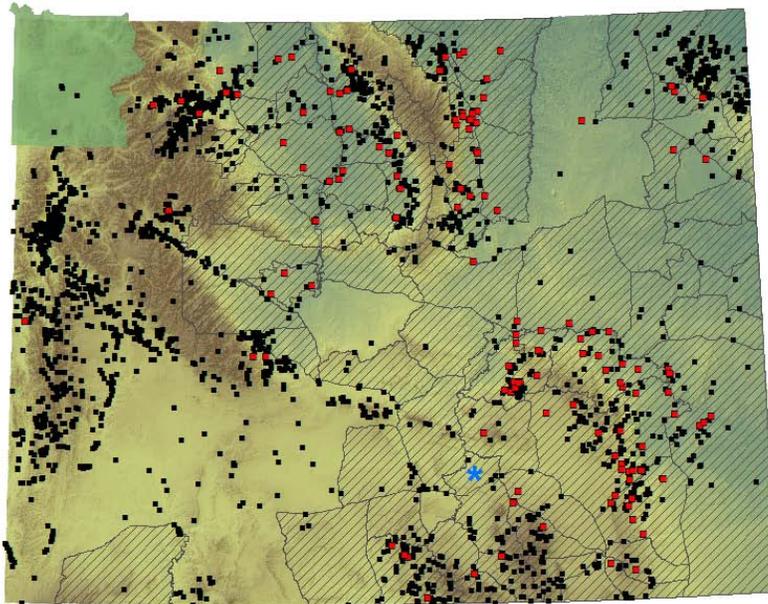
Herd Unit	2016 Estimated Prevalence	2012-2016 Average Prevalence
South Converse Mule Deer	42.9%	41.5%
Laramie Mtn Mule Deer	23.4%	22.9%
Laramie Peak Elk	5.9%	6.4%

Table 2: Estimated 2016 CWD prevalence and 5-year average prevalence in herd units of the core endemic area. Annual sample sizes are low leading to uncertainty in prevalence estimates. Long-term averages provide more confidence on approximate prevalence over a specified time-frame; however, long-term averages may underestimate prevalence in areas where prevalence is increasing.

Although the prevalence of CWD remains low in the majority of hunt areas across state, prevalence levels approaching 20% or above are becoming more common in many deer hunt areas (e.g. HAs 15, 59, 60, 61, and 66) that surround the core endemic area (Laramie Mountain and South Converse mule deer herds). The prevalence of CWD is also increasing in many deer hunt areas of the Bighorn Basin, where prevalence is approaching or exceeding 10% (e.g. HAs 41, 51, 120, and 124). Again, it is important to note that sample sizes achieved through our annual CWD surveillance are too low to estimate prevalence with good precision. Therefore the annual prevalence rates provided in this report represent rough estimations of true prevalence. Continued surveillance and monitoring of this disease as well as impacts it may be having on populations is warranted.

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

Wyoming Chronic Wasting Disease (CWD) 2016 All Species: Positive and Negative



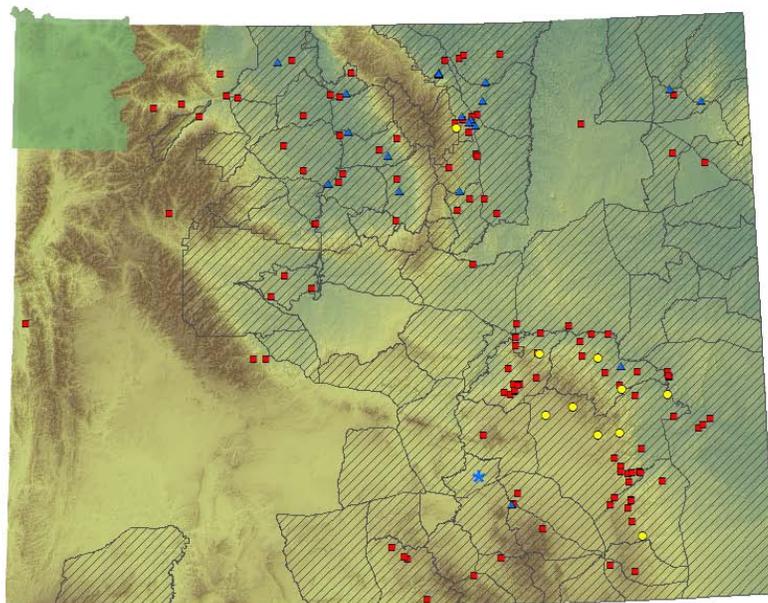
* Positive Corresponding Elk Hunt Area



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Wildlife Health Lab
February 2017

- All Species Positive
- All Species Negative
- ▨ CWD Endemic Deer*
Hunt Areas 2015

Wyoming Chronic Wasting Disease (CWD) 2016 Positive by Species



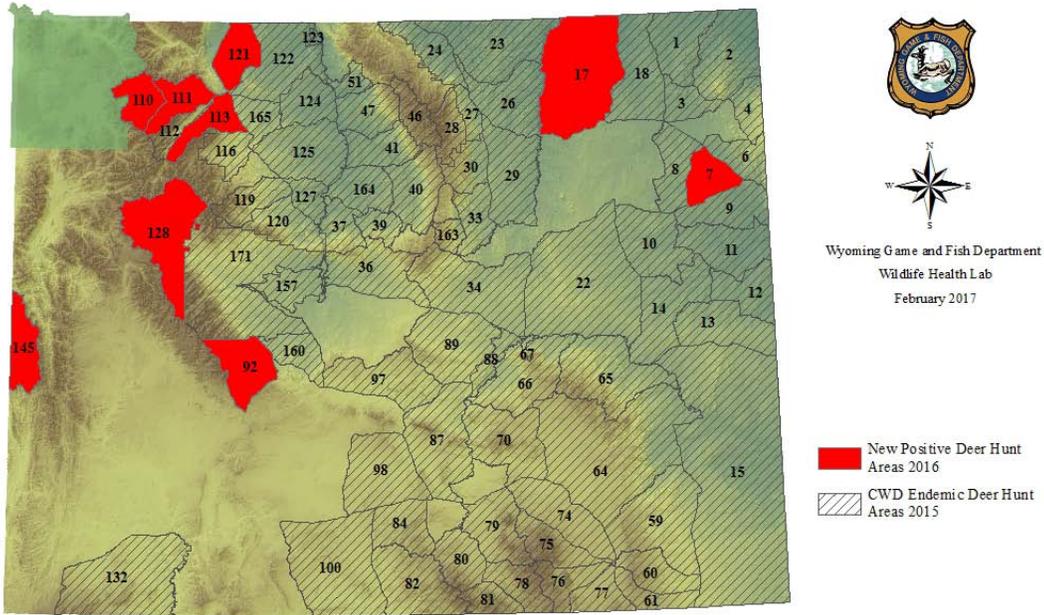
* Positive Corresponding Elk Hunt Area



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- Positive Elk
- ▲ Positive White-tailed Deer
- Positive Mule Deer
- ▨ CWD Endemic Deer*
Hunt Areas 2015

2016 New and Endemic CWD Deer Hunt Areas



2016 New* and Endemic CWD Elk Hunt Areas

