



Wyoming Game and Fish Department 2017 Chronic Wasting Disease Surveillance January 2018

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 (see maps below). Recent research in Wyoming and Colorado suggests that CWD can lead to declines in some deer and elk populations, and this threat has prompted the Wyoming Game and Fish Department (WGFD) to increase surveillance efforts in order to better understand statewide distribution and prevalence. The 2017 surveillance effort was focused on the western edge of the known endemic area; encompassing the Cody, Green River, Jackson, and Pinedale Regions. Sampling efforts were also concentrated within the core endemic area, to include the Laramie Mountains mule deer herd (hunt areas (HA) 59, 60, and 64), the South Converse deer herd (HA 65), Bates Hole/Hat Six mule deer herd (HAs 66 and 67), and the Goshen Rim mule deer herd (HA 15). The Laramie Peak/Muddy Mountain elk herd (HAs 7 and 19) and the Iron Mountain elk herd (HA 6) were also included in the core endemic surveillance plan. 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, check stations, and regional offices. Samples were also collected from road-killed and targeted (those showing signs of the disease) animals. Samples were also collected from any deer or elk taken in accordance with a WGFD issued lethal take permit. Predominantly 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) as the primary diagnostic assay, but also utilized immunohistochemistry (through the Wyoming State Veterinary Laboratory) when necessary. 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 individually notified by a letter within 48 hours of confirmation of test results.

Results and Discussion:

A total of 3,882 deer, elk, and moose samples were analyzed by the WGFD's Wildlife Health Laboratory in Laramie. Of these samples, 342 tested positive for CWD representing 262 mule deer, 50 white-tailed deer, and 30 elk (see Table 1). All moose tested for CWD were negative. This year's surveillance effort identified four new deer hunt areas: HAs 19 in the northeastern corner of the state, HA 52 north of Lovell, HA 118 south of Meeteetse, and 139 near Pinedale. Chronic wasting disease was also documented in elk HA 48 in the southern Bighorn Mountains (see maps below). Of the 3,882 total samples received, 80% were derived from hunter-killed animals, 11%

from targeted, and 9% 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	1,700	205	350	39	1,048	24	23	0	3,121	268
Targeted	220	46	32	10	160	6	19	0	431	62
Road-kill	243	11	45	1	30	0	12	0	330	12
Total	2,163	262	427	50	1,238	30	54	0	3,882	342

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

The discovery of a CWD positive targeted mule deer doe near the town of Pinedale (HA139) in late February 2017 was of particular concern due to its location in northwest Wyoming, as well as being a significant distance from other known positives (see maps below). A similar detection occurred last year when a targeted mule deer doe was found in HA 145 in the Star Valley of western Wyoming. These discoveries along with the steady expansion of this disease towards northwest Wyoming continue to motivate the Department to 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. The detection of CWD positive deer in HAs 139 and 145 highlight the value of targeted surveillance in detecting this disease in new areas.

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 demonstrating signs of CWD as outlined in the WGFD’s Chronic Wasting Disease Plan. Removal of these animals could help limit environmental contamination by CWD prions and the spread of this disease. 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. In 2017, these positions aided in the combined collection of over 250 samples of targeted and road-killed elk, deer and moose in the Jackson and Pinedale regions, with over 100 of these collections being from targeted animals within the feedground areas.

Within the core endemic area, a significant decrease in CWD prevalence was observed in the Laramie Mountains mule deer herd. Comparing 2005-2007 aggregated surveillance data to 2015-2017, shows a decrease from 28% to 21.2% over that time span. Conversely, prevalence in the Goshen Rim and the Bates Hole/Hat Six mule deer herds increased from 12.5% (2005-07) to 31.8% (2015-17) and 16.4% (2008-10) to 35.1% (2015-17) respectively. In the South Converse mule deer herd, the 2015-2017 prevalence was 39.1%, but insufficient sample sizes hinder analysis since the initial CWD prevalence of 21.5% (2000-02). It is important to note that hunter harvest of mule deer is primarily male and therefore prevalence estimates mainly 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. Trends in CWD prevalence in elk herds within the core endemic area were also examined. Prevalence appears to be increasing in the Laramie Peak/Muddy Mountain elk herd, where prevalence in 2005-2007 was 4.1%, but increased to 8.2% in 2015-2017. The Iron Mountain elk

herd has a higher prevalence of 10.3%, but based on sample size, that prevalence was not statistically different than the 2005-2007 level of 7.6%.

Surveillance of the deer and elk herds within the core endemic area provides a tremendous opportunity to study populations that have been affected by this disease for over 30 years. Determining the factors that may influence CWD prevalence in a population may provide insight into future disease management strategies.

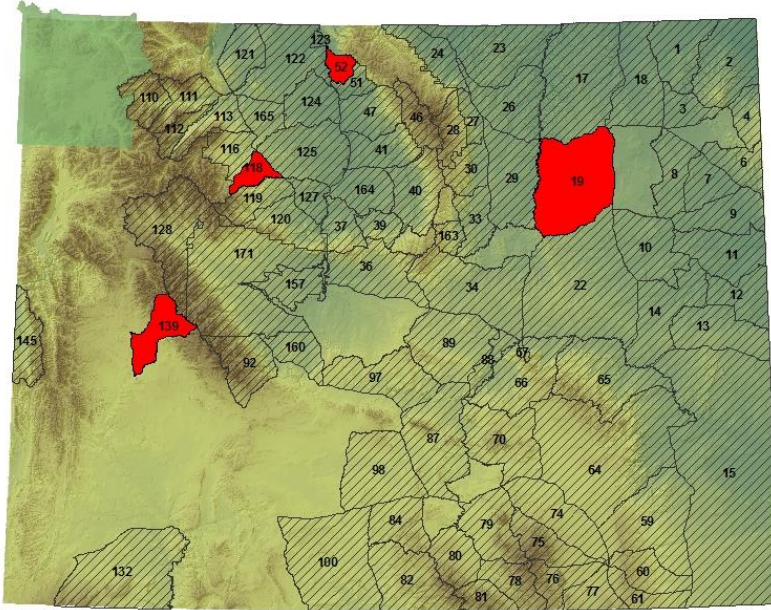
Although the prevalence of CWD remains low in the majority of hunt areas outside of the core endemic area, it appears to be increasing in deer of the Bighorn Basin as well as hunt areas on the eastern slope of the Bighorn Mountain Range. The highest prevalence observed was deer HA 30 of the southeastern Bighorns at 40%. Unfortunately, the sample size for this area was limited to 15 animals; making this estimate unreliable, but it does suggest that CWD may be increasing in this area and further surveillance data are required. In addition, prevalence increases were detected in adjoining deer hunt areas to the north and south (e.g. HA 23, 24, 27, and 33), and Bighorn Basin (HA 41, 46, 47) further warranting intensified surveillance in 2018. Other deer areas of concern for elevated CWD prevalence include HAs 82 near Baggs, 119 near Meetetse, 121 and 122 near Cody, 123 near Lovell, and 157 north of Riverton.

It is important to note that in most hunt areas, the sample sizes achieved through our annual CWD surveillance are too low to estimate prevalence with good precision. Therefore, annual prevalence figures provided in this report represent estimations of true prevalence. Continued surveillance and monitoring of this disease as well as its impacts on populations is warranted.



Future surveillance efforts should not only concentrate on those hunt areas where CWD is becoming a concern, but also in hunt areas where very little surveillance data has been collected over the past seven to 10 years (e.g. Cheyenne River, North Converse, North Natrona, Rattlesnake, South Rock Springs, Pumpkin Buttes, Powder River, Owl Creek, and Basin mule deer herd units). Although many areas were intensively sampled 10 to 15 years ago when federal funds were available to support surveillance, our ability to re-examine these areas has been limited. The WGFD is currently reviewing its CWD surveillance program to improve efficiency while effectively monitoring this disease throughout the state.

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

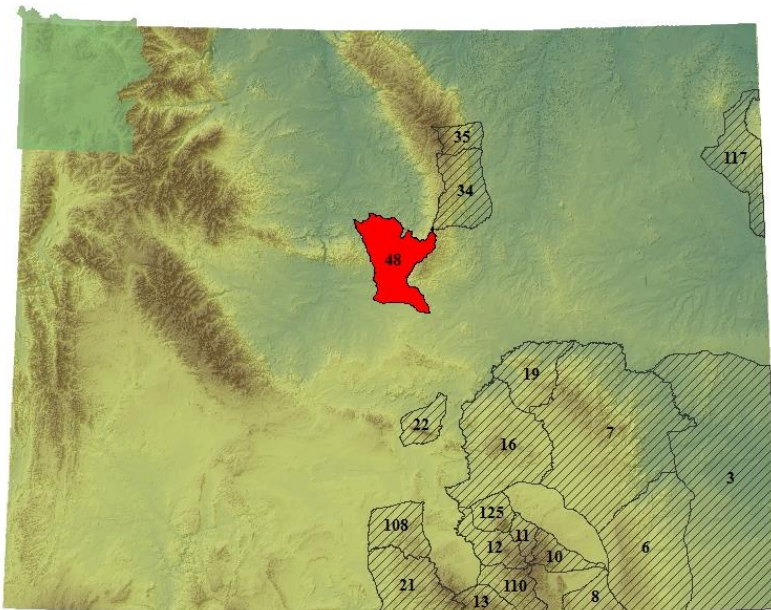
2017 New and Endemic CWD Deer Hunt Areas





Wyoming Game and Fish Department
Wildlife Health Lab
January 2018

-  New Positive Deer Hunt Areas 2017
-  CWD Endemic Deer Hunt Areas 2016

2017 New and Endemic CWD Elk Hunt Areas



Wyoming Game and Fish Department
Wildlife Health Lab
January 2018

-  New Positive Elk Areas 2017
-  CWD Endemic Elk Areas 2016