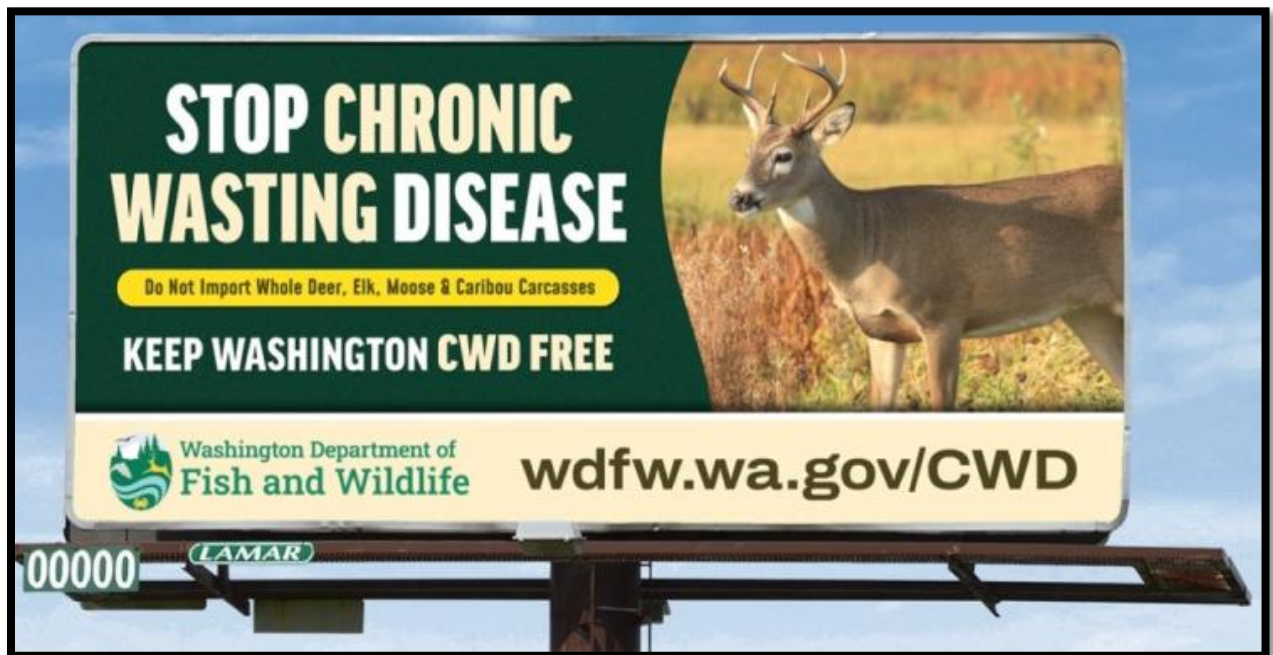


# Washington Department of Fish and Wildlife's Chronic Wasting Disease Surveillance Program Annual Report

July 2022 – June 2023



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## **Acknowledgements**

Kristin Mansfield provided expert disease knowledge and assisted with the development and implementation of the surveillance program. Paul Whelan developed and maintained the CWD data collection application and database. Staci Lehman conducted extensive outreach about the CWD surveillance program. Ilai Keren aided with data analysis and report development. Many WDFW field staff, seasonal technicians, tribal biologists, taxidermists, meat processors, and volunteers collected samples throughout the year. Marie Neumiller with the Inland Northwest Wildlife Council provided additional support for hunters to submit samples. The Washington Department of Transportation collected carcasses for sampling. Funding was provided by the Washington State Legislature.



## Executive Summary

Chronic wasting disease (CWD) is a fatal neurologic illness of cervids (members of the deer family *Cervidae*) caused by a prion protein. Free-ranging moose, elk, mule deer, white-tailed deer, and caribou are all known to be naturally infected and currently 31 states, 3 Canadian provinces, Norway, Finland, and Sweden have documented CWD in their wild cervid populations. In Washington, the Washington Department of Fish and Wildlife (hereafter “the Department”) used federal funds to test 6,133 cervids statewide from 2001-2011. After federal funding was no longer available, the Department tested only animals suspected of CWD based on non-specific clinical signs from 2012-2020. Currently, CWD has not been detected in Washington.

With CWD detections closer to Washington each year, the Washington State Legislature prioritized CWD surveillance by providing the Department budget proviso funds in 2021 to expand efforts and begin systematic surveillance. At that time, the closest detection to Washington was in Libby, Montana, thus the Department prioritized the four most northeastern CWD Surveillance Units (CSUs) described in the CWD Management Plan. During the 2021-2022 hunting season, Idaho Department of Fish and Game detected CWD for the first time in two mule deer near the Slate Creek drainage near Lucile. This was the first time CWD was detected in a bordering jurisdiction to Washington, and in response, the Department expanded surveillance throughout the eastern region (hereafter “Region 1”). This report describes the CWD surveillance program conducted in Region 1 during Surveillance Year (SY) 2022 (July 1, 2022- June 30, 2023).

During SY22, the Department focused efforts to collect samples from adult ( $\geq 1$  year old) white-tailed deer, mule deer, and elk in 11 CSUs in Region 1. These 11 CSUs encompassed 27 Game Management Units (GMUs) that were combined to achieve sampling units of approximately 15,000 deer per CSU. This estimate of deer per CSU is based on harvest within administrative units and is not an estimate of biological population size. Our goal was to sample 300 deer in each CSU to achieve 95% confidence of detecting CWD at 1% prevalence (i.e., the percentage of the population that was affected by CWD during the time samples were collected).

The Department collected 664 samples during SY22 and 654 were suitable for testing. Ten samples were either the incorrect tissue type, likely salivary gland, or an inadequate amount of tissue was collected and could not be tested for CWD. Chronic wasting disease prions were not detected in any of the 654 testable samples. Of the testable samples, 437 were from white-tailed deer (261 male, 173 female, 3 undocumented sex), 189 mule deer (124 male, 65 female), 35 Rocky Mountain elk (7 male, 28 female), 2 moose (1 male, 1 female), and 1 Columbian white-tailed deer (1 male). The Columbian white-tailed deer was collected by the U.S. Fish and Wildlife Service near the Julia Butler Hansen Refuge in Wahkiakum County and submitted as an opportunistic road-kill sample. Two elk outside of the surveillance area were submitted for testing based on suspicious clinical signs and CWD was not detected in either animal.

For the second consecutive year of systematic surveillance since implementing WDFW’s CWD Management Plan, CWD was not detected in any of the testable samples; however, sample sizes limited the Department’s ability to conclude with 95% confidence that CWD was not present at 1% prevalence in any of the CSUs in Region 1. During the surveillance year, all samples were submitted voluntarily. While the Department will continue to explore additional options to incentivize sample



submission, mandatory sample submission may become necessary to achieve sample size goals in the future.



## Introduction

Chronic wasting disease (CWD) is a fatal neurologic illness of cervids (members of the deer family *Cervidae*) caused by a prion protein. Free-ranging moose, elk, mule deer, white-tailed deer, and caribou are all known to be naturally infected and currently 31 states, 3 Canadian provinces, Norway, Finland, and Sweden have documented CWD in their wild cervid populations.

The first documentation of CWD was in captive deer at a Colorado research facility in the late 1960s. It was later found in wild deer in Colorado and Wyoming in the early 1980s. During the 1990s, CWD was detected at several captive facilities in Canada, South Dakota, Oklahoma, and Nebraska. Since the 2000s, CWD has spread throughout the continental United States, affecting free-ranging and captive cervids in the Midwest, Southwest, and some states along the East Coast. Parts of the Northeast, Southeast, and West Coast have not detected CWD to date; however, a lack of detection does not equate to freedom from disease.

Surveillance for CWD is conducted at the state or provincial level usually by the local wildlife management agency. Therefore, resources to conduct CWD surveillance are dependent on the local jurisdiction and their priorities for wildlife management, which can vary dramatically. In the 2000s, federal funds were available to states to conduct CWD surveillance, but funding ceased by 2011. Many states reverted to testing only those animals that showed non-specific clinical signs associated with CWD, such as weight loss, ataxia, abnormal behavior, excessive salivation, and excessive drinking and urination. Unfortunately, given the long incubation time before deer develop outward signs of CWD, waiting to observe and detect clinical signs in wild animals allows CWD transmission to occur undetected for potentially months to years. Implementing a surveillance program to test apparently healthy wild cervids increases the chances of early detection and will help wildlife managers respond quickly to an outbreak of CWD.

In Washington, the Washington Department of Fish and Wildlife (hereafter “the Department”) used federal funds to test 6,133 cervids statewide from 2001-2011. After federal funding was no longer available, from 2012-2020 the Department tested only animals suspected of CWD based on those non-specific clinical signs previously described. Chronic wasting disease was not detected in any animals during this time.

With CWD detections closer to Washington each year, the Washington State Legislature prioritized CWD surveillance by providing the Department budget proviso funds in 2021 to expand efforts and begin systematic surveillance. At that time, the closest detection to Washington was in Libby, Montana, thus the Department prioritized the four most northeastern CWD Surveillance Units (CSUs) described in the CWD Management Plan. During the 2021-2022 hunting season, Idaho Department of Fish and Game detected CWD for the first time in two mule deer near the Slate Creek drainage near Lucile. This was the first time CWD was detected in a bordering jurisdiction to Washington, and in response, the Department expanded surveillance throughout the eastern region (hereafter “Region 1”). This report describes the CWD surveillance program conducted in Region 1 during Surveillance Year (SY) 2022 (July 1, 2022 – June 30, 2023).

## Surveillance Area and Sample Size

During SY22, the Department focused efforts to collect samples from adult ( $\geq 1$  year old) white-tailed deer, mule deer, and elk in 11 CSUs in Region 1 (Fig. 1). These 11 CSUs encompassed 27 Game



Management Units (GMUs) that were combined to achieve sampling units of approximately 15,000 deer (white-tailed deer and mule deer) per CSU. This estimate of deer per CSU is based on harvest within administrative units and is not based on rigorous population estimation techniques. Deer harvest was used to delineate CSUs rather than elk because CWD prevalence is greater in deer populations relative to sympatric elk, thus have a higher probability of detection if present in deer populations. Harvest in this area is primarily antlered deer with very few antlerless opportunities. Research has shown that adult male deer tend to have higher occurrence of CWD compared to females and fawns in the same population. While the sampling strategy was not weighted using population demographics, hunting regulations opportunistically provided samples that increased the probability of detecting CWD. Our goal was to sample 300 deer in each CSU to achieve 95% confidence of detecting CWD at 1% prevalence (i.e., the percentage of the population that was affected by CWD during the time samples were collected). Until better estimates of deer populations are available, these methods for allocating sampling efforts and determining disease status within Washington will be used with these limitations in mind when interpreting results. Samples were collected from all cervid species within Region 1; however, the target species (i.e., greater resource allocation to collect samples from these species) were deer (e.g., white-tailed deer and mule deer) and elk. While moose are susceptible to CWD and are known to become infected in the wild, the number of moose infected with CWD in North America is considerably lower than deer and elk.

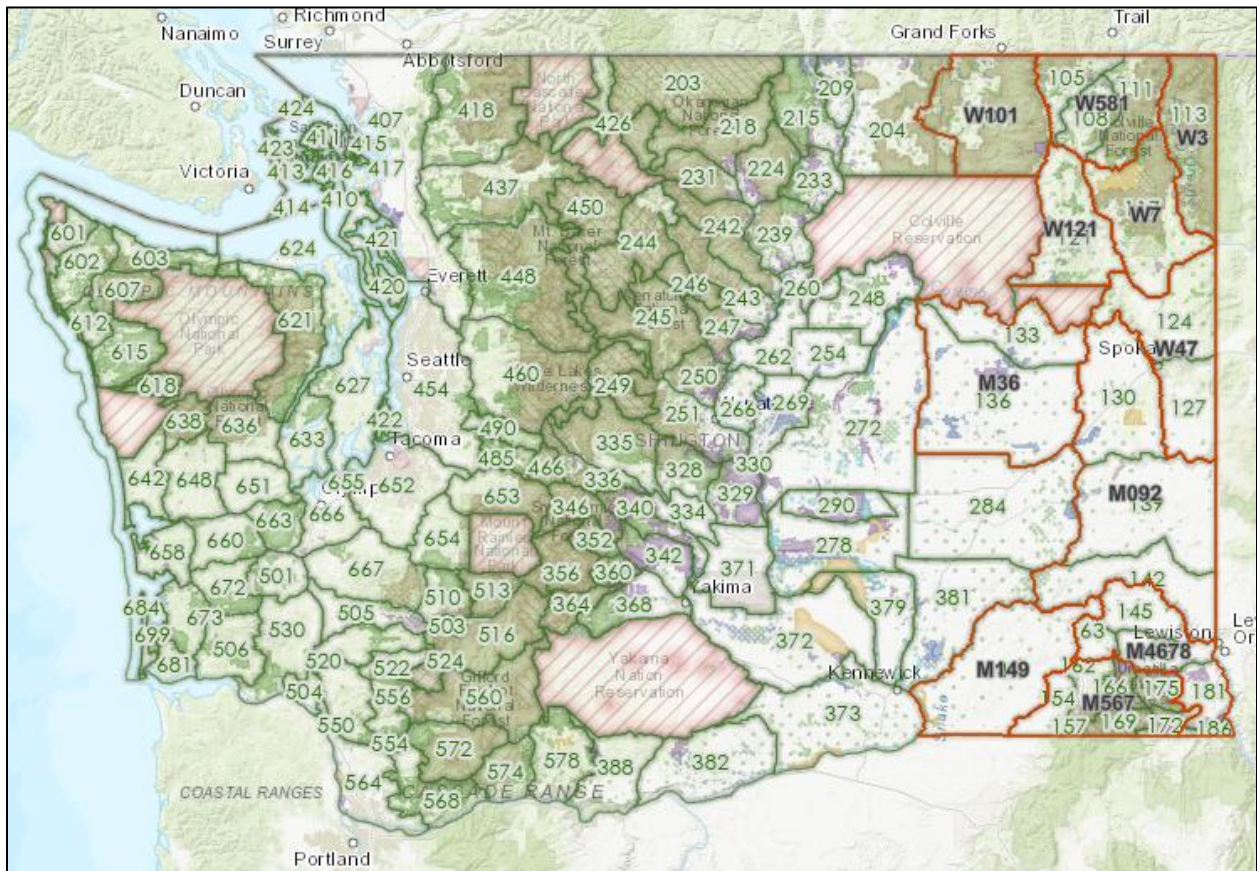


Fig. 1. Chronic wasting disease surveillance units (CSUs W101, W581, W3, W7, W47, M36, M092, M149, M4678, M567) that were made up of a combination of 27 Game Management Units (GMUs



101-186) located in eastern Washington were the focus of sampling efforts for the CWD surveillance program during Surveillance Year 2022 (July 1, 2022 – June 30, 2023).

## Methods

Medial retropharyngeal lymph nodes (RPLNs) were collected from dead cervids and submitted to the Washington Animal Disease Diagnostic Laboratory at Washington State University in Pullman, WA where they were tested using an enzyme-linked immunosorbent assay (ELISA) for detecting CWD prions. If insufficient tissue was collected for the ELISA, the remaining RPLN was examined using immunohistochemistry (IHC) to detect CWD prions. Incisor teeth were collected to be aged using cementum annuli analysis by Matson's Laboratory in Manhattan, Montana. Other data collected included date of sample collection, sex of the animal, cause of death, mortality location at either a specific location using latitude and longitude or a grid cell that covered an area of 4.3 square miles (11.1 square kilometers), and hunter or roadkill salvager's contact information when applicable.

Department staff sampled deer and elk opportunistically, and from harvested animals primarily during the general modern firearm hunting season. Collection from harvested deer and elk was conducted at eight hunter check stations placed strategically within CSUs operated by Department staff and volunteers during the early general deer season in October and three check stations during the late general deer season in November. Hunters were also given the options of making an appointment for sample collection either by Department staff or with the Inland Northwest Wildlife Council (INWC), collect the RPLNs themselves and mail samples to the Department following instructions on the WDFW CWD website, or drop off heads at one of two CWD kiosks located in Colville and near the Wooten Wildlife Area at the Last Resort campground and RV park. Road-killed deer were picked up either by Department staff or by the Washington Department of Transportation (WSDOT). When WSDOT picked up road-killed deer within a CSU, their staff tagged the carcasses with the location and date of collection so that Department staff could sample those animals at one of WSDOT's carcass collection sites. All harvested and salvaged deer were voluntarily submitted for sampling by the hunter or salvage permittee.

Outreach was conducted to increase awareness of the CWD surveillance program and to inform the public how to submit samples for testing. An email about the surveillance program and operation times and locations of check stations was sent to hunters that had reported hunting deer or elk in the last five years in Region 1. A letter was sent to licensed taxidermists and game meat processors statewide outlining the current transportation restrictions on cervid carcasses and information about the surveillance program. The Department also requested samples from taxidermists and game meat processors, with hunter consent, and offered \$7 per sample collected. Those that salvaged road-killed deer within a CSU, were notified via an online notification when submitting their salvage application that the Department was interested in testing their salvaged deer for CWD testing. Outreach about the CWD surveillance program was also conducted on Department social media accounts, local newspaper and radio outlets, and presentations given to local sportsperson and conservation groups.





## Results

The Department collected 664 samples during SY22 and 654 were suitable for testing. Ten samples were either the incorrect tissue type, likely salivary gland, or an inadequate amount of tissue was collected and could not be tested for CWD. Chronic wasting disease was not detected in any of the 654 testable samples. Of the testable samples, 437 were from white-tailed deer (261 male, 173 female, 3 undocumented sex), 189 mule deer (124 male, 65 female), 35 Rocky Mountain elk (7 male, 28 female), 2 moose (1 male, 1 female), and 1 Columbian white-tailed deer (1 male). The Columbian white-tailed deer was collected by the U.S. Fish and Wildlife Service near the Julia Butler Hansen Refuge in Wahkiakum County and submitted as an opportunistic road-kill sample. Two elk outside of the surveillance area were submitted for testing based on suspicious clinical signs and CWD was not detected in either animal.

The first sample was collected on July 1, 2022, and the last sample was collected on June 30, 2023 (Fig. 2). The bulk of sampling coincided with the general modern firearm deer seasons during October and November. Most samples were collected from harvested animals (n=314) at check stations (n=201) (Fig. 3a). Other collection streams of harvested animals were sampled by Department staff or INWC by appointment (n=45), at hunter camps (n=9), at a hunting resort that doesn't process meat but allows hunters to hang their game (labeled as game meat processor in Fig. 3a (n=41) through the Department's Conflict Management and Prevention Section (n=19), and mailed to the Department (n=2; Fig 3a). Most road-killed deer and elk were picked up by Department staff opportunistically (n=120), at WSDOT carcass collection sites (n=144), and from salvage permittees (n=36; Fig. 3b). Other miscellaneous samples came from deer or elk that died of various causes including illegal harvest (n=10), euthanized elk that had clinical signs consistent with CWD (n=2), fence entanglement (n=5), other injuries or disease (n=14), and predation (n=1). Cause of death was not recorded for 8 deer.

Starting this surveillance year, we recorded check station location to better understand sampling characteristics at these sites. We collected 202 samples (201 harvested animals and 1 road-killed salvaged deer) at check stations. New check station locations underperformed relative to check station locations that were operated in previous years (Table 1). Locations near Dear Park and Colbert collected the most samples and likely see more traffic compared to the other check station locations. While the check stations at Hesse Park near Republic and Hood Park near Burbank sampled the least number of animals, both locations provided the greatest number of samples from harvested animals in two of the CSUs (W101 and M149).

Animals sampled were primarily located within the Region 1 surveillance area in a specific location with an accuracy within 1 mile (Fig. 4). Less than 20% of animal locations were recorded using the grid area with an accuracy of 4.3 sq. miles. We did not collect enough deer samples in any CSU to conclude with 95% confidence that we would detect CWD at 1% prevalence. We did collect enough samples in 9 CSUs to conclude with greater than 96% confidence that we would detect CWD at 10% prevalence (Fig. 5). W47 that encompasses GMUs 124 and 127, for the second year in a row achieved the highest sample size (n=136) followed by new CSU M4678 that encompasses GMUs 145, 163, 178, 181, and 186 (n=100). For a second surveillance year, harvest estimates of deer in CSU W3 were lower than the goal sample size of 300 (Table 2).



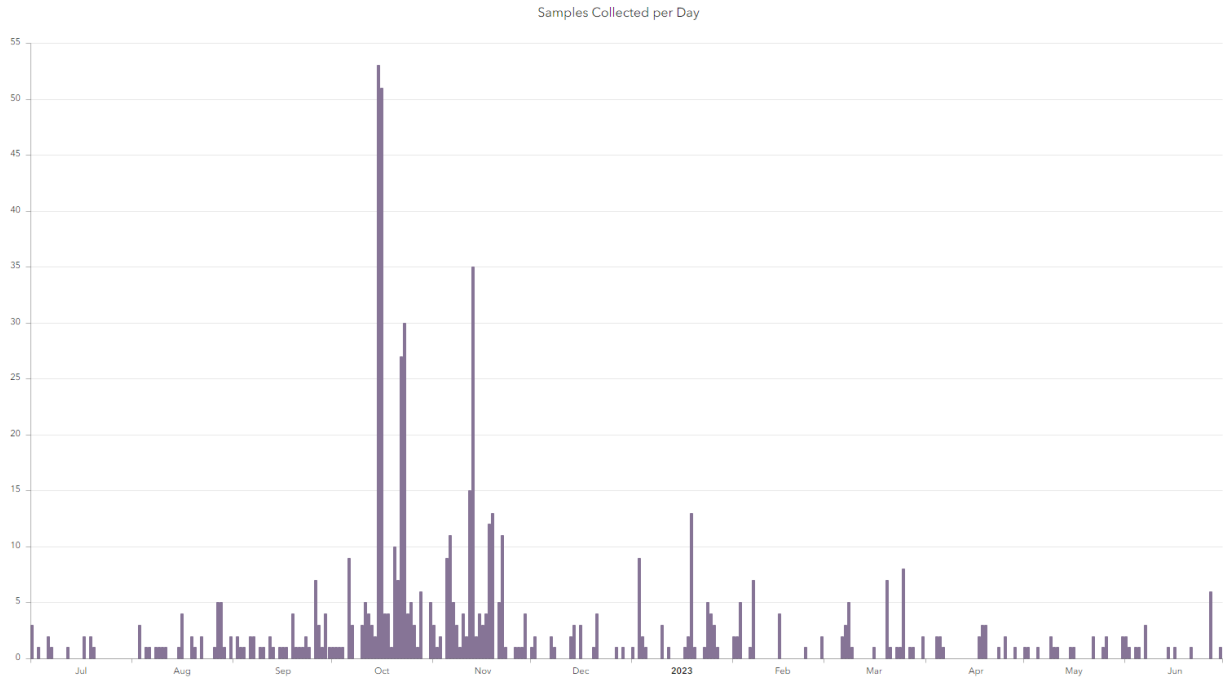


Fig. 2. The distribution of the number of chronic wasting disease samples collected per day during Surveillance Year 2022 in eastern Washington with the first sample collected on July 1, 2022, and the last sample collected on June 30, 2023, and most samples collected during the general deer modern firearm seasons during October and November.

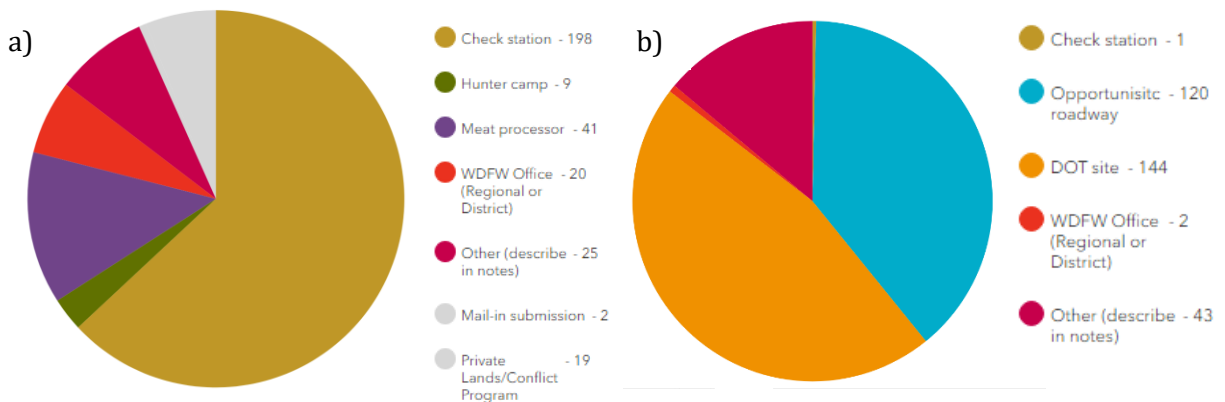


Fig. 3. The proportion of chronic wasting disease samples collected by collection location type for (a) hunter harvested and (b) road-killed animals during Surveillance Year 2022. Note that the “Other” categories primarily reflect staff going to a hunter’s residence, hunters going to Inland Northwest Wildlife Council for sample collection, or the Kalispel Tribe collecting the sample.



Table 1. Department staff operated 8 check stations throughout eastern Washington during the early general modern firearm deer season and 3 check stations during the late general modern firearm deer season in the northern portion of the eastern region. Staff and volunteers collected chronic wasting disease samples from any harvested or road-killed deer or elk that was presented by the hunter or salvager for testing.

Check Station Location	CWD Samples Collected	Species	CSUs Represented in Samples
<b>Colville District Office</b>	25	WTD, MD, Elk	W101, W121, W581, W7
<b>HWY 395 Weigh Station Deer Park</b>	66	WTD, MD, Elk	W101, W121, W3, W47, W581, W7
<b>HWY 2 Weigh Station Colbert</b>	29	WTD, MD, Elk	M092, W3, W47, W581, W7
<b>Hesse Park Republic</b>	10	WTD, MD, Moose	W101, W121
<b>Pacific Pride Washtucna</b>	23	MD	M092, M149, M4678
<b>Hood Park Burbank</b>	12	WTD, MD	M149, M4678, M567
<b>HWY 12 Weigh Station Walla Walla</b>	15	WTD, MD	M092, M149, M4678, M567
<b>HWY 129 DOT Clarkston</b>	22	WTD, MD, Elk	M092, M4678, M567



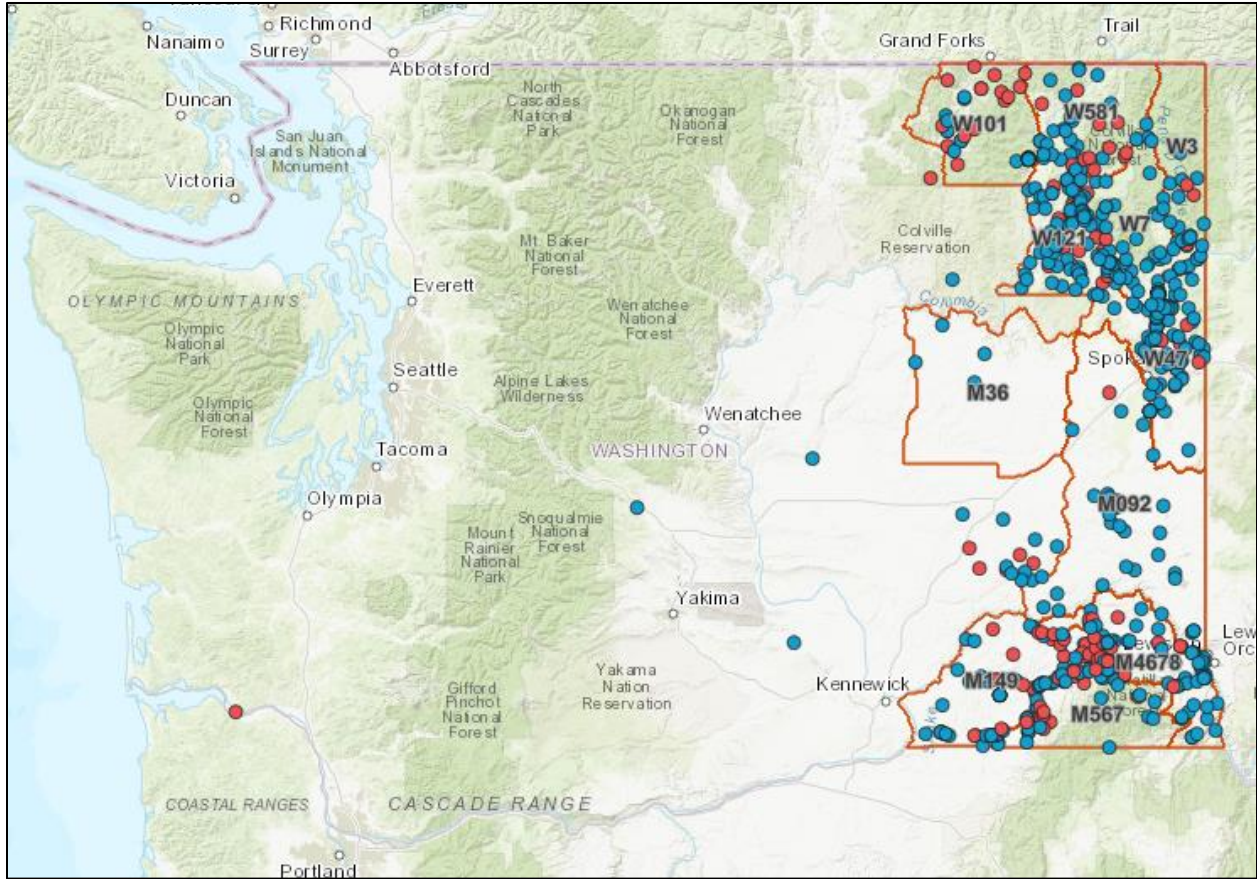


Fig. 4. Most samples were collected from 11 CWD surveillance units (CSUs W101, W581, W3, W7, W47, M36, M092, M149, M4678, M567) representing 27 Game Management Units (GMUs 101-186) during Surveillance Year 2022. Blue dots indicate the specific mortality location with a reported error of <1 mile; red dots indicate an estimated mortality location within a 4.3 sq. mile area.



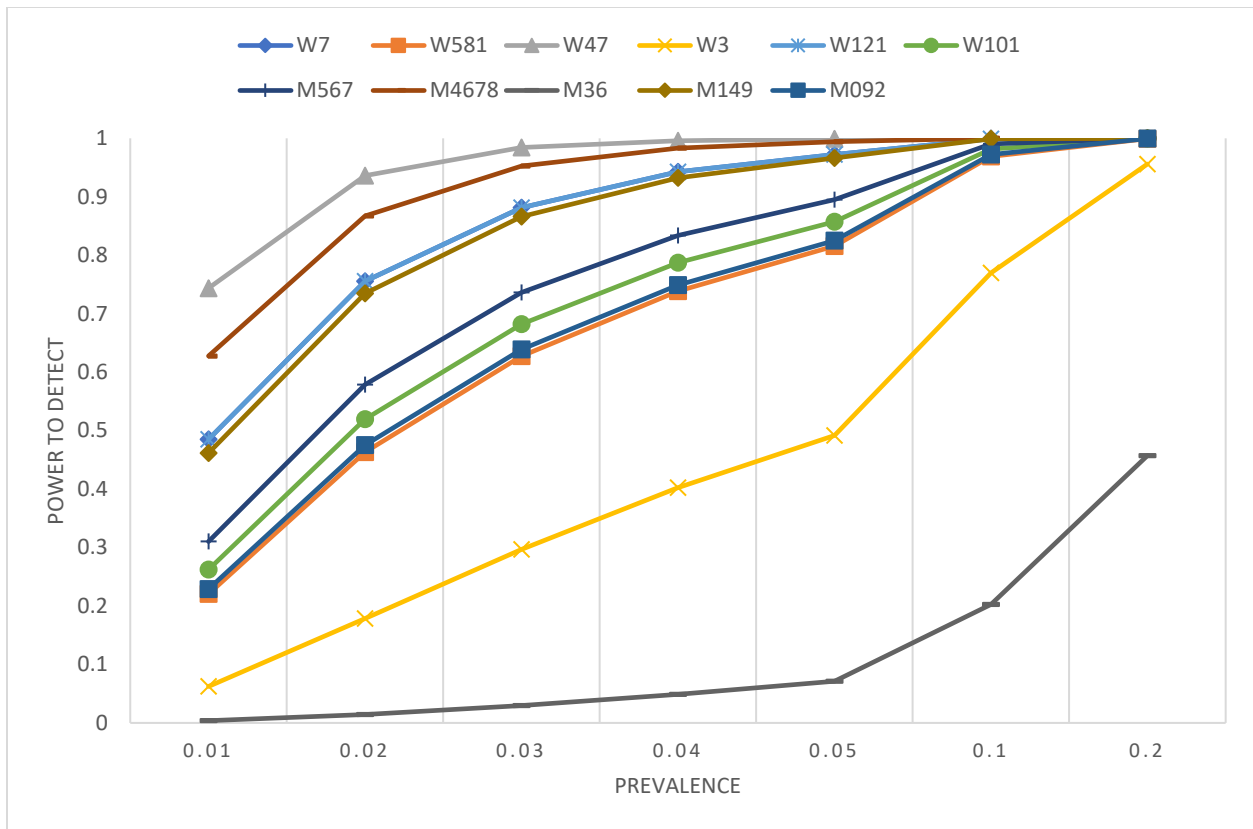


Fig. 5. The power to detect chronic wasting disease (CWD) at a prevalence ranging from 1% - 20% within each CWD surveillance unit based on the number of deer (i.e., white-tailed deer and mule deer) samples collected during Surveillance Year 2022.



Table 2. Number of hunters, white-tailed deer (WTD) and mule deer (MD) harvest, and success rate (total deer harvest/hunters) in each of the 11 CWD Surveillance Units (CSU) estimated from harvest reporting. Note, some hunters may hunt multiple CSUs. Standard error around harvest estimates is approximately 8%.

CSU	Hunters	Harvest WTD	Harvest MD	Success
<b>M092</b>	2,975	104	502	20%
<b>M149</b>	1,823	55	382	24%
<b>M36</b>	2,272	41	486	23%
<b>M4678</b>	2,235	193	407	27%
<b>M567</b>	3,379	357	147	15%
<b>W101</b>	3,376	419	143	17%
<b>W121</b>	4,047	982	82	26%
<b>W3</b>	1,522	210	5	14%
<b>W7</b>	3,322	557	4	17%
<b>W581</b>	2,893	589	39	22%
<b>W47</b>	4,556	1,272	37	29%

## Discussion

For the second consecutive year of systematic surveillance, CWD was not detected in any of the testable samples; however, sample sizes limited the Department’s ability to conclude with 95% confidence that CWD was not present at 1% prevalence in any of the CSUs in Region 1. During the surveillance year, all samples were submitted voluntarily. While the Department will continue to explore additional options to incentivize sample submission, mandatory sample submission may become necessary to achieve sample size goals in the future.

Check stations remained the best source of samples and should continue to be utilized during the general deer seasons to sample hunter-harvested animals. The Department opted to remove the Ione, Usk, and Chewelah check stations as they were less productive and likely redundant when operated in tandem with Colville, Deer Park, and U.S. Highway 2 locations. Five additional check station locations were established within Region 1 to sample harvested animals from the expanded surveillance area. Sample collection at check stations varied considerably depending on location



(range 10-66 samples). Considering this is the first year of operation for most of these check stations and no new CWD positive locations were identified that would require expanding to other locations in Washington, the Department will maintain these locations for SY 2023 (July 1, 2023 – June 30, 2024) hunting season dependent on resources available to operate at each location.

Surveillance unit W3 comprised only of GMU 113, in Pend Oreille County and geographically the closest area to known positive cases in western Montana, had the fewest number of samples collected (n=15). Achieving a sample size of 300 in W3 is likely not feasible based on harvest estimates. However, while hunter success in each unit is influenced by more than deer density, it is possible that an estimate of 15,000 deer within this CSU is an overestimate. During the first year of surveillance, we operated two check stations on the border of W3 in Ione and Usk but decided to remove these less productive check station locations to distribute resources to other locations. To mitigate the potential loss of samples from W3, we deployed staff to GMU 113 during the first weekend of modern firearm season to collect samples opportunistically from hunters in the field. Those efforts resulted in 10 samples from hunters. The Department will continue to explore options to efficiently collect samples in CSU W3 because of its proximity to known CWD cases in free-ranging deer.

Outreach continues to be the highest priority to increase sample submission from the public. In 2021, we learned from a survey submitted to those who applied for a salvage permit within Stevens, Pend Oreille, and Spokane Counties that most respondents were willing to submit a sample, but a third of respondents were unaware how to do so. We developed more detailed instructions on the Department's CWD webpage and added a CWD notification agreement on the permit that had to be acknowledge by permittees prior to receiving the final salvage permit. While there was no way of knowing if these specific outreach tools increased sample submission through the salvage program, we did see a 35% increase in the number of samples collected from salvaged deer.

We continue to struggle to enroll taxidermists and meat processors to collect samples for the surveillance program even with the \$7 per sample incentive. We did identify a business that allows hunters that stay at their resort to hang their harvested animals on site. This business allowed staff to set up an impromptu check station onsite and collect 36 samples over the course of two weekends. While they are not designated as a taxidermist or meat processor, we provided the monetary incentive for their assistance and permission to operate on their property. It became clear after this interaction and talking with other wildlife agencies managing CWD that personal communication and face-to-face interactions with these businesses is key to developing relationships and encouraging participation in CWD surveillance efforts. We will explore developing these relationships with business owners as resources allow, with a particular focus on the taxidermists in Region 1 that likely see mature bucks and bulls that are high value samples for surveillance.

