

# Pennsylvania Chronic Wasting Disease Response Plan



**Prevention. Surveillance. Management.**

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## Acknowledgments

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## Executive Summary

Chronic wasting disease (CWD) is a fatal neurologic condition that affects members of the Cervidae (deer) Family. Members of this family in Pennsylvania include white-tailed deer (*Odocoileus virginianus*) and Rocky Mountain elk (*Cervus elaphus nelsoni*). Scientific evidence supports that misfolded prion proteins cause the disease, which results in cervids exhibiting emaciation, stumbling, drooling, and a general lack of fear of humans. CWD was first detected in Pennsylvania in 2012 in a captive deer facility in Adams County. One month later, three free-ranging deer from Bedford and Blair counties also tested positive. As a result of these detections and others in subsequent years, Disease Management Areas (DMAs) were established to mitigate the risks of human-caused spread of the disease.

To date, DMAs cover nearly 9,500 square miles (20%) of Pennsylvania and CWD has been detected in approximately 460 free-ranging white-tailed deer in the Commonwealth. If management strategies are not improved, sample prevalence (the percentage of samples that test positive) will continue to increase, likely exceeding 30% in wild deer within Bedford and Blair counties over the next one to two decades based on growth seen in other states and in Pennsylvania over the last eight years. CWD will continue to spread to naïve areas throughout the Commonwealth, further increasing the expanse of DMAs. In order to maintain Pennsylvania's native deer and elk populations, the Game Commission must alter its current management actions.

This Response Plan establishes a framework for managing CWD in Pennsylvania. Its goals are first to minimize the impacts of CWD on Pennsylvania deer and elk populations and secondly to increase the public's understanding of, support for, and participation in CWD management efforts. To accomplish these goals, the Game Commission must prevent, detect, and manage the disease throughout the Commonwealth. Management strategies to minimize disease transmission and spread include:

- 1) Bans on movement of high-risk parts, feeding free-ranging cervids, and use of cervid attractants;
- 2) Increasing deer harvest to reduce deer abundance; and
- 3) Implementing targeted removals in areas where necessary and with landowner permission.

In addition, extensive communication efforts must be made with engagement occurring at the local and statewide level to increase public understanding of the severity of CWD.

This Response Plan is a living document and will be reviewed annually to determine if objectives are being reached and modifications are warranted. Current management strategies are based on the best available science and with input from all stakeholders. Through this collaborative approach, deer and elk will continue to thrive for Pennsylvania's current and future generations.

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## Problem Statement

Chronic wasting disease is an infectious neurological disease of cervids (e.g. deer, moose, and elk) first described nearly six decades ago. CWD is always fatal and infected cervids have overall lower survival rates than uninfected cervids as the disease also indirectly contributes to mortality (e.g., CWD-infected cervids are more likely to die from predation). To date, CWD has neither extirpated any cervid populations nor is there evidence of it infecting non-cervid species outside of a laboratory setting. So why should the Game Commission take action to manage it?

Prions, the infectious agent that causes the disease, are not unique to CWD. Other prion diseases are known to affect livestock and people (e.g., scrapie, bovine spongiform encephalopathy (BSE), Creutzfeldt-Jakob disease (CJD)). Research involving swine and non-human primates has demonstrated that under laboratory conditions, the CWD prion is capable of causing disease in non-cervid species. Such concerns naturally extend to human health, as humans regularly come into contact with deer, consume venison, and potentially may expose themselves to CWD prions. While strong evidence documenting transmission of CWD to humans does not currently exist, it cannot be ruled out. The history of humans contracting variant CJD following ingestion of BSE-tainted beef in England in the 1990s should serve as a warning and justification for taking a precautionary approach ([Disease Implications](#)).

Controlling CWD is very difficult. Research has demonstrated that CWD prions can pass through the digestive tract of scavengers and predators and remain infectious; plants can uptake CWD prions and remain infectious; soils retain infectious CWD prions for years; and water sources can be contaminated with CWD prions ([Disease Overview](#)). Despite ongoing efforts, there is currently no treatment or vaccine for CWD. It has been shown that the disease can contribute to population-level impacts in areas of relatively high CWD sample prevalence. If Pennsylvania follows similar trends observed in other states, CWD could severely negatively impact the Commonwealth's cervid population via lower survival. Lower cervid survival can lead to reduced hunting opportunities. Fewer deer and elk hunting opportunities and a possible decrease in hunter participation would harm Pennsylvania's hunting traditions. Less hunter participation would subsequently generate less funding for the Game Commissions' wildlife conservation efforts.

Based on our knowledge of CWD, limiting exposure of wildlife, livestock, and people to CWD prions is not only prudent but a necessity. History is littered with examples of zoonotic diseases. Ignoring that history could have catastrophic human and wildlife health and economic consequences. While the future is never certain, actions taken today to minimize the risk, spread, and prevalence of CWD may stem the rising tide of a disease that has the potential to impact more than just cervids. If the Game Commission does nothing, CWD will continue to increase and spread across the Commonwealth exposing more wildlife, livestock, and people to CWD prions. The Game Commission has a constitutional and legal responsibility to address CWD. A comprehensive approach will provide the Game Commission and Pennsylvania with the best chance of successfully addressing this growing problem.

# Introduction

## *Agency Responsibility*

The mission of the Pennsylvania Game Commission (Game Commission) is “to manage Pennsylvania’s wild birds, wild mammals, and their habitats for current and future generations”. This responsibility is derived from the Pennsylvania Constitution (Article 1, Section 27) and Game and Wildlife Code (Title 34) and affords the Game Commission with constitutional and legal authority in wildlife management actions. Given current knowledge of chronic wasting disease (CWD) and its impacts on [cervid](#) populations in other states, it is the Game Commission’s responsibility to acknowledge CWD as a serious threat to Pennsylvania’s deer and elk populations, as well as to take appropriate actions to mitigate the effects of the disease. The Game Commission recognizes that some of the management strategies described in this Response Plan may be difficult for the public and other stakeholders to accept. However, these actions are intended for the long-term benefit and preservation of Pennsylvania’s cervid populations. The Game Commission also understands the importance of deer and the deer hunting culture in the state and the threat that CWD poses to the long-term viability of both. As such, there exists a need and a duty of the Game Commission to take steps to effectively manage CWD. It is with that responsibility in mind that this [Pennsylvania Chronic Wasting Disease Response Plan](#) was developed.

## *Stakeholder and Partner Engagement*

A variety of stakeholders have an interest in CWD and how disease management efforts will impact free-ranging cervids in the Commonwealth. The Game Commission and these stakeholders share a desire to maintain healthy deer and elk populations in Pennsylvania.

State and federal government agencies responsible for natural resource management, agriculture, and human health are among those who are historically engaged in discussions about how to best manage this disease (Commonwealth of Pennsylvania 2011). Certain agencies, such as the Department of Conservation and Natural Resources (DCNR), local parks departments, and the United States Department of Agriculture (USDA) - Forest Service, have an interest in CWD due to the impact cervids have on habitat and how cervid health affects the public’s experience in the outdoors. Other agencies may be concerned because cervids are consumed by people (e.g., Department of Health), kept in captive settings (e.g., Pennsylvania Department of Agriculture (PDA)), or because of potential human-wildlife conflict (e.g., USDA - Animal and Plant Health Inspection Service - Wildlife Services (USDA-APHIS-WS)). While some agencies have regulatory authority, all make valuable contributions by providing perspective, expertise, and guidance. Together with the Game Commission, they form a governmental partnership in CWD management.

Incorporating input from non-governmental stakeholders is just as vital to the success of CWD management efforts. Hunters, landowners, wildlife watchers, retailers, captive cervid facilities, academic institutions, and other interested parties must be involved in the process. The strongest relationship is between hunters and the Game Commission, a bond that has been fostered since the creation of the Game Commission in 1895. Hunters have a considerable impact on the Game Commission and Pennsylvania’s economy. License sales are an important part of the Game Commission’s operational



budget and hunters have an estimated \$971 million impact on retail and tourism in Pennsylvania (United States Fish and Wildlife Service 2011). Hunters have a variety of motivations in deer management; by extension, CWD elicits a diversity of responses ranging from concerns that the disease will change their hunting experience to worries about food safety. Whether at the individual or organizational level, hunters are among the most engaged public stakeholders when it comes to CWD, and the Game Commission recognizes the importance of working with them to achieve CWD management goals. Concerns regarding rules and regulations affecting both deer populations and hunting opportunities are understandable. To successfully manage CWD, it is essential that state wildlife agencies and hunters work together (Uehlinger et al. 2016).

Landowners are another important stakeholder group and can be public (e.g., state parks, state forests, state game lands) or private (e.g., rural homestead, family-owned farm). There are 16.8 million acres of forestland in Pennsylvania, 70% of which is owned by private landowners. Parcels vary in size and landowners may have various management goals and/or land-use intentions. Hunting and fishing are one of the top reasons for land ownership and land leasing (Butler 2006). The Game Commission seeks to engage these diverse landowners to understand their interests and involve them in CWD management.

Wildlife watching is a growing activity in Pennsylvania and has a \$1.3 billion economic impact through retail sales and tourism. Observing wildlife connects participants to nature in many of the same ways as those who hunt, and generates concern for wildlife health and welfare (United States Fish and Wildlife Service 2011). Such core values are shared with the Game Commission. Wildlife watchers can negatively influence CWD management directly by feeding deer, an activity that can amplify transmission of the disease. Conversely, wildlife enthusiasts can have a positive impact by influencing policy. The Game Commission and DCNR recognize the importance of this stakeholder group in managing CWD.

Captive cervid facilities in Pennsylvania play a role in the Commonwealth's CWD management efforts. CWD can be passed between free-ranging and captive animals through direct contact or indirectly through contamination of the environment. Current fencing guidelines for captive facilities may not effectively prevent the two populations from interacting (Vercauteren et al. 2007). Some captive cervid facilities also produce urine for the lure industry, and unintentional introduction of infected urine on the landscape can unnaturally congregate cervids and lead to the infection of naïve individuals (Haley et al. 2009). In some cases described in the western United States, the geographic spread of CWD has been traced to the movement of captive animals (Williams et al. 2001; Miller and Williams 2004). Genetic analysis of free-ranging white-tailed deer from the mid-Atlantic region revealed with a high probability that at least two CWD-positive deer actually originated from captive populations (Miller and Walter 2020). It is therefore of paramount importance that the Game Commission considers the interests of the captive cervid industry and works closely with them to mitigate these risk factors. In Pennsylvania, captive cervid facilities are under the authority of the PDA and are subject to guidelines established by the USDA APHIS Veterinary Services, which reinforces the importance of interagency cooperation.

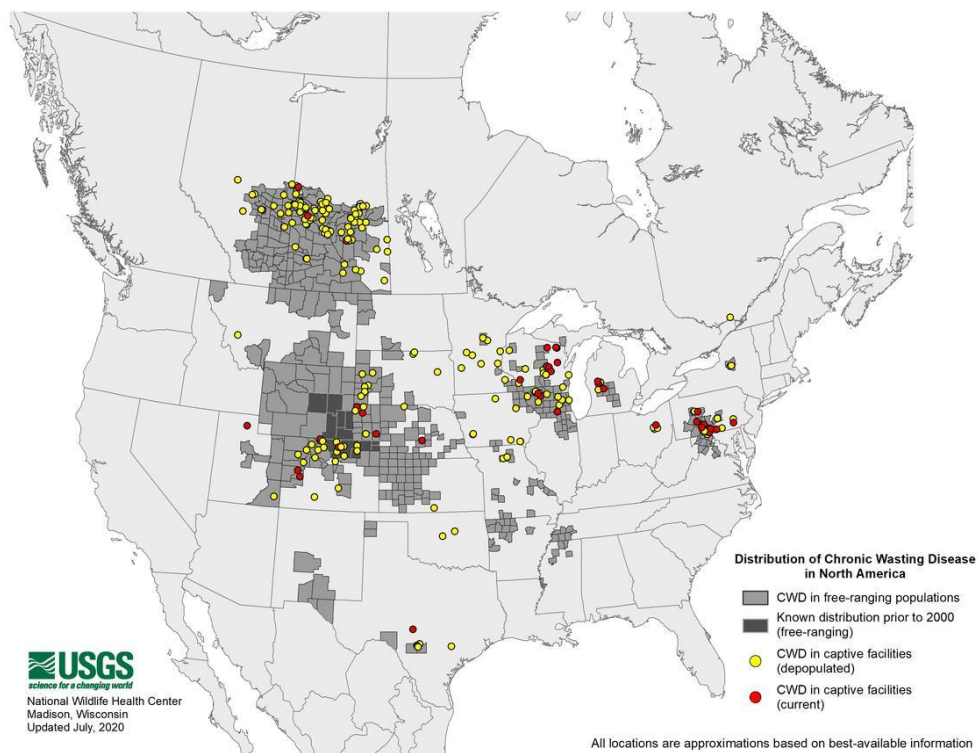
Academic institutions are valuable partners to engage in CWD management because of their research capacity, disease expertise, and diagnostic capabilities. An ongoing partnership between the Game Commission and the USGS Pennsylvania Cooperative Fish and Wildlife Research Unit at Pennsylvania State University has yielded valuable information about deer movement, dispersal, and genetics that can be applied to deer and CWD management. A new venture, the Pennsylvania Wildlife Futures Program

(PWF), was recently developed in cooperation with the University of Pennsylvania's School of Veterinary Medicine. The PWF will be operating a comprehensive wildlife health program across the Commonwealth and CWD is one of their top priorities.

Managing CWD in Pennsylvania will require a comprehensive approach that engages all stakeholders to identify and implement adaptive strategies. Information sharing will be critical to ensure stakeholder interests are understood and to gather support from the public. The Game Commission needs active participation in CWD management, such as hunters providing CWD samples, to accomplish disease surveillance objectives. Therefore, this CWD Response Plan includes both a communication (see [Appendix B](#)) and an adaptive resource management component.

### Disease Overview

Chronic Wasting Disease is a fatal neurologic condition that affects cervid species, which includes deer, elk, caribou, and moose (Williams et al. 2002). The disease was first detected at the Colorado Parks & Wildlife Foothills Wildlife Research Facility in Fort Collins, Colorado in 1967, but it wasn't until 1981 that CWD was first detected in a free-ranging cervid (elk in Colorado). Since then, the disease has spread across much of North America and has also been detected in Europe and Asia. As of April 2020, CWD has been detected in 26 states in the US, four Canadian provinces, South Korea, and several Scandinavian countries ([Fig. 1](#)). In Pennsylvania, approximately 460 free-ranging white-tailed deer have tested positive since the initial detection in 2012 and CWD remains an ongoing threat to the Commonwealth's deer and elk populations.



**Fig. 1.** Distribution of CWD detections in North America as of July 2020. Note: detections at the Toronto Zoo in Ontario, Canada and depopulations in Lancaster County, Pennsylvania are not depicted; CWD has also been detected in South Korea, Finland, Norway, and Sweden. *Courtesy of United States Geological Survey - National Wildlife Health Center.*



CWD is classified as a transmissible spongiform encephalopathy ([TSE](#)) and is similar to other TSEs like scrapie in sheep, BSE (also known as mad cow disease) in cattle, and CJD in humans. Overwhelming scientific evidence supports that misfolded [prion](#) proteins are the cause of TSEs. While prions are found naturally in mammalian tissue, the introduction of the infectious CWD prion leads to the misfolding of these normal prions, thereafter, making them resistant to breakdown and capable of causing disease. Due to the higher amount of prions in lymphoid and central nervous system tissues, neurodegenerative signs are seen in infected cervids as the accumulation of misfolded prions create sponge-like holes in the brain (Williams and Young 1980).

CWD transmission can occur through direct animal-to-animal contact as well as indirectly through prion-contaminated environments. CWD-infected individuals shed prions through saliva, urine, and feces; infected carcasses can also contribute to environmental contamination (Mathiason et al. 2009). Studies have shown that CWD prions can remain infectious even after passing through the gastrointestinal tract of scavengers and predators (VerCauteren et al. 2012; Nichols et al. 2015). Laboratory research has demonstrated that certain plants, such as wheat and barley grass, can absorb and uptake small amounts of prions from contaminated soils, suggesting that plants could also serve as a source of infection (Rasmussen et al. 2014; Pritzkow et al. 2015). Once in the environment, CWD prions may remain infectious in the soil for anywhere from several years to decades (Miller et al. 2004). Different soil compounds, such as mineral and organic compounds, can bind to prions. Some TSE-associated prions can bind to montmorillonite, a type of clay mineral in soil, which may increase prion infectivity (Johnson et al. 2006). The enhanced transmissibility of soil-bound prions may explain the environmental spread of some TSEs despite the presumably low levels that are shed into the environment (Johnson et al. 2007). While attempts to decontaminate infected locations have been unsuccessful, a recent study found that soils with higher concentrations of humic acid, a major component of soil organic matter, may decrease prion infectivity and reduce infectious prion concentrations in the environment (Kuznetsova et al. 2018). Despite ongoing research, there is currently no treatment or vaccine for CWD or any other TSE. In fact, recent evaluation of a novel elk CWD vaccine found that it actually accelerated the onset of disease when administered to elk (Wood et al. 2018).

CWD is further characterized by having a long incubation period; CWD-infected cervids may not show clinical signs of the disease for up to 18 to 24 months post-infection (Tamgüney et al. 2009). Deer that appear outwardly healthy could already be infected with the disease. Cervids shed infectious prions throughout the disease course including during the preclinical phase (Henderson et al. 2015; Tennant et al. 2020). Clinical signs of the disease include lowered head, lowered ears, progressive weight loss, rough hair coat, excessive salivation, excessive thirst, excessive urination, and other behavioral changes (Williams 2005). However, these clinical signs are not exclusively unique to CWD and could be due to other conditions, such as malnutrition or vehicle trauma. Studies have shown that CWD-infected cervids are more likely to die from predation, vehicle collisions, or hunter harvest prior to succumbing to the disease due to increased vulnerability resulting from the disease-driven physiological and behavioral changes (Krumm et al. 2005; Edmunds et al. 2016; DeVivo et al. 2017).

Cervid genetics and differing prion strains likely play a role in cervid susceptibility to CWD and its spread across the landscape. Variations in the prion protein gene in cervids can affect individual susceptibility to and progression of CWD (Robinson et al. 2012; Haley et al. 2019). However, cervids with the genotypes that are less susceptible to CWD are relatively rare. Cervids with these rare genotypes may require higher prion doses for infection and, once infected, have a slower progression of clinical disease (Hamir

et al. 2006; Otero et al. 2019). Slower progression of the disease does not preclude cervids from shedding prions into the environment; in fact, these individuals may shed prions for a longer period of time before the disease runs its course. It is important to note that decreased susceptibility does not equal immunity; such cervids can still get infected and will die from the disease. Certain populations of deer in Pennsylvania within Bedford, Blair, Huntingdon, Franklin, and Fulton counties have a significantly higher frequency of the more susceptible genotype than deer populations previously surveyed from New Jersey, Wisconsin, Wyoming, and Canada (Blanchong et al. 2009; Robinson et al. 2012; Miller and Walter 2019). Therefore, if not managed effectively, CWD might have a greater impact on the deer population in these areas of Pennsylvania compared to other regions. Further complicating matters, different strains of the CWD prion exist. Infectivity towards specific cervid species, disease progression following infection, as well as dose dependence for infection can vary across these strains (Duque Velásquez et al. 2015; Bian et al. 2019).

## *Disease Implications*

### Human Health

To date, there have been no known cases of CWD infecting humans. However, a historical precedent was set in the 1990s during the mad cow disease epidemic in the United Kingdom. During that outbreak, humans contracted variant CJD following consumption of BSE-infected meat. Currently, the CDC recommend that no one consume meat from a CWD-positive animal (Centers for Disease Control and Prevention 2020). Researchers continue to investigate the susceptibility of humans to CWD and, to date, no direct link has been found. Experimental infections have demonstrated that certain primates (squirrel monkeys) could contract CWD through oral consumption of infected meat or brain tissue, raising concerns that humans could be susceptible to CWD (Race et al. 2014; Waddell et al. 2018). Therefore, in addition to advising hunters to wear gloves whenever handling any cervid carcass, the Game Commission strongly recommends that harvests, particularly within Disease Management Areas (DMAs), be tested prior to consumption.

### Livestock and Agriculture Industries

Currently, CWD poses a low risk to the cattle industry. Experimental intracerebral (i.e., directly into brain tissue) inoculations of cattle with CWD material derived from elk, mule deer, and white-tailed deer have led to infection (Hamir et al. 2005, 2007; Greenlee et al. 2012). However, that is far from a natural disease transmission route and other long-term studies have shown that cattle do not contract the disease through natural means; one study over a 10-year period in Colorado showed that oral inoculation and housing cattle in pens with CWD infected cervids did not lead to any CWD infections in the cattle (Williams et al. 2018). Nevertheless, as CWD strains continue to evolve, the threat to livestock remains uncertain.

The effects CWD will have on the agriculture industry are unclear. Export markets may be affected by the disease; two and a half years after Norway detected its first case of CWD in a free-ranging cervid, the country banned the import of hay or straw originating from any CWD-positive state or province in North America. If CWD becomes more of a public health concern, contamination of the landscape on which crops are grown and the tendency for prions to bind to certain plant material could have far-reaching effects on food safety, the agriculture industry, and the economy.

## Impacts to Deer and Elk Populations

CWD can contribute to population-level impacts in areas of relatively high estimated [prevalence](#). In Converse County, Wyoming, where CWD was first detected in the state in 1985, CWD prevalence over an 8-year period was 33% and was correlated with a 10% annual decline in white-tailed deer populations. CWD-infected white-tailed deer were also nearly five times more likely to die annually than uninfected deer (Edmunds et al. 2016). The high CWD prevalence and lower survival of CWD infected deer helped explain the declining deer population trend in this area. Other than conducting annual surveillance of hunter-harvested deer to estimate prevalence, CWD was not actively managed in this area. Based on this study, CWD negatively affected the long-term growth rate of the population. Mule deer research conducted in the same Wyoming county showed annual population declines greater than 20% during a time period when the average annual estimated CWD prevalence was 24% (DeVivo et al. 2017). Although other factors including habitat and productivity affected this population, results identified CWD as a critical contributor to the population decline. In Colorado, the estimated mule deer population declined in a study area that had a high estimated CWD prevalence (> 25 %) and the estimated average life expectancy for infected deer was only an additional 1.6 years after capture compared to an additional 5.2 years for uninfected deer (Miller et al. 2008). Research involving elk in Rocky Mountain National Park in Colorado revealed that if estimated CWD prevalence exceeded 13%, elk population declines would occur even in the absence of hunting or other sources of mortality (Monello et al. 2014). If Pennsylvania follows similar trends, CWD could negatively impact the Commonwealth's cervid population.

## Impacts to Hunting and Wildlife Conservation

Lower survival due to CWD can lead to reduced hunting opportunities (DeVivo et al. 2017). Currently, hunting is the primary mortality factor for both deer and elk in Pennsylvania (Rosenberry et al. 2009; Banfield and Rosenberry 2020). As CWD mortalities increase, deer and elk populations will not be able to sustain the same level of hunter harvest. Furthermore, as new areas in the Commonwealth detect CWD, hunters may choose to hunt elsewhere or stop hunting altogether. Surveys conducted by the Game Commission have found that more than 20% of hunters in Pennsylvania would have a decreased interest in deer hunting if any CWD-positive deer were found in the area they hunt (unpublished data, Pennsylvania Game Commission 2018). Fewer deer and elk hunting opportunities and/or a decrease in hunter participation will negatively impact Pennsylvania's hunting traditions.

Deer hunting represents a significant source of revenue for wildlife conservation in Pennsylvania. Total annual deer-related revenue (e.g., licenses, permits, stamps) for the Game Commission has averaged close to \$25 million since 2015. The potential economic losses resulting from a decline in deer hunting opportunities and participation in Pennsylvania, be it through decreased license and/or hunting gear sales, would reduce funding not just for the Game Commission's wildlife management activities, but for wildlife conservation activities nationwide. Less revenue would be raised by the Wildlife Restoration Trust Fund via the Pittman-Robertson Act of 1937, now known as the Federal Aid in Wildlife Restoration Act, which raises funds through a nationwide 11% tax on the sales of long guns and ammunition, as well as a 10% tax on the sales of handguns.

## *Chronic Wasting Disease Management in Other States*

In 2005, New York detected CWD in five white-tailed deer in two captive deer herds in Oneida County. Within weeks, deer managers used a combination of hunter harvest and [targeted removals](#) to remove over 300 deer from the local area. Two additional free-ranging deer tested positive for CWD during these efforts. In the five years following the initial detection, nearly 30,000 samples were analyzed for CWD statewide. No additional positives were detected during that time and no new cases have been detected since (New York State Department of Environmental Conservation 2020). A surveillance system that detected the disease early, followed by immediate management actions, enabled New York to prevent the disease from becoming established in their deer population.

Many states have not been as fortunate as New York. However, some states have been able to manage cervids and CWD in a manner that keeps prevalence low. Options to manage CWD after it has become established in an area are currently limited. The only management strategy that has proven effective in reducing or maintaining a low CWD prevalence is reducing or maintaining lower deer [abundance](#). In Colorado, efforts to reduce deer abundance may have reduced a CWD outbreak (Geremia et al. 2015). In Illinois and Wisconsin, lower deer abundance may also explain lower CWD sample prevalence. Using the number of antlered harvests as an index to the population, counties in those two states with at least 3.0 antlered deer harvested per square mile had sample CWD prevalence rates that increased over time at a faster rate than counties with at least 50% fewer antlered deer harvested per square mile (unpublished data, Illinois Department of Natural Resources, Wisconsin Department of Natural Resources). Currently, Pennsylvania antlered harvest density exceeds 1.5 antlered deer per square mile in every WMU and exceeds 3.0 antlered deer per square mile in 18 of 23 WMUs.

CWD has the potential to infect a large portion of a white-tailed deer population. Within areas of Iowa and Dane counties in Wisconsin, sample prevalence in adult males has risen from 8-10% to 35% since 2002 with some areas showing over 55% of adult males as CWD-positive. Over the same time period, sample prevalence in adult females has also risen from 3-4% to 15% with some areas showing over 35% of adult females as CWD-positive (Wisconsin Department of Natural Resources 2020). In West Virginia's core area within Hampshire County, sample prevalence has increased from 3% to more than 30% since 2005 (unpublished data, West Virginia Division of Natural Resources). These results from midwestern and eastern white-tailed deer populations serve as a warning to Pennsylvania.

The successes and struggles from other states provide guidance in how to manage CWD in Pennsylvania. The success stories offer encouragement along two fronts: that increased deer removals can prevent CWD from becoming established in new areas; and reducing or maintaining lower deer abundance can keep sample CWD prevalence low in areas where the disease is already established. Likewise, struggles with garnering support for management strategies from hunters and the general public provide lessons on the importance of effective communication and cultivating community support and involvement. Reflecting on other states' experiences with CWD management has understandably played a significant role in the development of this Response Plan.

## *History of Chronic Wasting Disease in Pennsylvania*

The Pennsylvania Game Commission began testing cervids for CWD in 1998, 14 years before it was first detected in the Commonwealth (see [Surveillance](#)). In 2003, a CWD Interagency Task Force was established and the first CWD Response Plan was developed for the Commonwealth. The plan was subsequently updated in 2005 and 2011. One complication during these early years was the transfer of authority over the captive cervid industry from the Game Commission to the PDA in 2006, which divided cervid management between two agencies (Pennsylvania General Assembly 2006). Prior to being detected in Pennsylvania, CWD was detected in the neighboring states of New York and West Virginia (2005), Virginia (2010), and Maryland (2010). To prevent CWD from becoming established in Pennsylvania, the Game Commission has banned the importation of [high-risk cervid parts](#) from states and provinces known to have the disease.

### DMA 1

In October 2012, CWD was detected in a captive white-tailed deer facility in Adams County ([Fig. 2](#)). The facility was quarantined by the PDA, depopulated, and samples were tested for CWD. Results revealed one additional positive in the captive herd. Concurrently, [Disease Management Area \(DMA\) 1](#) was created (see [Geographic Designations](#)) and the Game Commission implemented the following: a ban on removing high-risk parts from DMA 1, a ban on the feeding of deer and/or use of natural urine-based lures within DMA 1, and enhanced disease surveillance through road-killed deer collection and increased sampling of hunter-harvested deer. In 2017, after no additional CWD-positive deer were detected over five consecutive years of disease surveillance (4,696 samples), DMA 1 was dissolved.

### DMA 2

In November 2012, CWD was detected in free-ranging deer within Pennsylvania for the first time. The three hunter-harvested samples were from Bedford and Blair counties within Wildlife Management Unit (WMU) 4A, leading to the establishment of DMA 2. Since these detections involved free-ranging deer, in addition to instituting the same DMA-wide restrictions and enhanced surveillance that had been applied to DMA 1, recommendations were made to reduce deer abundance in the area through increased antlerless allocations. Unfortunately, these measures to increase harvest opportunities were not implemented. Harvest opportunities were further reduced when the antlerless firearms season for the 2014-2015 hunting season was reduced from 12 to seven days. To encourage additional deer harvests, DMA 2 harvest permits were created in 2014 and available for use during archery, firearm, and muzzleloader seasons.

The recommendations originally made in 2013 to reduce deer abundance were adopted prior to the 2015-2016 hunting season. However, by that time, additional positives had already expanded the boundaries of DMA 2 to cover an area nearly three times its original size. Prior to the 2017-18 hunting seasons, the DMA 2 permits were replaced by Deer Management Assistance Program ([DMAP](#)) permits. DMAP permits were used in defined locations (units), at a limit of two permits per hunter per unit and enabled concurrent antlered/antlerless harvests during the first five days of the firearms season.

CWD was not detected in a captive facility within DMA 2 until 2016. Since that time, CWD has been detected in 17 captive cervid facilities within or adjacent to DMA 2 ([Fig. 2](#)). Depopulation has occurred

within seven of those infected facilities and the remaining facilities still house captive deer (see [Captive Cervid Facilities](#)). Additionally, two targeted removals of free-ranging deer were performed, removing less than 100 deer total, in areas immediately surrounding CWD-positive captive facilities in Fulton County in 2017 and Franklin County in 2018. Those actions resulted in the removal of one additional CWD-positive free-ranging deer.

In 2018, the Game Commission initiated a research project within DMA 2 to investigate the effectiveness of rapidly reducing deer abundance on CWD prevalence. While hundreds of deer were captured and monitored with GPS collars, deer population reductions did not occur. Originally 892 square miles in Blair and Bedford counties, DMA 2 has grown to 7,470 square miles in portions of 17 counties in south-central Pennsylvania as of the 2019-20 hunting season ([Fig. 2](#)).

### DMA 3

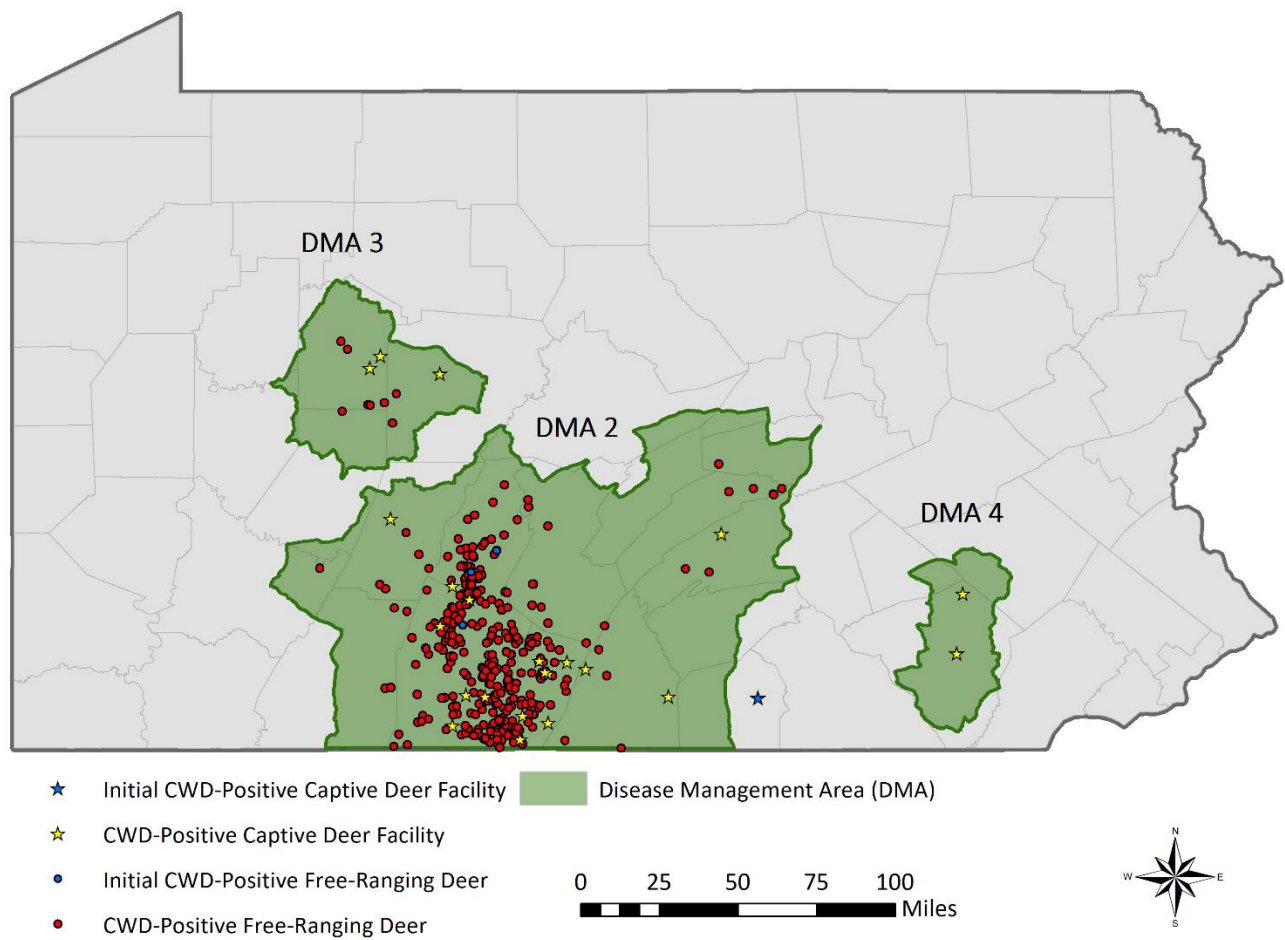
DMA 3 was established in 2014 after CWD was detected in two captive cervid facilities in Jefferson County. These facilities applied for federal indemnity and were depopulated and 12 additional CWD-positive deer were detected. DMA-wide restrictions and enhanced surveillance were instituted. Surveillance efforts were increased in the following years and in 2017, three free-ranging deer in Clearfield and Jefferson counties tested positive for CWD. Subsequently, DMA 3 expanded to cover more than 2,000 square miles. Increased antlerless allocations were adopted prior to the 2018-19 hunting season. Additionally, a targeted removal operation occurred in Clearfield County in an area surrounding a CWD-positive [clinical suspect](#) deer. In 2019, DMA 3 was expanded due to a deer from a Clearfield County captive cervid facility testing positive for the disease. This deer had been transferred from a Fulton County captive facility within DMA 2, which highlighted the urgent need to work with the PDA to expand DMA-wide regulations to captive cervid facilities. That same year, CWD was detected in four free-ranging deer across Indiana and Jefferson counties. Currently, DMA 3 is the second largest DMA in Pennsylvania covering a total of 1,233 square miles ([Fig. 2](#)).

### DMA 4

DMA 4 was established in 2018 after CWD was detected in a captive cervid facility in Lancaster County. The PDA oversaw depopulation of the facility, while the Game Commission introduced DMA-wide restrictions and enhanced CWD surveillance. Another captive cervid facility in Lancaster County tested positive for CWD in September 2019, which led to the DMA more than doubling in size. This facility has also been depopulated. To date, no CWD detections have been found in free-ranging deer in DMA 4. In 2019 alone, over 500 samples from free-ranging deer were tested from this area. DMA 4 currently covers 743 square miles in Lancaster, Lebanon, and Berks counties ([Fig. 2](#)).

The geographic distribution of CWD continues to expand across the Commonwealth and new cases are detected each year. Not only has the number of detections of CWD-positive deer continued to increase annually, the percentage of deer that test positive (i.e., sample prevalence), specifically within the core area of Bedford, Blair, and Fulton counties in DMA 2, has steadily increased since 2015 ([Table 1](#)).





**Fig. 2.** Disease Management Areas and CWD detections in both free-ranging and captive deer in Pennsylvania as of June 2020. Note: the blue star, representing the initial CWD detection in PA in 2012, was located in DMA 1, which was dissolved in 2017.

**Table 1.** CWD sampling and detections in all free-ranging deer in Bedford, Blair, and Fulton counties since 2012.

Year	# Tested	# CWD Detected	Sample Prevalence (%)
2012	143	3	2.1
2013	1,006	2	0.2
2014	780	5	0.6
2015	1,253	11	0.9
2016	1,257	25	2.0
2017	2,346	75	3.2
2018	2,382	108	4.5
2019	2,816	186	6.6
<b>Total</b>	<b>11,983</b>	<b>415</b>	

## *Captive Cervid Facilities*

Defined in statute as a “Cervidae Livestock Operation”, a captive cervid facility is an agricultural setting in which members of the Cervidae family are held in captivity. The PDA regulates the industry, overseeing licensing, inspection of facilities, and issuance of cervid importation permits. Exemptions to the Cervidae Livestock Operation license includes premises on fewer than 10 continuous acres and parties making less than \$10,000 in gross annual agricultural income as well as menageries, which are regulated by the Game Commission under 34 Pa. C.S. 2964. However, the PDA does have authority to regulate every CWD susceptible species of cervid under the dangerous transmissible disease quarantine order provisions of the Domestic Animal Law under 3 Pa. C.S.A. 2329. At the time of the 2003 CWD Response Plan, approximately 716 deer and 94 elk propagators were licensed in Pennsylvania (Schneck 2012). In 2007, the Pennsylvania Deer Farmers Association estimated that the captive cervid industry had a \$103 million impact on Pennsylvania’s annual economy (Shepstone Management Company 2007).

As part of its regulatory responsibilities and commitments to avoid CWD infection per the 2011 CWD Response Plan, the PDA implemented inter and intrastate movement requirements following regulations established by USDA; however, these directives still allowed for the importation of live cervids. Two surveillance programs are available for Pennsylvanians who possess farmed or captive cervid species that are susceptible to CWD (i.e., deer, elk). The first is a voluntary CWD Herd Certification Program (HCP); those with captive cervid herds who participate in this program and have no evidence of CWD for five consecutive years are designated as Certified. The second is a mandatory CWD Herd Monitored Program (HMP) through which a Certified status cannot be achieved. The HCP is a more rigorous disease surveillance program as it requires CWD testing of all cervids > 1 year of age (“adult”) that die for any reason including harvest and slaughter, while herds participating in the HMP are required to test 50% of all adult deer mortalities. Both HCP and HMP facilities may receive deer from out-of-state, so long as those cervids originate from a “certified” herd in that state. However, in order for a captive facility in Pennsylvania to sell and ship cervids out of the state, they must be enrolled in the HCP. Both programs have established fencing and inventory requirements, are subject to inspection by the PDA, and institute obligatory reporting of any cervids that have escaped or are exhibiting signs consistent with CWD infection to the PDA Bureau of Animal Health and Diagnostic Services.

When a CWD-positive cervid is detected in a captive facility, the PDA’s response includes: immediate quarantine of the CWD-positive facility (“index premises”); an epidemiological investigation that traces movement of animals from the known positive herd (“index herd”) in the backward and forward direction (i.e., locations where animals from the index herd came from (trace-back) and locations where animals from the index herd moved to (trace-forward)); long-term mandatory CWD testing of all cervid mortalities at the CWD-positive facility, as well as at any additional facilities identified by trace-back; and facilitating discussions between herd owners and the USDA for access to federal indemnification funds for voluntary depopulation of CWD-positive herds.

Since 2012, CWD has been detected in 207 captive deer on 23 different captive cervid facilities in Pennsylvania; 17 occur within DMA 2, three within DMA 3, two within DMA 4, and one within DMA 1, which has since been dissolved. Twelve of the 23 positive facilities have been depopulated while the remaining 11 continue to operate cervid herds.

As of January 30, 2020, 36 captive cervid facilities across 15 counties in Pennsylvania have been placed under quarantine by the PDA. A quarantine is placed on any captive cervid facility “where CWD has been identified in animals in the last 60 months or (if) animals may have been exposed in the last 60 months” (Pennsylvania Department of Agriculture - Bureau of Animal Health and Diagnostic Services 2020). Twenty-five of these quarantined captive cervid facilities still actively manage herds.

The PDA reports cervids that have escaped from captive facilities to the Game Commission regardless of the facility’s CWD status. Sharing this information allows the agencies to coordinate CWD risk mitigation efforts; it is the Game Commission’s policy to dispatch any escaped cervid encountered outside of a facility and the PDA is responsible for performing subsequent CWD testing. Hunters may also incidentally harvest escaped captive cervids. To date, no escaped captive cervid has tested positive for CWD. Upon encountering any escaped cervid, ear tags and/or microchips can assist in determining that deer’s origins. However, the HMP does not mandate that participating herds apply forms of identification to their cervids, so there may be occasions when the originating facility cannot be determined.

### *Lessons Learned in Pennsylvania*

Managing CWD requires substantial commitment of staff and financial resources from the Game Commission over an extended period of time. It is a year-round endeavor, with tasks that include sample collection and data management, working with stakeholder groups, managing hunter-harvest carcass disposal sites, and developing and enforcing regulations. An “after action review” (AAR) meeting with Game Commission staff occurs in the spring of each year after all CWD results from the previous hunting season are available. The AAR meeting has proven very beneficial to agency operations, as it facilitates the development and adoption of an internal timeline for annual CWD management activities. The meeting itself was born out of the use of simulation exercises conducted within the Game Commission prior to 2012. Such exercises helped guide staff response to CWD when it was discovered, and by continuing discussions via annual AAR meetings, the Game Commission can identify improvements to CWD management strategies.

In 2013, the Game Commission’s Executive Director created a CWD Intra-agency Committee consisting primarily of biologists and communications specialists to address the science, applied mechanisms, and communications elements of CWD management. The group provides a range of expertise and differing perspectives that contribute creative strategies, identify new challenges, and foster continual staff engagement.

The CWD Interagency Task Force, established in 2003, continues to allow the Game Commission, the PDA, and other participating agencies to coordinate CWD management efforts in a structured way, share information, and remain informed. However, it has been nearly a decade since the group last developed a CWD Response Plan, so a revision incorporating current and planned policies, strategies, regulations, and new information about CWD and the human dimensions of its management is overdue.

The Game Commission will continue to work with the PDA to protect the free-ranging deer and elk of Pennsylvania. Several of the challenges that both agencies face may be resolved by implementing new solutions. For example, the Game Commission and the PDA have mutually identified data-sharing as an important component of CWD management and are working to improve data management systems and

compatibility. If the PDA were to adopt double fencing measures, which USDA has provided them the authority to do, contact between free-ranging and captive deer could be decreased (VerCauteren et al. 2007). Also, by prohibiting the export of captive cervids from DMAs, the potential for introduction of the disease into CWD-naïve areas can be significantly reduced. Federally-appropriated indemnity funds for CWD depopulations of captive cervid facilities are limited. However, funding depopulations may be cost-effective compared to the financial implications of additional or expanding DMAs, lost hunting opportunities, long-term CWD surveillance, and implementation of other CWD management strategies. The measures being considered by the Game Commission and the PDA have serious implications and effects, particularly to those who hunt or live closest to affected areas. However, collaboration, communication, and cooperation between these two agencies will be essential to the successful management of CWD.

Managing the spread and infection rate in Pennsylvania's free-ranging white-tailed deer also has proven extremely challenging. In areas with high deer abundance, more deer are exposed to the infectious prions either through direct contact with an infected deer or a contaminated environment. The number of free-ranging deer infected with CWD is increasing and the area of all DMAs continues to expand. If this trajectory of the disease continues in Pennsylvania, the sample prevalence in portions of Blair, Bedford, and Fulton counties will likely exceed 30% in the next one to two decades, and the potential for CWD to spread throughout the Commonwealth will rise. Ultimately, this is detrimental to deer populations throughout Pennsylvania, negatively impacting individuals' ability to enjoy deer through wildlife viewing, hunting opportunities, and exposes other species and humans to an unknown threat. If not contained, CWD could spread to Pennsylvania's elk herd, which is finite in number and restricted to a small portion of the Commonwealth. The introduction of CWD into this herd would be devastating. Implementing new measures now may help avoid the need to enact more drastic measures in the future and provides the Commonwealth with the best opportunity of slowing and possibly containing the spread of CWD across the landscape.

In Bedford, Blair, and Fulton counties, the CWD sample prevalence has increased nearly sevenfold since 2015 ([Table 1](#)). DMA 2 has expanded nearly ninefold since it was established in 2012. Pennsylvania is on pace with the number of CWD-positive deer and geographic spread of the disease to experience exponential increase in years to come. The Pennsylvania Game Commission and the public must make difficult decisions that will affect the future of wildlife and humans alike. Past strategies have proven insufficient. The Game Commission must reevaluate these strategies and transition to alternative actions to slow the spread and mitigate the effects of CWD.

Reducing or maintaining lower cervid abundance is the only effective method to reduce or maintain low CWD prevalence in free-ranging cervid populations (Association of Fish and Wildlife Agencies 2018). Lowering deer numbers reduces deer interactions, a natural form of social distancing. This reduces the spread of disease among deer, thereby reducing the risk of the disease becoming established in an area and spreading across the landscape. Although stakeholders support management actions to reduce the effect of CWD, lowering deer populations has been a historically controversial topic in Pennsylvania regardless of the reason for its implementation (unpublished data, Pennsylvania Game Commission) (Diefenbach et al. 1997; Frye 2006; The Wildlife Management Institute 2010). However, alternative options for managing CWD in free-ranging deer are limited to actions that only mitigate the disease's effects, such as restricting amplifiers (e.g., supplemental feeding) and infection sources (e.g., high-risk

parts or urine-based lures), and ensuring regulations are enforced. These actions alone are not enough to prevent an increase in CWD prevalence and spread of the disease across the Commonwealth.

Stakeholder engagement efforts will be critical to increase Pennsylvanians' understanding of, support for, and participation in CWD management. The Game Commission is committed to improving stakeholder engagement and outreach to local communities, hunters, landowners, and other stakeholders affected by CWD. In addition to the applied side of CWD management, the Game Commission will continue to engage the public and ascertain their concerns and motivations. We will be asking people to help explore the many issues that will arise as we take steps to combat the disease. It is vitally important that the Game Commission and the public work together in the development and implementation of this Response Plan to successfully curtail the spread of CWD.





# Management Goals, Objectives, and Strategies

## Goal 1: Minimize the effects of CWD on Pennsylvania deer and elk populations.

Objective 1.1: Prevent human-caused introductions of CWD into free-ranging cervid populations outside of [Disease Management Areas](#) (DMAs).

Strategy 1.1.1: Enforce existing bans on feeding deer and use and possession of [attractants](#) within DMAs and movement of high-risk cervid parts from DMAs.

Strategy 1.1.2: Reduce feeding of deer and use of attractants statewide by increasing educational outreach and awareness of the risks associated with these activities.

Strategy 1.1.3: Collaborate with the PDA to strengthen their oversight of captive cervid operations and mitigate the risks captive cervids and Pennsylvania's free-ranging deer and elk populations may pose to each other.

Strategy 1.1.4: Enforce existing ban on import of high-risk cervid parts from North American states and provinces where CWD has been detected. Expand ban to include all non-Pennsylvania domestic and foreign locations regardless of CWD status.

Objective 1.2: Quickly detect CWD infections in new areas (i.e., before sample prevalence exceeds 1% in new areas) so that management strategies can be implemented at the earliest opportunity.

Strategy 1.2.1: Refine diagnostic testing strategies and expand testing capacity to provide CWD testing results quickly.

Strategy 1.2.2: Refine surveillance strategy to efficiently detect spatial spread of CWD and change in sample prevalence over time.

Strategy 1.2.3: Annually evaluate statewide deer sampling and increase sample intensity if necessary.

Strategy 1.2.4: Maintain mandatory CWD testing of harvests of adult elk (> 1 year of age) and any mortalities encountered on the landscape.

Objective 1.3: Limit sample prevalence to  $\leq 1\%$  in adult deer (> 1 year of age) and meet surveillance goals within [Enhanced Surveillance Units](#) (ESUs).

Strategy 1.3.1: Increase deer hunting opportunities and implement or continue sampling of road-kill deer within ESUs.



Strategy 1.3.2: Monitor sample prevalence within ESUs to evaluate management strategies.

Objective 1.4: Within [Containment Zones](#) (CZs), prevent the disease from becoming established or spreading farther on the landscape.

Strategy 1.4.1: Increase deer hunting opportunities within CZs to maximize the removal of potentially exposed cervids.

Strategy 1.4.2: Prioritize and utilize targeted removals, with landowner permission, to maximize the removal of potentially exposed cervids.

Objective 1.5: Limit sample prevalence to  $\leq 5\%$  in hunter-harvested adult deer ( $> 1$  year of age) within [Established Areas](#) (EAs).

Strategy 1.5.1: Increase deer hunting opportunities to reduce deer abundance and remove more CWD positive deer from the landscape.

Strategy 1.5.2: Monitor sample prevalence within EAs to evaluate management strategies.

## **Goal 2: Increase stakeholder understanding of, support for, and participation in CWD management efforts.**

Objective 2.1: Foster two-way communications and utilize human dimension techniques to assess stakeholder values and opinions on Game Commission CWD management efforts.

Strategy 2.1.1: Review the CWD Communications Plan on at least an annual basis and refine as needed (see [Appendix B](#)).

Strategy 2.1.2: Identify stakeholder concerns and utilize the best platforms to both address stakeholder interests and Game Commission communications objectives.

Strategy 2.1.3: Develop support for Game Commission CWD management activities by providing consistent information that clearly illustrates management objectives, the necessity of management actions, and how they may impact stakeholders.

Strategy 2.1.4: Conduct educational outreach and marketing campaigns to communicate key messages about CWD.

Strategy 2.1.5: Provide up-to-date information of CWD testing results and Game Commission CWD management activities online and provide mechanisms by which stakeholders can submit comments, questions, or concerns.

Accomplishing these goals will minimize the impact of CWD on native white-tailed deer and elk in Pennsylvania. Since eradication is not feasible in areas with established infections, the management of CWD will require a sustained, long-term commitment and adaptive approach that will be continuously evaluated and adjusted as the science of CWD detection and management advances.



# Geographic Designations

In the following section, geographic areas are described that follow the Game Commission's response to an initial CWD detection from large areas of hundreds or thousands of square miles (i.e., Disease Management Areas) to tens of square miles (i.e., Enhanced Surveillance Units) to a few square miles (i.e., Containment Zones). An Established Area is created once CWD has become widespread and recurrent in an area.

## *Disease Management Areas*

**Disease Management Areas (DMAs)** are created when new CWD detections are found in free-ranging or captive deer in Pennsylvania. To designate a DMA, a 10-mile radius buffer is created around each new detection ([Fig. 3](#)). This buffer will be used to establish or expand an existing DMA. If a new detection is near the extent of an existing DMA boundary, either within or outside, the existing DMA's boundary could expand to encompass this latest detection. If a new detection is found within an existing DMA and its 10-mile radius buffer falls entirely or mostly within the existing DMA, no change will be made to the existing DMA's boundary. Alternatively, a new detection well beyond the boundaries of any existing DMA will lead to the creation of a new DMA. Actual distance of a DMA boundary from CWD detections will depend on local geography and availability of easily identifiable physical boundaries (e.g., roads, rivers). A 10-mile radius buffer is used because this area encompasses the dispersal distances of most deer in Pennsylvania (Long et al. 2008; Lutz et al. 2015). If no additional CWD detections occur along the periphery of a DMA for five consecutive years, the DMA boundary may be reduced. If no additional CWD detections occur *throughout the entire* DMA for five consecutive years, the DMA will be dissolved.

Purpose: To reduce human-related activities that amplify and spread CWD and to increase the probability of early detection of CWD in areas surrounding known CWD detections through increased sampling efforts within the DMA.

Management Approach: Strategies to prevent amplification of CWD within a DMA include prohibiting feeding of deer and use of deer attractants as well as reducing deer abundance. Strategies to prevent spread of CWD beyond DMA boundaries include restrictions on transporting high-risk parts. Strategies to increase CWD sampling will include use of road-killed deer collections, use of head collection bins for voluntary sample submissions by hunters, and increased effort by Game Commission staff to collect samples (e.g., meat processors, clinical suspects).

Measure of Success: Public compliance with restrictions, hunter cooperation with abundance reduction efforts, prevention of geographic spread of CWD, early detection or containment of CWD with increased sampling effort, and reduction or dissolution of DMA(s).

## *Enhanced Surveillance Units*

**Enhanced Surveillance Units (ESUs)** are individual areas within DMAs that may be created when there is a new CWD detection in a free-ranging or captive cervid that is at the leading edge of disease expansion

or at least 5 miles from any other past CWD detection. An ESU encompasses an approximately 3 to 5-mile radius buffer surrounding a new, isolated detection ([Fig. 3](#)). This buffer radius was chosen to focus surveillance efforts to an area within which the CWD-infected deer was likely to have traveled and interacted with other cervids. This buffer radius should provide enough samples to meet the target sample size. Each ESU will have an associated DMAP unit and the boundaries will be delineated by easily identifiable features such as roads or waterways; therefore, sizes among ESUs will vary. In these new areas, the extent and sample prevalence of CWD are unknown.

Purpose: To determine the extent of CWD infection and limit CWD sample prevalence in adult deer to  $\leq 1\%$ .

Management Approach: Increased CWD sampling via hunter harvest will be used to determine the extent and sample prevalence of CWD. In addition to increased hunting opportunities, enhanced CWD sample collection – including increasing public awareness of the need for samples and increased availability of head collection bins – will occur within an ESU.

The implementation of management strategies within an ESU is dependent on when the new CWD detection occurs. For example, if the new detection occurs in late December, the Game Commission will have already completed collection of samples during deer aging operations. Establishing the ESU boundaries, placing head collection bins, informing the hunting community of the urgent need for samples, and providing additional hunting opportunities before the end of that hunting season may not be feasible. In such cases, management changes may not be implemented until the following hunting season. At a minimum, ESUs will be created and the public will be notified in a timely manner regardless of when the CWD detection occurs.

The annual ESU target sample size will provide a 95% probability of detecting CWD if the disease sample prevalence amongst deer within the ESU is at least 1%. Given the range of deer abundance in Pennsylvania, an annual sample of approximately 250-300 deer will fulfill the target sample size and can be achieved with hunter harvest and landowner cooperation.

Sampling results will be analyzed each year and will guide future management actions. If no additional CWD infections are detected for five consecutive years, the ESU will be dissolved. Conversely, if more CWD-positive deer are detected and spread of the disease from the initial detection is evident, the ESU may transition into an EA and management actions will be applied over a larger area (see [Established Areas](#)).

Measure of Success: Fulfillment of annual ESU target sample size, maintenance of CWD sample prevalence to  $\leq 1\%$ , and dissolution of ESU.

## *Containment Zones*

**Containment Zones (CZs)** are smaller areas created within ESUs that are designated to facilitate focused management strategies to prevent CWD from becoming established or spreading farther on the landscape ([Fig. 3](#)). A CZ encompasses an approximately 1-mile radius around the location of the new CWD detection. The size of a CZ was determined based on deer home ranges in Pennsylvania and the need to remove potentially exposed individuals (Walter et al. 2018). CWD infections exhibit a clustered

distribution, with highest prevalence occurring near the point of introduction (Wasserberg et al. 2009). Therefore, deer in closer proximity to CWD detections are more likely to become infected and spread the disease (Joly et al. 2006). As a result, areas directly surrounding CWD detections are considered higher risk for transmission and increased management actions are crucial to control the disease. When management objectives within a CZ are fulfilled, the CZ will be dissolved but the area will remain part of the associated ESU.

Purpose: To prevent the establishment and spread of CWD by removing the most high-risk deer from the area immediately surrounding a CWD detection.

Management Approach: In cooperation with landowners and stakeholders, increase deer hunting opportunities and implement targeted removals during the post-hunting period, as needed, by wildlife professionals with landowner permission.

Before implementing management actions in a CZ, the Game Commission will meet with local landowners and stakeholders to discuss management options and identify the most practical methods to reduce deer abundance in the area. Implementation of management strategies in a CZ will occur as quickly as possible; however, exact timing will be determined on a case-by-case basis at the discretion of Game Commission staff and is dependent on landowner cooperation. If resources to implement management strategies in multiple active CZs are insufficient, a weighted prioritization method will be utilized to determine how resources are distributed.

Measure of Success: No additional detections of CWD following CZ creation and upon fulfillment of management objectives, dissolution of CZ.

## *Established Areas*

**Established Areas (EAs)** are smaller areas within DMAs that are characterized by CWD detections occurring contiguously and consistently across a large area from year to year. In an EA, CWD is considered to be established within the deer population and, coupled with environmental contamination, poses a long-term threat to neighboring areas. As of July 2020, there is only one EA in Pennsylvania, which is centered in Blair, Bedford, and Fulton counties ([Fig. 3](#)). It is comprised of WMU 4A and a portion of WMU 2C.

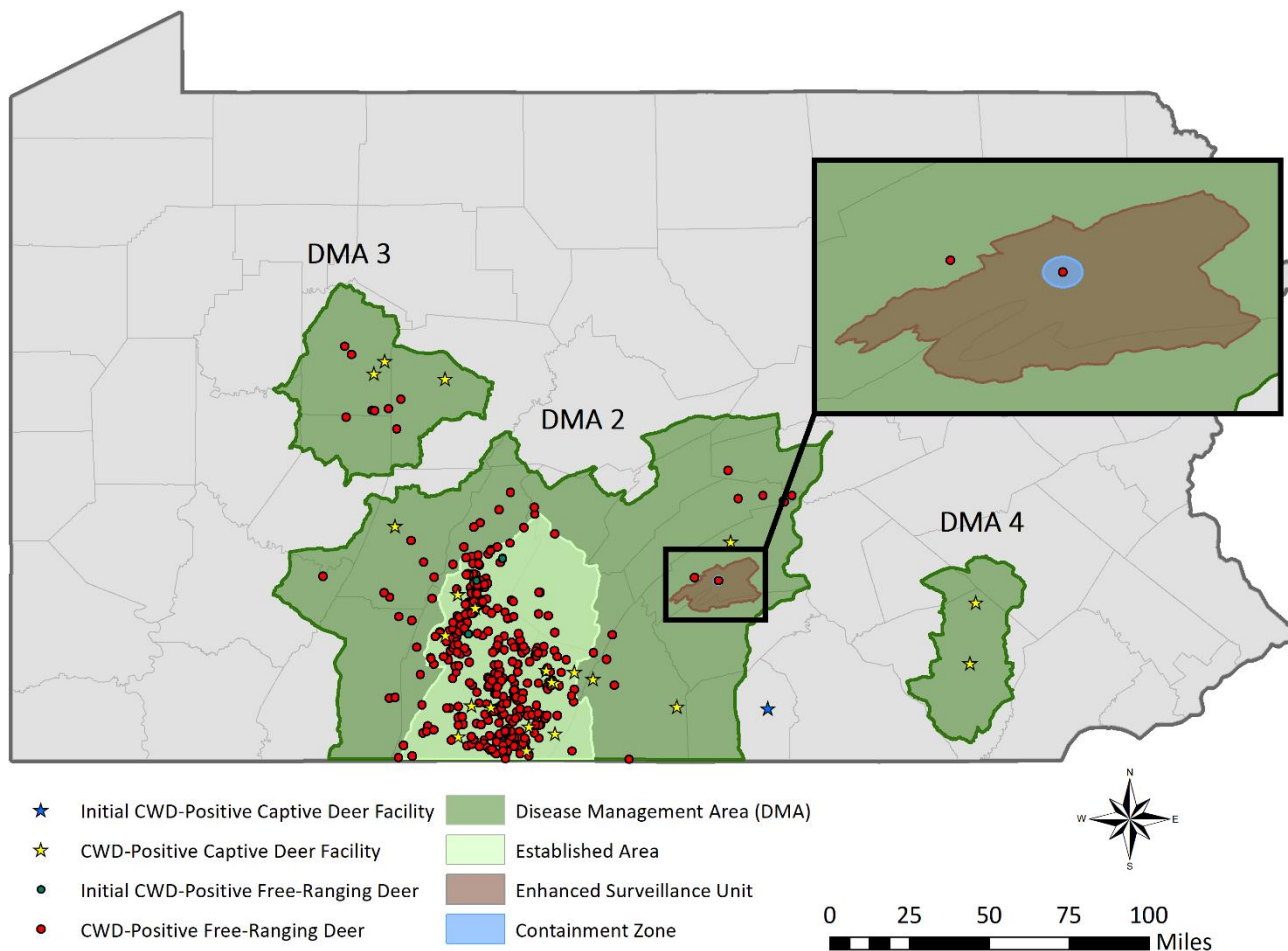
Purpose: To limit CWD sample prevalence in hunter-harvested adult deer to  $\leq 5\%$  and to minimize the risk of human-caused movement of CWD high-risk parts to other areas.

Management Approach: Reducing deer abundance will be the primary management strategy implemented within an EA. Such an approach will mitigate disease transmission risks, remove diseased cervids from the landscape, and prevent further contamination of the environment. Deer abundance reductions will occur through hunting and be adaptive in its approach to increasing deer harvests. Any changes to deer hunting regulations will occur based on regular evaluations of management success. A ban on the movement of high-risk cervid parts outside of EAs should be considered to prevent CWD sample prevalence in non-EA areas within the DMA from increasing.



According to the Colorado Chronic Wasting Disease Response Plan, data and modeled disease trends show that CWD prevalence increases slowly until a 5% threshold is crossed, after which point disease prevalence accelerates drastically (Colorado Parks and Wildlife 2018). Similar patterns have been observed in other states with white-tailed deer, such as West Virginia and Wisconsin. Maintaining CWD sample prevalence below this threshold would prevent the infection rate from rapidly increasing and minimize the need to implement additional, more aggressive management strategies in the future.

Measure of Success: A decline and maintenance of CWD sample prevalence to  $\leq 5\%$ .



**Fig. 3.** Locations of CWD detections, Disease Management Areas (DMAs), and Established Area as of June 2020, along with a theoretical Enhanced Surveillance Unit with Containment Zone for CWD management in Pennsylvania. Note: the blue star, representing the initial CWD detection in captive facilities in PA in 2012, was located in DMA 1, which was dissolved in 2017.



# Management Strategies

The following management strategies are intended to assist in controlling CWD by reducing potential disease transmission and limiting the geographic spread of the disease. CWD management strategies currently implemented by the Game Commission are described. Additional, more comprehensive CWD management strategies are also proposed.

## *Regulations on Movement of High-Risk Parts*

To prevent human-caused introductions of CWD into uninfected areas, removing high-risk cervid parts from a DMA is unlawful (see [Disease Overview](#)). Additionally, at a more finite scale within a DMA, movement of high-risk cervid parts outside of EAs should be prohibited. To assist hunters in complying with this ban, the Game Commission provides dumpsters during the hunting season in various locations within DMAs for disposal of whole carcasses or high-risk parts. The locations for the dumpsters are provided on the Game Commission's website: [pgc.pa.gov/cwd](http://pgc.pa.gov/cwd). High-risk parts may also be disposed of in commercial waste destined for lined landfills. Leaving high-risk parts on the landscape is strongly not recommended as it may further contribute to environmental contamination.

Additionally, importing high-risk cervid parts into Pennsylvania from CWD-positive states or Canadian provinces is unlawful. As of May 2020, this ban extends to 26 states and four Canadian provinces. However, to be most effective, it is proposed that this ban be expanded to include all non-Pennsylvania domestic and foreign locations regardless of CWD status. CWD monitoring efforts vary by region and a lack of CWD detections does not necessarily equate to CWD-free cervid populations.

The following items are not considered high-risk and can be imported into Pennsylvania or taken outside of a DMA or EA: any remaining meat, on or off the bone; skull plate with antlers attached if no brain or spinal cord material is present; cleaned capes with no visible brain or spinal cord material present; tanned or raw hides with no visible brain or spinal cord material present (i.e., no brain-tanned hides); upper canine teeth, if no root structure or soft tissue material is present; and finished taxidermy mounts.

## *Regulations on Feeding Free-Ranging Cervids*

Within DMAs and all sub-designated areas (i.e., EAs, ESUs, CZs), the feeding of free-ranging deer is illegal. Providing food and/or supplement sources (e.g., mineral licks) to cervids leads to an unnatural congregation of animals, amplifying both direct and indirect disease transmission (see [Disease Overview](#)). Feeding brings deer in close proximity to each other and within range of oral and respiratory droplets and other bodily secretions known to contain infectious CWD prions. Feeding sites harbor and concentrate disease agents deposited by infected animals creating a reservoir of disease. Deer cannot avoid fecal consumption at feed sites. Some diseases and parasites spread through ingestion of contaminated excreta, including CWD. Other diseases known to be transmitted at feed sites include bovine tuberculosis, brucellosis, salmonellosis, toxoplasmosis, lungworms, and tapeworms.

Artificial feeding can also result in long-term habitat destruction, increased vehicle collisions, habituation to humans, alteration of normal behavioral patterns, and pose risks to nontarget species as well. An important distinction should be made between the act of feeding and food plots: Food plots create a more natural feeding setting that still allows for spacing between individuals since food is not provided from a single point location. Increasing educational outreach and awareness of the negative consequences associated with artificial feeding are essential to help reduce public participation in this activity.

### *Regulations on Cervid Attractants*

The use and possession of natural urine-based lures are currently prohibited within DMAs. Such attractants are often manufactured from urine collected from captive cervids. While cervids may have appeared healthy at the time of collection, due to the long incubation period of CWD, they may have been shedding infectious prions (see [Disease Overview](#)). Current industry CWD testing of urine has not been approved by the USDA and must be further evaluated before placing confidence in results. Additionally, lure/scent manufacturers and product suppliers abiding by self-imposed restrictions through the Archery Trade Association Deer Protection Program or similar program may not be sufficient to ensure CWD-free products.

In addition to potentially seeding the environment with infectious CWD prions, the use of cervid attractants, regardless of source material, can lead to the unnatural congregation of cervids. Game Commission survey results also show that antlered harvest success is not affected by the use of attractants (unpublished data, Pennsylvania Game Commission 2018). Given the risks associated with using these products and the fact that attractants do not improve harvest success, increased educational outreach is imperative to reducing hunter use of attractants to help minimize potential introductions of CWD into new areas.

### *Increased Hunter Harvest*

Currently, the best management strategy to control CWD is to reduce deer abundance in infected areas to slow the rate of disease transmission and remove infected individuals from the landscape (Association of Fish and Wildlife Agencies 2018). To increase hunter harvest of cervids in CWD-affected areas of Pennsylvania, the following management strategies may be implemented:

#### Increase Antlerless License Allocations

Antlerless deer constitute the vast majority of the deer population, make the greatest contribution to population growth, and are the deer most likely to spread CWD via natural dispersal (i.e., 12 to 18-month-old males and females dispersing from natal ranges). Therefore, increased antlerless harvests will reduce deer abundance and potential for natural dispersal, which in turn will reduce opportunities for disease growth and spread.

Depending on the scale of application, two options exist for increasing antlerless harvests. First, WMU antlerless license allocations can affect deer population abundance over large scales (i.e., > 1,000 square miles). Given the current status of CWD in Pennsylvania, the WMU scale is

appropriate for deer abundance reduction in some situations (e.g., the Established Area). Second, hunters can increase antlerless harvests through their use of DMAP permits to reduce deer abundance on smaller scales (i.e., tens to hundreds of square miles) and, through subsequent sample submission, assist in fulfilling ESU target sample size objectives as needed.

### Concurrent Seasons

Concurrent firearms seasons allow for the hunting of both antlered and antlerless deer. Expanding concurrent firearms seasons to WMUs affected by CWD (or statewide) would simplify deer hunting regulations, removing much of the inherent confusion between WMU antlerless licenses which can only be used during a 7-day concurrent firearms season in certain WMUs and DMAP permits which can be used through the 14-day firearms season. An expansion would also have the added benefit of providing additional opportunities for deer hunters and generate more consistent antlerless harvests from year to year.

### Additional or Extended Seasons

Additional deer hunting opportunities during existing seasons (e.g., all hunters can hunt during October antlerless firearms season) or season extensions (e.g., a firearms season in January) may be considered at all levels of scale (i.e., DMA, EA, ESU, CZ). Such changes would depend on evaluations of deer population dynamics and stakeholder input.

### Remove Antler Point Restrictions

The biological and social implications of removing antler point restrictions (APRs) for CWD management are not completely understood. Biologically, removal of APRs would likely lead to removal of most (i.e., 70-80%) antlered deer from the population each year. Although this removal would significantly impact the number of antlered deer surviving in the population, it would not address the remaining 75-80% of the deer population that is capable of perpetuating (e.g., fawn births, family group contacts) and spreading CWD (e.g., dispersal of 12 to 18-month-old deer). Thus, removal of APRs must occur in conjunction with overall deer abundance reduction efforts. Socially, population reductions without APRs have not succeeded in Pennsylvania. Pennsylvania's deer populations grew throughout the 1980s and 1990s despite efforts to reduce the deer population (Diefenbach et al. 1997). Following implementation of APRs and increased antlerless harvests in 2002, deer populations declined and were maintained at lower levels in most WMUs for a decade (Wallingford et al. 2017).

Based on these factors, it is recommended that APRs be removed in CZs. In these small areas where targeted removals may occur, removal of APRs will help achieve the management objective to remove as many deer as possible. At this time, removing APRs at larger scales (i.e., ESUs, DMAs, EAs) is not recommended. Removal of APRs should be limited to situations where it achieves a clearly defined objective. Based on existing data, focusing harvest effort on antlerless deer at these larger scales will support more CWD management objectives including increased sampling, reducing CWD spread, and reducing deer abundance. If circumstances arise where removing APRs will aid in achieving CWD management objectives in these areas, recommendations and justifications will be provided.

## *Targeted Removals*

Targeted removals are small-scale operations carried out by USDA-APHIS-WS professionals. They are most likely to occur within CZs and any targeted removals would require landowner permission, cooperation, and collaboration. The timing of removals will be determined by Game Commission staff on a case-by-case basis and may depend on the location of the positive detection. This strategy aims to prevent the disease from becoming established or spreading farther on the landscape.

## *Elk Population Considerations*

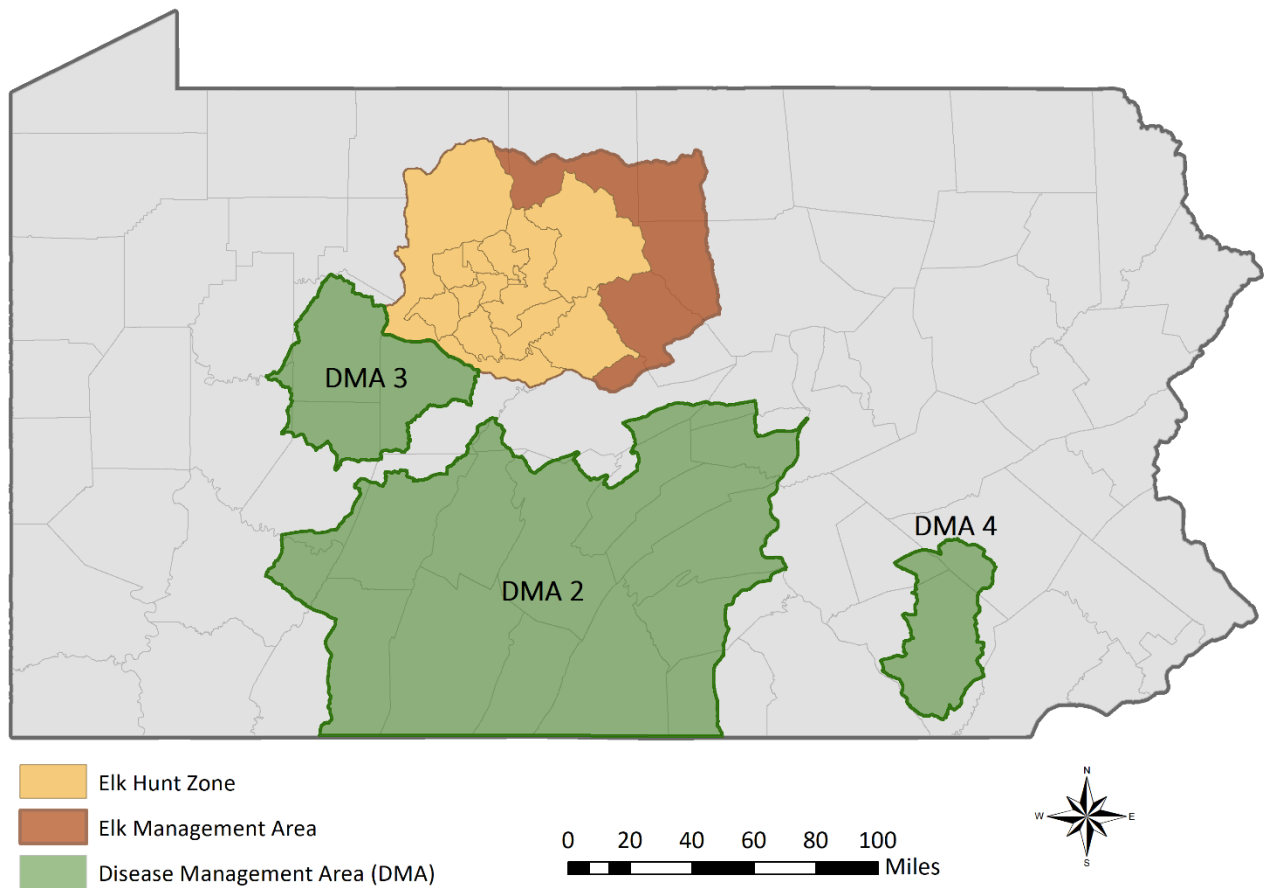
Pennsylvania's elk are located in the northcentral portion of the Commonwealth within the Elk Management Area (EMA; [Fig. 4](#)). The EMA is approximately 3,750 square miles and includes all of Cameron County, along with portions of Elk, McKean, Potter, Tioga, Lycoming, Clearfield, Centre, and Jefferson counties. Approximately two-thirds of the western portion of the EMA is divided into 14 Elk Hunt Zones (EHZs). Each EHZ is designed to loosely encompass sub-populations, or groups, of elk that remain together throughout the calendar year ([Fig. 4](#)). Estimates calculated in April 2020 indicate that the elk population is comprised of approximately 1,500 individuals (unpublished data, Pennsylvania Game Commission).

Pennsylvania has conducted CWD testing of elk for more than two decades and the disease has never been detected (see [Surveillance](#)). CWD has also not been detected in any deer within the EMA. However, seven free-ranging deer within 20 miles of the EMA and three captive deer facilities within 10 miles of the EMA have tested positive for the disease. Given the proximity of these CWD detections, there is a high risk that Pennsylvania's elk population will become infected if aggressive actions to manage CWD in captive and free-ranging deer are not taken. Since CWD has been shown to cause population declines in elk, the consequences of the disease emerging in Pennsylvania's elk could be severe (Monello et al. 2014).

If a CWD-positive cervid is detected within the EMA, the standard geographic designations (e.g., DMA, ESU, CZ) and accompanying management strategies will be enacted (see [Geographic Designations](#)). One exception is if the new detection falls within an EHZ; in such a case, all EHZs will be combined into a single DMA of approximately 2,500 square miles that will remain separate from any adjoining DMAs (e.g., DMA 3) to prevent the movement of high-risk parts from those DMAs into the EHZs. Such an encapsulation is also necessary because EHZs do not perfectly designate elk sub-populations. Elk have large home ranges and movement across elk sub-populations has been documented (Rosatte 2017). Movement between EHZs is particularly common during the autumn rut in Pennsylvania when bulls can travel up to 20 miles to breed with cows. Thus, an infected elk could potentially contaminate multiple EHZs.

In addition to increasing CWD surveillance efforts within the new DMA, targeted removals may be utilized at the CZ level; however, targeted removals will only be implemented for deer. If the need arises to remove additional elk from any of the EHZs, extra elk licenses can be offered to hunters. Since elk population estimates vary among EHZs, the number of extra elk licenses will depend on the EHZ and where CWD was detected. Due to the highly competitive nature of elk license procurement in the Commonwealth – for the 2019-2020 hunting season, over 40,000 hunters applied for 142 elk licenses –

it is expected that hunters alone will be able to harvest any additional elk needed to achieve CWD management goals and objectives.



**Figure 4.** Elk Hunt Zones (1-14), the Elk Management Area, and CWD Disease Management Areas (DMAs) as of June 2020 in Pennsylvania.

### Surveillance

Surveillance for CWD in Pennsylvania has been ongoing since 1998 when the Game Commission began testing of deer and elk that exhibited clinical signs consistent with the disease (“clinical suspects”; see [Disease Overview](#)). Surveillance efforts have expanded significantly since then and samples are currently collected from hunters voluntarily submitting deer heads following harvest, meat processors during the Game Commission’s annual deer aging operations, road-killed cervids, all harvests of adult elk, and any clinical suspects. As of June 30, 2020, more than 95,000 free-ranging deer and 1,400 free-ranging elk have been tested for CWD in the Commonwealth; CWD has been detected in a total of 460 deer and zero elk ([Table 2](#)).

**Table 2.** Annual CWD tests and results for free-ranging deer and elk in Pennsylvania from 1998-2019. \*Test results through June 30, 2020.

Year	Free-Ranging Deer		Free-Ranging Elk	
	# Tested	# CWD Detected	# Tested	# CWD Detected
<b>1998-2001</b>	> 200	0	27	0
<b>2002</b>	566	0	61	0
<b>2003</b>	2,052	0	64	0
<b>2004</b>	3,662	0	35	0
<b>2005</b>	3,927	0	43	0
<b>2006</b>	4,314	0	43	0
<b>2007</b>	3,887	0	43	0
<b>2008</b>	4,358	0	48	0
<b>2009</b>	4,189	0	57	0
<b>2010</b>	4,105	0	47	0
<b>2011</b>	3,887	0	51	0
<b>2012</b>	5,138	3	60	0
<b>2013</b>	5,124	2	73	0
<b>2014</b>	4,269	5	89	0
<b>2015</b>	5,654	12	93	0
<b>2016</b>	5,707	25	110	0
<b>2017</b>	7,911	79	128	0
<b>2018</b>	9,631	123	122	0
<b>2019</b>	15,686	204	161	0
<b>2020*</b>	1,499	20	49	0
<b>Total</b>	<b>&gt; 95,766</b>	<b>473</b>	<b>1,404</b>	<b>0</b>

During the hunting season, deer hunters can voluntarily submit heads to CWD collection bins that are in select locations within DMAs. CWD collection bin locations are posted on the Game Commission’s website: [pgc.pa.gov/cwd](http://pgc.pa.gov/cwd). These samples provide data on the CWD sample prevalence within a given DMA; from such data, prevalence trends can be assessed over time and management strategies can be refined to provide the best chance of achieving CWD management objectives.

All successful elk hunters are required to present their harvest at a designated check station. At the check station, trained Game Commission staff extract tissue samples for CWD testing from all adult elk harvests except those intended to be mounted. In those cases, instructions and materials including postage-paid shipping containers to ship the caped head to the laboratory are provided to the hunter. Opportunistic samples from roadkill and clinical suspect elk are also collected for testing.

Statewide CWD sampling of deer consists of collecting random samples from hunter-harvested deer at cooperating meat processors. The statewide sample size of deer tested for CWD is allocated among WMUs proportional to each WMUs estimated deer population. Based on simulation modeling, a statewide sample size of approximately 4,000 deer will provide a 62% chance of detecting CWD if prevalence is at least 1% in any given WMU (Diefenbach et al. 2004). This sample size also represents



the maximum number that can feasibly be collected with the current level of staff and resources available to the Game Commission.

The Game Commission employs private contractors to collect road-killed deer from state and local roads within and along the perimeter of DMAs. Carcasses are delivered to designated locations where Game Commission staff extract samples for CWD testing. The remaining carcass parts are then discarded into lined landfills to prevent environmental contamination. Samples from road-killed elk are collected in the field prior to carcass disposal. In Pennsylvania, CWD detections from road-killed deer samples often serve as the first indication that the disease is expanding into new areas; past detections have resulted in the expansion of DMA boundaries.

Samples from clinical suspects are also opportunistically collected and tested for CWD throughout the Commonwealth. This data can provide valuable information regarding new detections in naïve areas, so the Game Commission encourages the public to report deer or elk that are exhibiting signs consistent with CWD infection.

Beyond the scope of this version of the CWD Response Plan is an evaluation of the efficiency of the Game Commission's current methods of CWD surveillance. By the end of 2020, an outline detailing how CWD surveillance efficiency will be assessed will be appended to this plan.

### *Communications*

Developing and maintaining strategic partnerships is key to implementing successful CWD management efforts. The Game Commission is committed to informing Commonwealth citizens about wildlife matters in Pennsylvania and strives to be attentive and timely when responding to issues. Strong relationships, transparency, and rapid information sharing are crucial when facing an issue like CWD with its inherent complexities and potential for various long-term negative impacts (see [Disease Implications](#)).

Currently, the Game Commission has a comprehensive website featuring a wide range of information on CWD and related management activities across the Commonwealth. The Game Commission has encouraged feedback from the public, providing both a phone line – 1-833-INFOCWD – and email address – [infocwd@pa.gov](mailto:infocwd@pa.gov) – to offer avenues through which the public can ask questions, raise concerns, and share ideas. In addition to several outreach events, surveys, and other CWD communications activities conducted throughout the year, an earlier draft of this CWD Response Plan was shared on the Game Commission website in September 2019 and public comments were collected for five months (see [Appendix A](#)). The revised version of this CWD Response Plan also was made available for a 30-day public comment period in April 2020. Information gathered through these efforts was used in the revision and finalization of this CWD Response Plan.

It is critical to have a thoughtful and comprehensive strategic plan for CWD communications to foster public understanding and support; in that spirit, the 2020 CWD Communications Plan is also appended to this plan (see [Appendix B](#)).

## Conclusion

CWD is a serious, long-term threat to deer and elk in Pennsylvania, and the interests of a diversity of stakeholders. Without significant changes to management strategies and support for necessary actions, CWD will continue to intensify within free-ranging cervid populations and spread across the Commonwealth. Experiences from other states provide guidance on management strategies that can be used to successfully manage CWD. It should be anticipated that the strategies described in this CWD Response Plan will require a sustained, long-term commitment of resources to be effective. For Pennsylvania to be successful in managing CWD, it will also require the continued support and participation from all stakeholders.

The implementation of the strategies described within this Response Plan will involve continual analysis, discussion, and review to ensure that priority goals and objectives are identified, and that appropriate responses are implemented. In addition, ongoing review of the latest scientific knowledge and management techniques will determine the most up-to-date and effective disease management strategies for Pennsylvania. This adaptive approach is critical as information regarding the biology and management of the disease is constantly evolving. Ultimately, the Game Commission will strive to use the best available scientific information to continue to improve its response to CWD in order to fulfill its mission to manage and protect Pennsylvania's deer and elk for current and future generations.



# Definitions

**Abundance** – The number of individuals of a species (e.g., white-tailed deer) that are found in a defined area.

**Attractant** – Can be natural or manufactured and includes items containing deer urine, blood, gland oil, feces, or other bodily fluid as well as liquid food scents, salt, minerals, and other products that attract deer.

**Cervid** – A member of the deer family (Cervidae) which includes white-tailed deer, mule deer, black-tailed deer, elk, moose, caribou, fallow deer, axis deer, sika deer, and red deer.

**Clinical suspect** – A cervid that appears sick and is exhibiting clinical signs consistent with CWD infection, such as lowered head, lowered ears, progressive weight loss, rough hair coat, excessive salivation, excessive thirst, excessive urination, and other behavioral changes.

**Containment Zone (CZ)** – A small designated area, extending to approximately a 1-mile radius around the location of a new CWD detection, within an Enhanced Surveillance Units that allows for focuses management strategies to suppress the impact of an initial CWD detection.

**Deer Management Assistance Program (DMAP)** – A landowner-based program that provides additional antlerless deer hunting permits to landowners and hunters to manage deer to achieve landowner goals. The Game Commission also uses DMAP to establish management units for CWD management purposes at a scale larger than individual properties, but smaller than wildlife management units (WMUs).

**Disease Management Area (DMA)** – An area that is created when new CWD detections are found in free-ranging or captive deer in Pennsylvania, regardless of proximity to any previous detections. To designate a DMA, a 10-mile radius buffer is created around each new detection. The purpose of a DMA is to reduce human-related activities that amplify and spread CWD and to increase probability of early detection of CWD spread from known locations.

**Elk Hunt Zone (EHZ)** – Specific areas within the Elk Management Area that are delineated and designed to encompass an individual sub-population (a group of elk that remain together throughout the calendar year) and any areas of potential elk-human conflict.

**Elk Management Area (EMA)** – The geographic area where elk presence is desirable and/or generally tolerated.

**Enhanced Surveillance Unit (ESU)** – An individual area within DMAs that is created when there is a new CWD detection in a free-ranging or captive cervid that is greater than 10 miles from any other past CWD detection. An ESU is created by using an approximately 3 to 5-mile radius buffer around a new, isolated detection.

**Established Area (EA)** – This term means that CWD is established in the affected population and is maintained without external inputs. The disease prevalence and spatial extent of infection is consistent

and has the potential to increase in the affected area. Transmission between deer is efficient and constantly occurring, and more young deer (yearlings and fawns) are found infected through sampling efforts annually. Once CWD is established, existing efforts may not be sufficient to eliminate CWD from the area.

**High-risk parts** – If an animal is infected with any TSE, certain tissues contain a significantly higher concentration of the TSE-associated prions. These tissues are considered high-risk parts and include the brain, tonsils, eyes, lymph nodes, spinal cord/backbone, and spleen. Additional high-risk parts include the skull plate with attached antlers if visible brain or spinal cord matter is present, upper canine teeth if root structure or other soft tissue material is present, unfinished taxidermy mounts, brain-tanned hides, and any object or article containing visible brain or spinal cord material.

**Prevalence** – In disease terms, the proportion of a population that has the disease. Throughout the document you may see references to sample prevalence (proportion of all samples tested over a specific area and time frame that detect the disease) and estimated prevalence (sample prevalence that, after correcting for sampling and other biases to most closely represent the actual population, is the best estimate of the true proportion of an entire population that has the disease).

**Prion** – A type of protein naturally found in mammalian tissue. Infectious prions, the agent of disease in transmissible spongiform encephalopathies, can trigger normal proteins in the brain to fold abnormally, leading to a fatal neurodegenerative condition.

**Targeted removal** – Removal of cervids from a focused area carried out by trained professionals. On private property, this activity is not undertaken without the clear consent and the signing of a contract between the private landowner and contractor (e.g., USDA-APHIS-WS).

**Transmissible spongiform encephalopathies (TSE)** – A group of rare degenerative brain disorders that are characterized by tiny holes that give the brain a “sponge-like” appearance. Overwhelming scientific evidence supports that TSEs are caused by misfolded prion proteins and infection results in impaired neurologic function and eventual death. TSEs in mammals include scrapie in sheep and goats, CWD in cervids, bovine spongiform encephalopathy (BSE; also known as mad cow disease) in cattle, transmissible mink encephalopathy in mink, and Creutzfeldt-Jakob disease in humans.

# Acronyms

APHIS	Animal and Plant Health Inspection Service
APR	Antler Point Restriction
BSE	Bovine spongiform encephalopathy
CDC	Centers for Disease Control and Prevention
CJD	Creutzfeldt-Jakob Disease
CWD	Chronic Wasting Disease
CZ	Containment Zone
DCNR	Department of Conservation and Natural Resources
DMA	Disease Management Area
DMAP	Deer Management Assistance Program
EA	Established Area
EHZ	Elk Hunt Zone
EMA	Elk Management Area
ESU	Enhanced Surveillance Unit
HCP	Herd Certification Program
HMP	Herd Monitoring Program
PDA	Pennsylvania Department of Agriculture
PWFP	Pennsylvania Wildlife Futures Program
TSE	Transmissible Spongiform Encephalopathy
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WMU	Wildlife Management Unit
WS	Wildlife Services

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# Appendix A: Public Comments on Draft CWD Response Plan

## *Introduction*

In early 2019, the Pennsylvania Game Commission (Game Commission) consulted various representatives from other state wildlife agencies, representatives from conservation-based non-government organizations, and representatives from local universities to draft a CWD Response Plan. The CWD Response Plan strives to stabilize the CWD infection rate and slow the spread of CWD in the state by reducing deer populations. Management strategies proposed in the draft CWD Response Plan include increasing harvest tag allocations, extending seasons, and removing of antler point restrictions in CWD-positive areas.

In September 2019, the Game Commission issued a request for public comment on its draft CWD Response Plan. This request aimed to better gauge and understand stakeholder support for or lack of support for management strategies proposed in the draft CWD Response Plan. The draft plan was available on the Game Commission website for public comment from September 2019 until February 29, 2020. Individuals who wished to comment on the draft plan could do so by emailing or mailing a completed public comment form which was also available on the Game Commission website.

The draft CWD Response Plan and request for public comment were announced to the public through a press conference held at the Game Commission Harrisburg headquarters on Wednesday, September 4, 2019. The press conference streamed live on the Game Commission's YouTube channel for the public and members of the Pennsylvania Outdoor Writers Association were invited to attend and share information about the draft CWD Response Plan.

## *Methods for Summarizing Public Comments*

The Game Commission received a total of 447 public comments through phone, email, or mail. Of these comments, 357 public comment forms were submitted and were used to produce this summary. The remaining 90 comments were received through phone calls, hand-written letters or emails sent to our general comments email. These 90 comments were clearly not intended to directly address management strategies proposed in the draft CWD Response Plan and therefore were not summarized in this document. However, it should be noted that while these comments are not summarized here, they did provide additional insight into better understanding public concern, knowledge, and support for CWD and CWD management.

Each public comment, either submitted through public comment form, phone, or letter, was collected and categorized using an Excel spreadsheet. All paper public comment forms were kept for future reference.

Each response was categorized by the questions asked on the public comment form. The responses to each question yielded no overall consensus, however responses provided valuable insight as to the degree of support for various management strategies proposed in the draft CWD Response Plan. The summary below describes the number of responses for each question and the trends associated with

those responses. For the purpose of this summary, a trend is described as comment, concern, or suggestion that was noted in 5 or more responses to questions. This document aims to summarize the common trends noted through public comment and does not summarize each individual response received via public comment form. To compare responses easily, each response was categorized as supportive, opposed, neutral, or nonresponsive to the questions asked regarding management strategies proposed in the draft CWD Response Plan.

## *Public Comment Form Results*

### **1. Are you a PA hunter?**

Out of the 357 public comment forms submitted, 6 people did not respond to this question. Of those who did respond, 341 people considered themselves hunters, which represents approximately 97% of those who responded to this question.

### **2. Did you read the draft CWD Response Plan?**

Out of the 357 public comment forms submitted, 315 respondents indicated they read the draft CWD Response Plan prior to providing comment, this represents approximately 90% of those who responded to this question (10 people did not respond to this question).

### **3. Did you refer to any other resources to better understand the draft CWD Response Plan?**

Of the 357 public comment forms submitted, 341 people responded to this question. Of those who did respond, 220 people indicated they did reference other resources prior to reading the draft CWD Response Plan, this represents approximately 64% of respondents. Other resources referenced included: attending CWD public programs, Game News articles, the Game Commission website, local game wardens, response plans from other agencies, social media and television. It should be noted that some respondents may have misinterpreted this question. For example, one respondent noted, "No I did not reference any other materials... but attended a Game Commission meeting on CWD at greenwood and read the CWD information on the Game Commission website."

### **4. Please provide comment on the proposed expansions to hunting seasons, intended to maximize hunter opportunities and slow the spread of CWD.**

Out of the 357 public comment forms submitted, 337 people responded to this statement. Of those who responded, 257 respondents (roughly 76% of respondents) supported the proposal to expand hunting seasons and 72 respondents (roughly 21% of respondents) did not support the proposal to expand hunting seasons. The remaining 7 respondents (roughly 2% of respondents) provided a response that neither supported nor opposed the proposal to expand hunting seasons. For example, one individual responded by noting, "The Game Commission should look into driving deer from private land." While this response suggests the individual may be concerned about deer congregating on private land, the response does not indicate support for or lack of support for the proposal to expand hunting seasons.

While approximately 76% of respondents supported the proposal to expand hunting season, recommendations varied on when and how to implement expanded hunting seasons. A common

opinion mentioned in 5 responses (> 2%) recommended reinstating a concurrent hunting season within Pennsylvania's Disease Management Areas (DMA). Another common trend mentioned in 5 responses (> 2%) recommended the Game Commission only expand fall or late archery hunting seasons. In addition, some respondents (> 0.5%) expressed safety concerns about overlapping rifle and archery hunting seasons.

**5. Please provide comment on the proposed regulations changes regarding antler point restrictions within Pennsylvania's Disease Management Areas.**

Out of the 357 public comment forms submitted, 350 people responded to this statement. Of those who responded; 228 respondents (roughly 65%) supported and 103 respondents (roughly 29%) opposed the proposal to remove antler point restrictions in DMAs. A total of 7 respondents (roughly 2%) provided a response that neither supported nor opposed the proposal to remove antler point restrictions within DMAs.

The most common trend associated with this question (n = 10, 3 %) was that respondents did not like the proposal to remove antler point restriction but supported the management strategy because respondents understood the importance of doing so. For example, one respondent noted, "I like antler point restrictions but if it needs to be done then it needs to be done." The next most common trend associated with this question (n = 9, > 3%) was the recommendation for the Game Commission to allocate more than one antlered harvest tag to hunters within the DMAs. Some of these respondents (n = 5) were not supportive of the proposal to remove antler point restrictions but recommended the allocation of additional antlered harvest tags. Another trend commonly associated with this question (n = 5, 1.5%) recommended the Game Commission remove antler point restrictions not only within the DMAs but statewide.

**6. Please provide comment on the proposed antlerless tag allocations, intended to maximize hunter opportunities and slow the spread of CWD.**

Out of the 357 public comment forms submitted, 350 people responded to this proposal. Of those who responded, 252 people supported (roughly 72%) and 88 people opposed (roughly 25%) opposed the proposal to increase antlerless harvest tag allocations to slow the spread of CWD. Ten respondents provided responses that neither supported nor opposed the proposal to increase antlerless tag allocations.

Whether respondents supported or opposed the proposal to increase antlerless tag allocations the most common trend (n = 9, > 3%) associated with this proposal expressed concerns that increasing tag allocations will not be effective because hunters will not harvest more deer. The next most common trend was expressed among respondents who opposed this proposal. These respondents (n = 7, 2%) noted their opposition to this proposal associated with concerns about low deer populations and hunting success. One respondent noted, "killing more deer will not stop it (CWD), I would rather have today's (deer) herd size with or without CWD."

Another common trend associated with this proposal (n = 5, 1.5%) recommended the Game Commission reduce the cost of antlerless harvest tags. Regardless of whether respondents supported or opposed this proposal, concerns were expressed about the ability to harvest deer that congregate on private land (n =



5, 1.5%). One respondent noted, “you can allocate all the tags you want but without taking deer on private land, (the spread of) CWD will not slow.”

**7. If hunters are provided the first opportunity to manage CWD, through the proposed actions above, would you consider targeted removals a reasonable supplement to manage CWD?**

Out of the 357 public comments submitted, 341 people responded to this question. Of those respondents, 205 people supported (roughly 60%) and 115 people opposed (roughly 34%) the use of targeted removals to supplement hunter harvest. Twenty-one respondents (roughly 6%) provided responses that neither supported nor opposed using targeted removals to supplement hunter harvest.

It should be noted that respondents may have misinterpreted this question or the information about targeted removals in the draft CWD Response Plan, with some opponents (n = 13, > 4%) stressing the need to provide hunters the opportunity to manage CWD. One opponent noted, “hunters should have the chance to remove deer.”

Even though the draft CWD Response Plan specifies that targeted removals will only be considered within the Established Area and within CWD Control Zones, respondents commonly noted (n = 10, > 3%) they would only support the use of targeted removals in CWD-positive areas or “hot spots.”

**8. For future reference, what is the best way to provide accurate and timely information to you on CWD and deer management?**

Out of the 357 public comment forms submitted, 333 responded to this question. Numerous respondents listed more than one preferred source of information and therefore numbers summarized here may exceed 333 responses. Of those that did respond, the most popular preferred sources of information listed was email (n = 124, roughly 37%), the Game Commission website (n = 119, roughly 35%), local news media (n = 54, roughly 16%), the Game Commission’s social media accounts (n = 46, roughly 14%), and direct mail (n = 45, roughly 13%). Other sources of information mentioned included Game News, public meetings, and the hunting trapping digest.

*Next Steps*

The Pennsylvania Game Commission appreciates the individuals and organizations who took the time to provide input on the draft CWD Response Plan. The Game Commission will use the comments and recommendations provided to revise the plan. Following revisions, the plan will be presented to the Game Commission’s Board of Commissioners for approval. A second, shorter public comment period will occur to provide the public a chance to review and make suggestions to the revised CWD Response Plan before the document is finalized.

# Appendix B: 2020 CWD Communications Plan

## *Introduction*

Since the first detection in 2012, the Game Commission has been working to manage and limit the spread of Chronic Wasting Disease (CWD), an always fatal disease that affects members of the cervid family. With no vaccine or treatment for CWD, options to manage this disease are limited. Given that CWD is spread through direct deer-to-deer contact, reducing deer populations around known positives is the most commonly proposed management strategy and has shown some success in other states.

However, reducing deer populations to prevent a disease from killing deer seems illogical to many stakeholders, including hunters. Reducing deer populations often, directly or indirectly, affects stakeholder interests. Because of this, management actions that reduce deer populations are often controversial and require extensive outreach efforts to garner public support. Therefore, this Communication Plan was created to identify our target audiences, the information that needs to be provided to these individuals, when that information should be delivered, and what communication channels will be used to deliver that information. With the implementation of this Communication Plan, we will increase knowledge of CWD and support for CWD management actions among targeted audiences in Pennsylvania.

## *Targeted Audiences*

- Legislators and gubernatorial staff – local/statewide
- Game Commission staff and Board of Commissioners
- General Public, more specifically:
  - Resident and non-resident Pennsylvania hunters
  - Hunter trapper education instructors and students
  - Deer processors and taxidermists
  - Conservation groups and non-profit wildlife organizations
  - Sportsmen clubs
  - Gun shops/Outfitters
  - Landowners, more specifically farmers
  - Families of hunters who consume wild game
  - Naturalists (nature lovers)
- Media:
  - Newspapers – key local and regional
    - Outdoor Reporters
    - Editorial Boards
    - Food Editors
  - Bloggers and focused websites (where appropriate)
  - Local television outlets
  - Local radio outlets

## *Objectives*

**Objective 1:** Increase public and legislative knowledge and awareness of CWD and potential negative consequences of the disease.

**Objective 2:** Increase public and legislative support of the need for CWD management efforts.

**Objective 3:** Increase Interagency, Game Commission staff, and Board of Commissioners understanding of CWD and CWD management.

## *Strategies & Action Items*

**Objective 1: Increase public knowledge and awareness of CWD and potential negative consequences of the disease.**

**Strategy 1.1:** Develop print materials that contain key messages on CWD and CWD management for public distribution (see Appendix B-I).

**Action Item 1.1.1:** Update the CWD booklet to contain key messages on CWD, address management changes regarding CWD, and why the changes were made. The CWD booklet will be provided to all issuing agents, including county treasurers, for public distribution.

**Action Item 1.1.2:** Update CWD business cards to include information on the back on regulations pertaining to CWD.

**Action Item 1.1.3:** Update standardized displays (stand-up banners) on CWD and CWD consequences/management for display at public events. Develop a standardized display that will notify hunters of any changes to regulations or CWD management from the previous year and why these changes were made.

**Action Item 1.1.4:** Collaborate with other Pennsylvania state wildlife agencies to mail a postcard to PA residents who hunt in other CWD positive states. This postcard will contain messaging on CWD and Pennsylvania's high-risk parts importation ban.

**Strategy 1.2:** Increase public understanding/knowledge of Disease Management Areas (DMAs).

**Action Item 1.2.1:** Include maps of DMAs in the Hunter-Trapper Digest and ensure the Hunter-Trapper Digest continues to be provided at point of sale. If at any point in time the printed Hunter-Trapper Digest is no longer provided at point of sale, the Game Commission will still provide CWD and DMA information via print (see Action Item 1.1.1).

**Action Item 1.2.2:** If changes are made to DMA boundaries after digest publication, create and send a mandatory insert for the digest in the form of a fold out map to include Deer Management Assistance Program (DMAP) units within the respective DMAs.

**Action Item 1.2.3:** Provide each issuing agent a 24"X30" kiosk map of the DMA in which they reside with respective DMAP units. Request it is posted in a prominent location within their business.

**Action Item 1.2.4:** Develop a separate CWD insert for the Hunter-Trapper Digest that will provide additional information on CWD status, Game Commission surveillance efforts, and management strategies (see Action Item 1.1.1).

**Strategy 1.3:** Provide up-to-date information on CWD, negative consequences of the disease, CWD management actions, and related regulations on social media.

**Action Item 1.3.1:** Utilize Facebook Live to host real-time question and answer sessions with the public. These sessions will also be used to address misinformation on CWD that is commonly posted on Facebook.

**Action Item 1.3.2:** Invite wildlife professionals (biologists, professional hunters, non-profit organization representatives etc.) to discuss CWD and CWD management on the Game Commission podcast. Podcast efforts will be focused on CWD during deer hunting seasons and limited to one per month (see Appendix B-II).

**Action Item 1.3.3:** Continue to include CWD hotline/email information on all social media posts. Encourage other advocates, such as the National Deer Alliance or the Quality Deer Management Association, to create posts/videos or share Game Commission posts/videos on their social media.

**Action Item 1.3.4:** Continually address misinformation posted on Game Commission social media platforms (e.g., Facebook, Instagram) with facts.

**Strategy 1.4:** Continue to provide annual updates on CWD status and CWD management on our website and increase efforts to enhance public awareness of our website contents.

**Action Item 1.4.1:** Update the layout of CWD information on the Game Commission website to make information easier for the public to locate (see Appendix B-V).

**Action Item 1.4.2:** Maintain the CWD blog. Blog posts will be focused on CWD hot topics, CWD myths, CWD research updates, and CWD surveillance or management updates for the public.

**Action Item 1.4.3:** Collaborate with Bureau of Automated Technology Services to develop a method to provide hunters with CWD-test results via text for the 2021 deer hunting seasons.

**Action Item 1.4.4:** Offer CWD-based webinars or online workshops as needed to better educate the public on CWD and the negative consequences of the disease. At least one CWD public event should be recorded and provided on the CWD webpage for those who are unable to attend meetings.

**Strategy 1.5:** Offer CWD public events across the state, both inside and outside of DMAs, to raise awareness of CWD and garner support for CWD management.

**Action Item 1.5.1:** Appropriate agency staff will host CWD public events within their respective region (See Appendix B-III).

**Action Item 1.5.2:** Appropriate agency staff will maintain regular State Game Warden visitations at existing sportsman clubs and other known conservation organizations (See Appendix B-III).

**Action Item 1.5.3:** Game Commission staff will strive to attend and provide CWD information at local sportsman shows, fairs, and festivals.

**Action Item 1.5.4:** Appropriate agency staff will work with local legislators to host CWD seminars for the public.

**Action Item 1.5.5:** Appropriate agency staff will document details of all public events (e.g. programs, fairs, sportsman shows, sportsman club meetings, etc.) where CWD

information or materials were provided to the public. Information to be documented may include: the date of each event; event type; information or materials provided; location of event and estimate of people reached. This information will be provided to the CWD Communication Specialist by December 31, 2020.

**Strategy 1.6:** Collaborate with other conservation-based agencies and organizations to increase CWD awareness and increase public support for CWD management actions. Agencies and organizations to consider include but are not limited to:

- Pennsylvania Department of Conservation and Natural Resources
- Pennsylvania Department of Agriculture
- Pennsylvania Fish and Boat Commission
- Pennsylvania Federation of Sportsmen and Conservationists
- National Deer Alliance
- Quality Deer Management Association
- United Bowhunters of Pennsylvania
- Whitetails Unlimited
- Backcountry Hunters and Anglers, Pennsylvania Chapter
- Hunters Sharing the Harvest
- Keystone Elk Country Alliance
- Rocky Mountain Elk Association
- Safari Club International, Pennsylvania Chapters
- The Wildlife Society, Pennsylvania Chapter
- National Wild Turkey Federation
- Pheasant Forever
- Ducks Unlimited
- Ruffed Grouse Society

**Action Item 1.6.1:** Collaborate with other conservation-based agencies and organizations to host public events on CWD across the state.

**Action Item 1.6.2:** Encourage other conservation-based agencies and organizations to create posts/videos or share Game Commission posts/videos about CWD on their social media. Ask these agencies and organizations to help the Game Commission counter misinformation on CWD seen on social media.

**Action Item 1.6.3:** Provide CWD print materials to other conservation-based agencies and organizations for distribution at public events.

**Strategy 1.7:** Provide up-to-date information on CWD, CWD management, and regulations as needed via print media (e.g. news releases, Game News articles, letters).

**Action Item 1.7.1:** If any changes are made to DMA boundaries or CWD regulations, a news release announcing these changes will be provided to the public.

**Action Item 1.7.2:** Rent billboards, within or along the border of DMAs, to increase public knowledge of CWD management actions. Billboards will:

- Encourage hunters to get their deer tested
- Notify hunters that they are in a DMA
- Remind hunters not to transport high-risk parts
- Direct people to the Game Commission website or hotline for more information

**Strategy 1.8:** Prioritize direct communication efforts to all individuals residing or hunting within DMAs.

**Action Item 1.8.1:** Send letters or postcards to individuals residing or hunting in a DMA, Enhanced Surveillance Area (ESU), or Containment Zone (CZ) to (see Appendix B-IV):

- Notify individuals of any changes to regulations within DMAs, ESUs, or CZs
- Notify individuals of any changes to DMA, ESU, or CZ boundaries
- Remind hunters of DMA regulations, specifically the high-risk parts ban
- Update individuals on the current status of CWD (i.e. number of positives by township) in their area
- Encourage hunters to get their deer tested

**Action Item 1.8.2:** Collect contact information at CWD public events to create a quarterly Game Commission e-newsletter. This newsletter can be used to:

- Notify individuals of any changes to regulations within DMAs, ESUs, or CZs
- Notify individuals of any changes to DMA, ESU, or CZ boundaries
- Remind hunters of DMA regulations, specifically the high-risk parts ban
- Update individuals on the current status of CWD (i.e. number of positives by township) in the state
- Encourage hunters to get their deer tested

**Action Item 1.8.3:** Develop and provide a 30-second public service announcement on CWD to be broadcast on local TV and radio stations within DMAs during deer hunting seasons.

**Strategy 1.9:** Provide print materials on CWD to all businesses associated with sporting goods, issuing agents, processors, and taxidermists for public display or distribution.

**Action Item 1.9.1:** Provide written instructions and key messages to all issuing agents, including county treasurers, explaining what and how materials should be disseminated at point of sale.

**Action Item 1.9.2:** Provide CWD pamphlets and DMA maps to processors and taxidermists, both cooperating and non-cooperating, for greater public outreach.

**Action Item 1.9.3:** Provide CWD information pamphlet to issuing agents, including sporting goods stores, for insertion into Hunter-Trapper Digest at point of sale. Provide each issuing agent a 24"X30" kiosk map of the DMA in which they reside with respective DMAP units. Request it be posted in a prominent location within their business.

**Action Item 1.9.4:** Provide county treasurers with respective DMA maps and information on regulations to be sent with any antlerless deer license within a WMU that is partly or completely situated within a DMA.

**Strategy 1.10:** Monitor public opinions and knowledge on CWD management actions to develop messages and delivery mechanisms that enhance public understanding of the risks associated with CWD.

**Action Item 1.10.1:** Measure public understanding of CWD and support for CWD management actions via surveys.

- Conduct a statewide landowner survey, including both hunters and non-hunters alike, to measure public knowledge, attitudes, perceptions, and support for CWD management actions.



**Action Item 1.10.2:** Conduct human dimensions research to help make management decisions.

- Human Dimensions research may consider:
  - how knowledge gaps affect the acceptance of proposed CWD management actions.
  - how attitudes and beliefs about CWD differ with length of exposure to CWD and geographic proximity to CWD.
  - communication preferences among various stakeholder groups.

**Objective 2: Increase public involvement in the development of CWD management actions.**

**Strategy 2.1:** Develop citizen advisory councils for CWD-related issues across the state to increase public knowledge and support for CWD management actions.

**Action Item 2.1.1:** Select and invite 20 stakeholders (e.g. hunters, taxidermists, processors, outdoor writers, landowners, community leaders, etc.) to serve on their regional citizen advisory council for CWD.

**Action Item 2.1.2:** Hold quarterly citizen advisory council meetings in each region to adequately educate members on CWD-related issues and to discuss stakeholder perspectives, ideas, concerns, and interests related to these issues. These meetings will be recorded and provided on the CWD webpage.

**Action Item 2.1.3:** Combine common perceptions, ideas, concerns, interests, and recommendations in a quarterly report to guide future communication and management actions.

**Objective 3: Increase Game Commission staff and Board of Commissioner understanding of CWD and CWD management actions.**

**Strategy 3.1:** Provide monthly updates on CWD and CWD management actions to Game Commission staff.

**Action Item 3.1.1:** Continue to hold monthly conference calls to update Game Commission staff on CWD and CWD management actions.

**Action Item 3.1.2:** Conduct annual meetings in Game Commission Regions to brief appropriate Game Commission staff on CWD and CWD management actions.

**Action Item 3.1.3:** Provide information on CWD hot topics, CWD myths, CWD research updates, and CWD surveillance or management updates via email to Game Commission staff. Send email invitation to all Game Commission staff for future updates and create a contact list for updates. Any staff who do not wish to receive updates will not be included on the list.

**Action Item 3.1.4:** Provide a statewide annual training available to Game Commission staff on CWD and CWD management actions.

**Strategy 3.2:** Keep Board of Commissioners updated and knowledgeable on CWD and CWD management actions.

**Action Item 3.2.1:** Hold semi-annual meetings to update Board of Commissioners on CWD management activities.

**Action Item 3.2.2:** Provide Board of Commissioners with a multi-page annual report summarizing CWD status and management at the end of the year.

**Objective 4: Collaborate with interagency, legislative, and gubernatorial entities to increase support for CWD management actions.**

**Strategy 4.1:** Establish and maintain external collaborations with other state agencies to increase effective communication on CWD to the public.

**Action Item 4.1.1:** Continue to discuss CWD and CWD management actions with the CWD Task Force.

- The Task Force includes members from the Department of Conservation and Natural Resources (DCNR), Pennsylvania Department of Agriculture, Game Commission, and United States Department of Agriculture-Wildlife Services.
- Encourage members of this group to host informational public meetings on CWD. CWD Communications Specialist will notify, if possible, the respective Region of any CWD public events hosted by other state agencies.

**Action Item 4.1.2:** Provide a quarterly CWD update to CWD Task Force via email.

**Action Item 4.1.3:** Attend DCNR's Deer Working Group meetings bi-annually to update DCNR on CWD and CWD management.

**Strategy 4.2:** Establish and maintain external collaborations with non-government organizations (NGO's) to increase support for CWD management.

**Action Item 4.2.1:** Provide a quarterly CWD update to collaborating or targeted NGO's via email. Updates will include information on CWD hot topics, CWD myths, CWD research updates, and changes to CWD surveillance or management actions.

**Action Item 4.2.2:** Collaborate with non-profit organizations to host public events on CWD throughout the state.

**Strategy 4.3:** Establish and maintain external communications with state legislators to garner support for funding and policies necessary to manage and contain CWD.

**Action Item 4.3.1:** Hold meetings, as needed, to update local, regional, and state legislators on CWD and CWD management actions.

**Action Item 4.3.2:** Collaborate with state and local representatives to host public events/town halls on CWD throughout the state.

**Action Item 4.3.3:** Update respective Region(s) via e-mail correspondence immediately after notification of additional confirmed positive CWD detections. Regions will then update respective state representatives of confirmed positive CWD detections.

**Action Item 4.3.4:** Ensure CWD informational handouts, maps, and other related materials are provided to Regions for distribution to state and local representative offices and town halls by July of each license year.

## *Summary of 2019 CWD Communications*

In 2019, the Hunting and Trapping Digest was printed and once again provided to hunters with the purchase of a hunting license at point of sale. A multipage informational section on Chronic Wasting Disease was added to the back of the Hunting and Trapping Digest to spread awareness of CWD and regulations pertaining to CWD. Unfortunately, the Game Commission was unable to provide maps of Pennsylvania's Disease Management Areas (DMAs) or information on the draft CWD Response Plan available for public comment for the digest. For this reason, a separate multipage pamphlet was created that provided enlarged maps of the current DMAs with locations of associated hunter services such as head collection bins and dumpsters for high-risk parts. These maps were then provided to issuing agents to be distributed with the Hunting and Trapping Digest.

In previous years, a small tri-fold brochure on CWD was provided to the public to spread awareness of CWD and CWD management. However, due to the size of the brochure, a limited amount of information could be included. In 2019, the trifold was expanded into an 8-page educational booklet to provide more information on CWD and to encourage the public to read and provide comment on the draft CWD Response Plan. To increase the distribution of these materials, they were provided to various issuing agents along with multiple nonprofit organizations for distribution at public events.

The Game Commission also invested in renting 27 billboards within and along the border of DMAs. These billboards were used to remind hunters not to transport high-risk deer parts outside of DMAs and to also encourage hunters to get their deer tested.

An opportunity arose in late summer of 2019 that allowed the Game Commission to increase awareness of CWD on various TV and radio outlets. Taking advantage of this opportunity, a 30-second video and a prerecorded message for radio were created to be broadcast in various locations across the state from October to December. As deer hunting season takes place during these months, this was an optimal time to broadcast these messages.

The Game Commission hosted 32 informational programs on CWD for the public in 2019. These programs served to spread awareness and allow the public an opportunity to ask questions and express concerns to Game Commission staff. In addition, Game Commission staff attended and provided information on CWD at more than 200 fairs, sportsman shows, and sportsman club meetings.

The Game Commission also provided information on CWD through print media. At least 13 news releases were presented to the state addressing CWD and/or CWD management. In addition, at least 10 Game News articles mentioned or were focused on CWD. The Game Commission also provided information on CWD through various social media outlets including Facebook and Twitter. At least 14 CWD related posts were posted on Facebook in 2019, which were viewed by more than 420,000 people.

The draft CWD Response Plan was provided on the Game Commission website for the public to review and provide comment in late September and remained available until February 29<sup>th</sup>, 2020. The Game Commission also sent surveys via mail to individuals both inside and outside the DMAs, to gain a better understanding of the public knowledge of CWD and the degree of support for management strategies proposed in the draft Response Plan. All public comments and data from surveys were reviewed by Game Commission staff and were considered during revision of the final CWD Response Plan.

## 2020 Schedule for Implementation of CWD Communications

MONTH	Action Item	Responsibility
<b>JANUARY</b>		
	Develop a CWD Communications Plan for 2020.	CWD Com. Spec.
<b>FEBRUARY</b>		
	Work with Marketing Director, Matt Morrett, to create an outline for a billboard campaign to run from September to December within or along the border of DMAs (work with Red House).	CWD Com. Spec. / Marketing Director
	Create and release a press release announcing surveillance efforts and total number of positives detected in 2019. Ensure CWD status is updated on CWD webpage.	CWD Com. Spec.
	Send an email summarizing the 2019 surveillance efforts and total number of positives to CWD Task Force and cooperating NGO's.	CWD Com. Spec.
	Analyze and summarize all public comments and surveys on CWD into an easy to understand report for Bureau of Wildlife Management. Comments and survey data will be considered when revising the draft CWD Response Plan.	CWD Com. Spec.
	Post a friendly reminder on Facebook that the draft plan is still available for public comment until Feb. 29.	CWD Com. Spec.
<b>MARCH</b>		
	Draft a letter to send to landowners who reside within DMAs to recruit or renew DMAP units. Letters should provide information on how to apply to become a DMAP unit.	CWD Com. Spec.
	Meet with Travis Lau, Press Secretary, in early March to discuss space available for CWD information in the 2021 Hunting and Trapping Digest.	CWD. Com. Spec
	Draft and send CWD information for the 2020-2021 Hunting and Trapping Digest to Game Commission Press Secretary no later than April 1 <sup>st</sup> .	CWD Com. Spec
	Attend and present on CWD and CWD management actions at the Game Commission annual Deputy Conference on March 21 <sup>st</sup> .	CWD Com. Spec.
<b>APRIL</b>		
	Send an email summarizing the final revisions made to the CWD Response Plan and why these revisions were made to CWD Task Force and NGOs. Provide any update on DMA boundaries, regulations, etc.	CWD Com. Spec.
	Work with Marketing Director, Matt Morrett, to develop a plan to broadcast at least three CWD-focused podcasts during the months of September through December. Each of these podcasts will feature CWD experts from other states, representatives from non-government organizations, or hunting celebrities who concerned about CWD and potential negative consequences of the disease.	CWD Com. Spec.

<b>MAY</b>		
	Draft and send a letter thanking trash haulers and landfills for collaborating with us to properly dispose of high-risk deer parts. Letter should outline the importance of this relationship.	CWD Com Spec.
	Draft or update CWD materials for distribution or display at public events. Materials should include: CWD pamphlet, DMA map hand-outs, CWD PowerPoint, and CWD stand-up displays. Please note—CWD materials should not be mass printed until the CWD Response Plan is finalized, in case of any last-minute changes.	CWD Com. Spec
<b>JUNE</b>		
	Draft and release a press release summarizing final management actions within CWD Response Plan, changes to DMAs, locations of ESUs and CZs, etc.	CWD Com. Spec.
	Send letter to landowners in newly expanded DMAs to inform them of the DMA expansion, DMA regulations, and pertinent CWD information.	CWD Com. Spec.
	Update maps and CWD status on Game Commission website.	CWD Com. Spec.
	Record a webinar on the CWD Response Plan and CWD management to be posted on the Game Commission website for public distribution. This webinar can also serve as a tool to train staff on the updated standardized CWD PowerPoint.	CWD Com. Spec.
	Meet with Human Dimension Specialist, Coren Jagnow, to discuss conducting a human dimension study on CWD.	CWD Com. Spec.
	Send an email summarizing all changes to DMA boundaries, new DMAP units/allocations, and changes to regulations to the CWD Task Force and NGOs.	CWD Com. Spec.
	Finalize CWD materials for distribution or display at public events. Provide and encourage other state agencies and NGOs to distribute these materials at public events.	CWD Com. Spec.
<b>JULY</b>		
	Contact adjacent CWD-positive states to collaborate on creating print materials to educate hunters on CWD regulations.	CWD Com. Spec.
	Send finalized billboard designs to Red House.	CWD Com. Spec.
	Offer a multiday statewide agency staff training on CWD and CWD communications in Harrisburg.	CWD Com. Spec./ CWD Act. Coord.
<b>AUGUST</b>		
	Send a letter to notify landowners they now reside in a CWD ESU or CZ. Letter will include information on what an ESU or CZ is, regulations in ESUs and CZs, and other information on CWD.	CWD Com Spec.
	Work with Marketing Director, Matt Morrett, to create and broadcast a 30-second PSA on CWD to local TV and radio stations across the state from October to December.	CWD Com. Spec.
	Draft a survey for human dimensions study.	CWD Com. Spec.
<b>SEPTEMBER</b>		
	Revise and post list of cooperating processors and taxidermists on webpage. Ensure locations are provided on interactive map.	CWD Com. Spec.

	Release a press release advertising all upcoming CWD public events. All events should be added to the Game Commission CWD webpage and advertised on social media.	CWD Com. Spec.
	Host a CWD public event at the Game Commission headquarters office, which will be streamed live (and recorded) on Facebook. Recorded video will be made available on the Game Commission website and YouTube page.	CWD Com. Spec.
	Advertise and conduct a Facebook live Q&A session on CWD.	CWD Com. Spec./ CWD Act. Coord.
	Collaborate with Regional Information and Educational Specialists (IESs) to host CWD public events across the state.	CWD Com. Spec./ Regional IES
	Update maps and CWD status on website. Ensure all hunter services (headbin locations, dumpster locations, and cooperating processor/taxidermist information) is provided on the interactive map on the CWD webpage.	CWD Com. Spec./ CWD Act. Coord.
<b>OCTOBER</b>		
	Collaborate with Regional IESs to host CWD public events across the state.	CWD Com. Spec./ Regional IES
	Advertise and conduct a Facebook live Q&A session on CWD.	CWD Com. Spec./ CWD Act. Coord.
	Conduct statewide surveys evaluating hunter perceptions, knowledge, attitudes, behaviors, and support for CWD management.	CWD Com. Spec.
	Broadcast 30-second public service announcement on CWD to local TV and radio stations within and along DMAs.	CWD Com. Spec./ Marketing Director
	Confirm with Red House that billboards are posted.	CWD Com. Spec.
<b>NOVEMBER</b>		
	Send follow-up letters to landowners in CWD ESUs and CZs to update them on the status of surveillance efforts in the local area and thanking them for their help.	CWD Com. Spec.
	Advertise and conduct a Facebook Live Q&A session on CWD.	CWD Com. Spec.
	Collaborate with Regional IES to host CWD public events across the state.	CWD Com. Spec./ Regional IES
<b>DECEMBER</b>		
	Advertise and conduct a Facebook Live Q&A session on CWD.	CWD Com. Spec./ Regional IES
	Gather information and write an annual Communications Report for CWD for 2020. A summary will be provided to senior staff and BOC by the end of January 2021.	CWD Com. Spec.



## **APPENDIX B-I: Key CWD Messages**

Key messages for the general public:

- CWD is a fatal brain disease that affects deer and elk. Currently, there is no cure or vaccine for CWD.
- CWD is caused by a defective protein called a prion, that causes holes to form in the brain, eventually leading to death.
- CWD is now spreading in Pennsylvania.
- CWD is contagious. CWD can be spread through deer-to-deer contact or through contact with infected land/soil. CWD remains in the soil for several years.
- Deer infected with CWD, may or may not show symptoms. On average it takes 18-24 months for CWD infected deer to show symptoms.
- Get your deer tested! While CWD has not been found to infect humans, similar diseases such as Mad Cow Disease were able to jump from animals to humans. Because of this, the CDC recommends getting deer/elk meat tested before you eat it.
- CWD has been shown to cause deer populations to decrease over time.
- Together we can control CWD! This is a call to action depending on the audience. The non-hunting public can help slow CWD by: educating themselves and others around them; hosting a CWD public event; sharing Game Commission Facebook posts; or volunteer on a citizens advisory group. Hunters and landowners can help slow CWD by: reporting sick looking deer; filling harvest tags in DMAP areas and submitting samples in collection containers; and providing access to land for DMAP permit holders.

Additional key messages for the hunting public:

- The Game Commission began monitoring wild deer populations for CWD in 1998 (over a decade before CWD was first detected in PA). Surveillance efforts include sampling hunter harvested deer and elk, road killed deer within DMAs, escaped captive deer or elk, and clinical suspects. Since 1998, the Game Commission has sampled and tested over 79,000 deer.
- Disease Management Areas (DMAs) exist around known cases of CWD. Within DMAs, specific regulations apply to help prevent the spread of CWD.
- CWD reduces survival which leads to fewer deer and elk and fewer hunting opportunities.
- Experiences in other states indicate that, without proactive management actions, CWD infection rate will increase over time.
- Options to manage CWD are limited; where success has occurred, management actions reduced deer populations using increased hunter harvest and targeted removal of deer.
- The Game Commission will use a combination of increased hunter harvest and targeted removals (selective culling) around recent isolated cases of CWD to lower the probability of CWD becoming established in new areas and to determine the extent of CWD in the local area.
- The Game Commission will provide hunters with the first opportunity to reduce deer populations, through extra permits. If hunters do not harvest enough deer in the target area to reduce deer populations to a desired amount, targeted removal may be considered.
- Targeted removals are small-scale operations that will not occur on a statewide or county-wide level. On average, targeted removals will occur within 1 to 2 miles of a new CWD detection. All deer harvested via targeted removals will be tested for CWD and venison from non-detected deer will be donated to local foodbanks or cooperating landowners.

## ***APPENDIX B-II: Game Commission Podcast***

The Game Commission Podcast will provide weekly updates, news, tips, and general information on hunting, trapping, outdoor recreation, and wildlife management.

This podcast will be hosted by: Matt Morrett

This podcast will feature a variety of guests, including but not limited to:

- Other state wildlife agency officials (e.g. biologists, veterinarians)
- Representatives from non-government organizations (e.g. National Deer Alliance, National Wild Turkey Federation)
- Professional hunters or hunting outfitters

This podcast will cover a variety of topics, including but not limited to:


- Habitat and Wildlife Management
- Wildlife Diseases
  - Chronic Wasting Disease—podcasts at least twice a month from June to September
- Shooting Sports
- Hunting and Trapping Information

This podcast will be available to the public in both audio and video format.

**APPENDIX B-III: Regional CWD Communications**

Strategy	Action Item	Timeline
<b>Provide regular and consistent updates on CWD to various media outlets within region.</b>		
	Report any new isolated CWD detections or “flyers” that will result in the creation of a new CWD ESU and CZ and/or DMA.	As needed
	Provide updates on CWD status via news releases (i.e. number and location of CWD positives) within region, where applicable extend new release coverage into adjacent states.	As needed
	Identify and invite outdoor writers who show interest in writing about CWD efforts to participate in CWD field operations.	June to February
	Utilize interview opportunities prior to and during hunting season on local TV, radio, and social media venues as an outreach opportunity to highlight CWD field operations.	June to February
	Provide 30-second hunting reminders, PSAs and updates to local TV, radio, and social media venues.	June to December
	Rent advertising space to promote CWD events and raise awareness of DMA boundaries to local resident and non-resident hunters.	June to December
<b>Offer CWD public events tailored to the different CWD areas (i.e. no CWD, DMA, ESU) within a region.</b>		
	Provide one public event within any CWD ESU established within a region.	June to October
	Offer additional public events within DMAs no later than mid-October.	June to October
	Offer DMA, DMAP, ESU, or CZ maps for respective region(s) at CWD public events.	June to October
	Offer CWD multi-page pamphlet at CWD public events.	June to October
	Promote all public events through local media outlets no later than two weeks prior to planned event.	May to October
<b>Maintain regular State Game Warden visitations at existing sportsman clubs and other known conservation organizations.</b>		
	Attendance at sportsman club meetings located within ESUs are a priority after the final management direction has been approved.	June to October
	Continue to provide sportsman clubs with informational packets and CWD maps.	June to October
	Provide monthly CWD email updates to all sportsman clubs.	January to December
	Provide a monthly CWD letter with updates to all sportsman clubs without email accounts.	January to December
<b>Provide regular and consistent updates on CWD to legislative bodies.</b>		
	Send email updates on CWD status or CWD management to respective regional state representatives, <u>prior to</u> or in conjunction with news releases.	As needed
	Contact state representatives to notify them of newly detected CWD positives that would either establish an ESU or expand a DMA in their respective region.	As needed
	Hold meetings to update state representatives on CWD and CWD management.	As needed
	Ensure CWD print materials and maps are provided to each local state representative office by August of each license year.	August

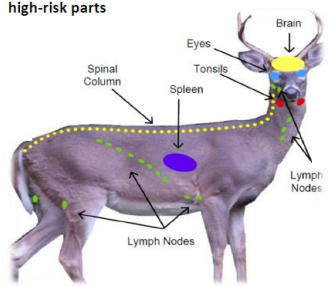
## APPENDIX B-IV: Standardized Postcard & Letter



**HELP US PREVENT THE SPREAD OF CWD**

**High-risk parts** include the head (brain, eyes, tonsils, lymph nodes), spinal cord, and spleen.

**Prohibited high-risk parts**




The diagram shows a deer with several parts highlighted. The brain, eyes, tonsils, and spleen are highlighted in yellow. The spinal column and lymph nodes are highlighted in blue. A dashed yellow line runs along the spine, indicating the spinal column. Labels with arrows point to each of these parts.

**ATTENTION ALL DEER HUNTERS:**

To help prevent the spread of CWD the importation of high-risk deer or elk parts into Pennsylvania from CWD positive states or provinces is banned.

Any deer harvested from Ohio must remain in that state for purposes of processing and/or taxidermy unless the high-risk parts are removed. Once removed, the remaining meat on or off the bone, cleaned capes, cleaned skull caps with antlers, and finished taxidermy mounts may be imported into Pennsylvania.



**Pennsylvania Game Commission**  
State Headquarters  
2001 Elmerton Avenue,  
Harrisburg, PA 17110

**For more information please go to:**  
**Pennsylvania Game Commission**  
<http://bit.ly/PGC-CWD>  
**Pennsylvania Department of Agriculture**  
[www.agriculture.pa.gov](http://www.agriculture.pa.gov)  
**Chronic Wasting Disease Alliance**  
[www.cwd-info.org](http://www.cwd-info.org)

## Are You Hunting in a DMA?

[Resident Name]  
 [Street Address]  
 [City, State, Zipcode]

Date

Dear Sir or Madam,

Due to new cases of chronic wasting disease (CWD) being detected, both free-ranging and captive deer, disease management areas (DMA) 2 and 3 have expanded. DMA 2 now covers more than 6,715 square miles, an expansion of 2,101 square miles since last year. DMA 2 now includes all or parts of Adams, Bedford, Blair, Cambria, Clearfield, Cumberland, Franklin, Fulton, Huntingdon, Juniata, Mifflin, Perry, Snyder, Somerset and Westmoreland counties. DMA 3 has expanded by 203 square miles and now covers more than 1,119 square miles, due to the discovery of CWD in a captive deer facility in Clearfield County. DMA 3 now includes all or parts of Armstrong, Clarion, Clearfield, Jefferson and Indiana counties.

Within DMAs, specific regulations apply to prevent the spread of CWD to other parts of the state. Within DMAs, it is unlawful to:

- Export high-risk cervid parts, including deer and elk
- Feed free-ranging cervids, including deer and elk
- Use or possess natural urine-based attractants in the field

High-risk carcass parts include: the head (including brain, tonsils, eyes, and lymph nodes); spinal cord/backbone (vertebra); spleen; skull plate with attached antlers, if visible brain or spinal cord material is present; cape, if visible brain or spinal cord material is present; upper canine teeth, if root structure or other soft material is present; any object or article containing visible brain or spinal cord material; and brain-tanned hide. Once these parts are removed, the meat on or off the bone; hides cleaned of all brain tissue; skull plates and/or antlers cleaned of all brain tissue; upper canine teeth without soft tissue; or finished taxidermy mounts may be transported throughout the state.

CWD is a fatal disease of cervids, currently impacting deer and threatening elk in Pennsylvania. CWD is believed to be caused by a misfolded protein called a prion. While studies suggest that CWD is primarily spread through animal-to-animal contact, animals can become infected through prion-contaminated environments. Prions can be shed into the environment through saliva, urine, or feces. Once in the environment, prions can remain infectious for several years. Recent studies in other states show CWD can reduce deer survival and populations. Unfortunately, there currently is no cure or treatment for CWD.

While there are no known cases of CWD infecting humans, experimental studies have shown that non-human primates can become infected with CWD through consumption of infected meat. These studies raise concerns that CWD may pose a potential threat to humans. The Centers for Disease Control and

Prevent (CDC) recommends that no one knowingly consume meat from CWD-infected animals. The Game Commission recommends hunters who harvest deer within DMAs get their deer tested for CWD prior to consuming. Hunters can get their deer tested free-of-charge by placing their deer head with harvest tag attached and double-bagged in a head-collection container provided by the Game Commission. Locations of head-collection containers will be available closer to deer hunting seasons at [www.pgc.pa.gov](http://www.pgc.pa.gov).

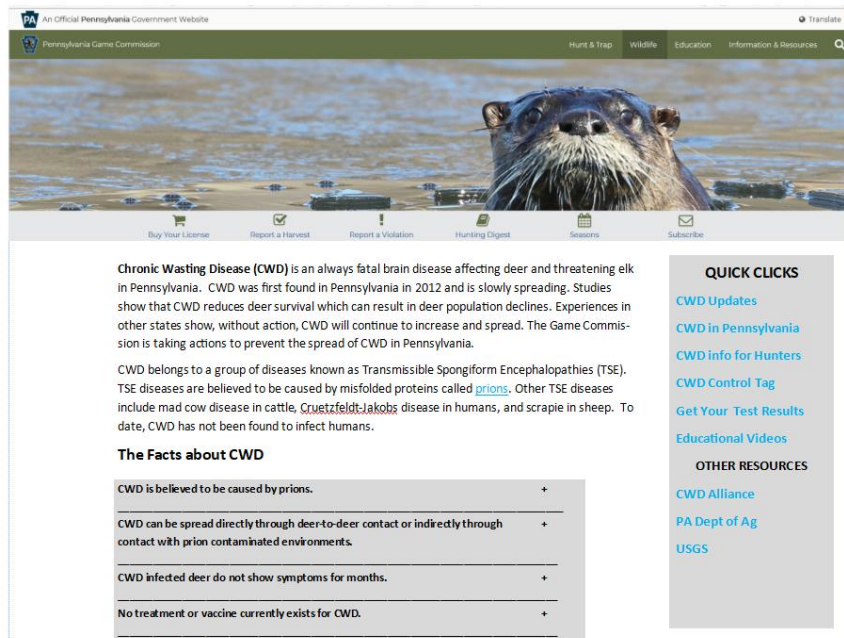
The Game Commission is responsible for the management of Pennsylvania's deer and elk herd for current and future generations to come. While the Game Commission is responsible for managing this disease, it is the public who will ultimately determine the disease's fate. You can help by abiding by CWD regulations—this includes not feeding wild deer or using natural urine-based attractants in the field. Hunters can help by limiting the movement of and properly disposing of high-risk parts. Hunters can help detection efforts by filling DMAP permits and submitting heads for testing. Landowners can help by opening access to land for hunters within DMAP units. And everyone can help by educating not only ourselves, but those around us. Together we can fight CWD!

To find more information on CWD check out pages 57-60 in your 2019-2020 Hunting and Trapping Digest or go to our website at [www.pgc.pa.gov](http://www.pgc.pa.gov).

Sincerely,

## APPENDIX B-V: Online Resources

Found at [pgc.pa.gov/cwd](http://pgc.pa.gov/cwd), the Game Commission's *CWD Homepage* will contain general information on CWD including associated human-health risks, information on the causative agent, transmission of disease, symptoms of disease, and history of CWD nationwide.



The *CWD Updates* page will be a CWD blog intended to provide the public with accurate and updated information on CWD and CWD management within the Commonwealth. Following a typical blog format, the most recent blog entry will appear at the top of the page, with the oldest appearing at the bottom. Links can be situated within blog text to allow quick jumps to related blog posts.

The *CWD in Pennsylvania* page will contain information on the current status and history of CWD in Pennsylvania. The status of CWD will be frequently updated and made available through a table displaying CWD positives by year and county. In addition, the geographic locations of CWD will be available through various maps showing the locations of CWD positives. CWD surveillance and management efforts will be described in detail on this page.

The *CWD Info for Hunters* page will contain information on a wide range of topics including but not limited to: current CWD regulations; DMA and DMAP boundaries with locations of cooperating processors and taxidermists, head collection containers, and high-risk parts dumpsters; links to register for the DMAP program or to acquire DMAP permits; recommendations or precautions for hunters; educational videos specific to hunting within a DMA on topics such as how to remove high-risk parts, how to dispose of high-risk parts, and how to get your deer tested; ESU and CZ location and information on any associated additional hunting opportunities; and a CWD results lookup page to confirm individual test results and track Game Commission CWD surveillance activity across the Commonwealth.