

CHRONIC WASTING DISEASE RESPONSE AND MANAGEMENT PLAN 2023-2027



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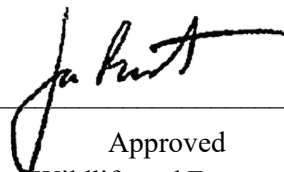
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For additional information visit www.CWDinTN.com or contact Tennessee Wildlife Resources Agency at asktwra@tn.gov.



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Executive Summary

The chronic wasting disease (CWD) strategic planning group was assembled in June of 2021 with the goal of producing a five-year strategic plan for addressing CWD in free-ranging deer and elk in Tennessee. Currently, there is no straightforward, universally accepted approach for management of the disease; thus, this plan provides a comprehensive approach based on the best available science. The TWRA CWD Response and Management Plan serves as the third version of Tennessee's previous CWD Response Plan (Tennessee Wildlife Resource Agency 2016, 2018a) and should be considered a supplement to the existing Elk (Tennessee Wildlife Resource Agency 2018b) and White-tailed Deer (Tennessee Wildlife Resource Agency 2019) Strategic Management Plans. Objectives, Strategies and Actions are focused heavily on white-tailed deer; however, we will take appropriate actions as outlined in this plan should an elk test positive for CWD. Given the current distribution of CWD in Tennessee, this document has been devised as both a response and management plan, documenting the agency's intended response to the detection of CWD in new areas and outlining the agency's ongoing management of the disease in areas where it is known to occur.

This plan contains the following five (5) overarching goals to address CWD in Tennessee:

1. **Prevention Goal:** Prevent the introduction or spread of CWD to areas where the disease has not been detected.
2. **Surveillance and Monitoring Goal:** Maximize the probability of early detection in areas where CWD has not been detected and monitor the prevalence and geographic distribution of CWD in areas where it has been detected.
3. **Response and Management Goal:** Minimize and mitigate the impacts of CWD where the disease has been detected and proactively respond to detections in novel areas.
4. **Research Goal:** Optimize the contribution of research to TWRA's CWD programs.
5. **Outreach and Communications Goal:** Foster stakeholder partnerships in support of CWD programs through increased understanding about CWD.

The following are the objectives of this plan:

- Minimize the spread of CWD from natural animal movements.
- Minimize the unnatural spread of CWD across the state from human activities.
- Assist TDA to minimize risk of introduction and spread of CWD by the captive cervid industry.
- Maintain a systematic, rigorous risk-based surveillance strategy to promote early detection.
- Within positive counties, monitor CWD prevalence to detect changes over time.
- Maintain rigorous and contemporary CWD laboratory testing and reporting protocols.
- Optimize statewide CWD sampling of free-ranging cervids.
- Maintain a current 5-year TWRA CWD Response and Management Plan.
- Respond proactively to initial detections of CWD in novel areas.
- Develop and implement management actions to minimize and mitigate the impacts of CWD in areas where the disease is known to exist.
- Incorporate *Suspect, Not Confirmed* CWD cases (see Appendix F. Updated CWD Testing and Reporting Protocol) into Agency designation, response, and communication efforts.
- Understand the population dynamics and movement patterns of free-ranging white-tailed deer in Tennessee.
- Improve understanding of the characteristics of CWD, its infectious agent, and management-related options.
- Understand free-ranging white-tailed deer mortality by county, including harvest rate, hunter distribution, and deer-vehicle collisions.
- Understand and detect changes over time in stakeholder perspectives of and attitudes towards CWD and associated management.
- Obtain external funding to support CWD research projects as principal investigators or in collaboration with partners.
- Develop and distribute scientifically based information regarding CWD and its management.
- Ensure TWRA staff are well-trained and have accurate and current information on CWD and associated management.
- Maintain or increase hunter participation in CWD-affected areas.

Introduction

The mission of the Tennessee Wildlife Resources Agency (TWRA) is “...to **preserve, conserve, manage, protect, and enhance the fish and wildlife of the state and their habitats for the use, benefit, and enjoyment of the citizens of Tennessee and its visitors.**” Chronic wasting disease (CWD) is the most recent and significant threat to the health and persistence of Tennessee’s free-ranging white-tailed deer and elk populations. This CWD Response and Management Plan provides guidance to TWRA on short-term response and long-term management of CWD; serves as a clearinghouse of current science, the status of CWD in Tennessee and nationally; and provides accessible, reliable information to TWRA, partners and stakeholders regarding our strategic actions to address the disease.

TWRA’s mission is to preserve, conserve, manage, protect, and enhance the fish and wildlife of the state and their habitats for the use, benefit, and enjoyment of the citizens of Tennessee and its

In wild populations CWD often becomes established prior to the disease being detected, creating reduced likelihood of full disease eradication (Baeten et al. 2007, Miller and Fischer 2016). Rather, the current tools and strategies available to wildlife managers are geared towards CWD prevalence stabilization and reduced spread to minimize and mitigate the impacts of the disease. The TWRA is dedicated to strategies that would reduce impacts to wildlife populations and affected stakeholders.

A prion (proteinaceous infectious protein) is the infectious agent of the disease and is highly transmissible. Currently, a cure for CWD does not exist and the disease is 100% fatal. A prion can persist in the environment for years due to the inability to be easily destroyed. Increased disease prevalence leads to negative population-level impacts and can be detrimental to cervid populations (see [Appendix A. Background](#)).

Licensed deer hunters are TWRA’s primary ally in the management of CWD. However, hunter participation may decline due to uncertainty in the potential transmissibility of CWD to humans from handling or consuming meat from a CWD-infected animal.

To date, there have been no reported cases of CWD infection in humans (Centers for Disease Control 2021). Since 1997, the World Health Organization has recommended that the agents of all known prion diseases be prevented from entering the human food chain and the Center for Disease Control and Prevention (CDC) states if CWD were to be detected in humans, it would most likely be from consuming meat from an infected deer or elk (Centers for Disease Control 2021). Some animal studies suggest CWD may pose a risk to some non-human primates, which raises concerns that CWD may present a risk to people (Centers for Disease Control 2021). Studies are ongoing to assess the potential transmissibility to humans as zoonotic information regarding CWD is still limited.

White-tailed deer and elk are an important feature of Tennessee’s landscape and culture. The infectivity, persistence, negative population effects, and potential for human health impacts from CWD demand that TWRA develop and implement effective response and management strategies, and support research to develop new tools to fight CWD. Management of CWD is complex and requires numerous long-term techniques to be applied, monitored, and adjusted to appropriately gauge their effectiveness over time.

The TWRA CWD Response and Management Plan (2023 – 2027) contains five (5) overarching goals to address CWD in Tennessee. Objectives (and associated strategies, actions, tasks, when applicable) are outlined for each goal and depict the steps TWRA will take to achieve each Goal.

Management of CWD is complex and requires numerous long-term techniques to be applied, monitored, and adjusted over time.

CWD Response and Management Plan

The CWD strategic planning group was assembled in June of 2021 with the goal of producing a five-year strategic plan for addressing CWD in free-ranging deer and elk in Tennessee. The CWD strategic planning group consisted of representatives from TWRA, Tennessee Department of Environment and Conservation (TDEC), and Tennessee Department of Agriculture (TDA) Animal Health Division. This document was drafted with the assistance of a neutral, third-party facilitator and was developed through an inclusive and engaging process. Internal discussions between TWRA and partner agencies were regularly held during team and small working group meetings. An internal review of the document was conducted prior to external peer review. Stakeholders were involved throughout the development of the plan (Fall 2021), including one-on-one phone interviews, two stakeholder focus group meetings (both in April 2022), and public comment period including a public input meeting (December 2022 – January 2023).

Currently, there is no straightforward, universally accepted approach for management of the disease; thus, this plan provides a comprehensive approach based on the best available science. The TWRA CWD Response and Management Plan serves as the third version of Tennessee's previous CWD Response Plan (Tennessee Wildlife Resource Agency 2016, 2018a) and should be considered a supplement to the existing Elk (Tennessee Wildlife Resource Agency 2018b) and White-tailed Deer (Tennessee Wildlife Resource Agency 2019) Strategic Management Plans. Given the current distribution of CWD in Tennessee, this document has been devised both as a response and management plan, documenting the agency's intended response to the detection of CWD in new areas and outlining the agency's ongoing management of the disease in areas where it is known to occur.

Research on prion diseases, including CWD, and the effectiveness of management options is ongoing. Furthermore, each detection of CWD occurs within a unique set of circumstances that must be considered when deciding which CWD management programs or actions should be applied. Therefore, TWRA and its stakeholders should remain flexible in CWD response and management activities as there is not one universal option for addressing CWD.

This plan uses the legal numbering system, shown below, depicting goal statements and the nested levels of activities needed for achieving each goal. The nested levels include objectives, strategies, actions, and tasks. Objective statements are only stratified into the lower levels when necessary.

1. Goal
 - 1.1. Objective
 - 1.1.1. Strategy
 - 1.1.1.1. Action
 - 1.1.1.1.1. Task

- **Goal** – The purpose or result to be achieved through identified efforts.
- **Objective** – Specific things that need to be accomplished to achieve the goal.
- **Strategy** – Overall approach used to achieve objectives.
- **Action and Task** – Specific things that must be accomplished to achieve strategies/objectives.
- **Target Audience** – To whom the efforts are directed.
- **Timeframe** – The dates and/or frequency in which a strategy will occur.

Additional supporting materials are referenced throughout the plan as appendices, in which some remain as “living” documents and may be updated as new research becomes available or protocols are revised.

History of CWD in Tennessee

Beginning in 2002, due to increasing national concerns over CWD and the serious nature of the disease, TWRA began CWD surveillance of white-tailed deer and elk. In fall of 2016, a new pilot strategy was implemented, to significantly increase the number of samples obtained on an annual basis. The new approach was to enlist the assistance of taxidermists and game processors, paying them to collect samples. In 2016 and 2017, sample sizes for CWD testing increased by more than 590% (2,014 and 1,799 samples in 2016 and 2017, respectively). In 2018, TWRA implemented an enhanced surveillance strategy (Schuler et al. 2018), which is designed to both assess the risk of CWD introduction into Tennessee, and implement a weighted sampling strategy that integrates deer population and key risk factors. The overall goal of this surveillance approach is to maximize the chances of early detection of CWD.

By 2018, a total of 12,282 free-ranging white-tailed deer and 109 free-ranging elk had been tested for the disease. On December 14, 2018, TWRA was informed by its CWD diagnostic laboratory that 10 hunter-harvested white-tailed deer taken from Hardeman and Fayette Counties tested positive for CWD. This notification set off a chain reaction prescribed in TWRA's CWD Response Plan (Tennessee Wildlife Resource Agency 2016, 2018a). Unit CWD was created as a deer hunting unit which included the two newly affected counties and an additional six surrounding, at-risk counties (i.e., counties with a border within 10-miles of a known CWD positive deer). Carcass transportation and feeding restrictions were implemented, and the deer hunting season was extended with mandatory check stations.

As result of the extended deer hunting season and mandatory check stations, over 3,100 deer were sampled, 186 of which tested positive for CWD. Most positive samples came from deer harvested in Fayette and

Hardeman Counties while one positive sample came from a deer harvested in Madison County. This high volume of positive results within the first year of detection signified the potential for a much larger affected area than originally anticipated. TWRA would need to apply multiple years of intensive surveillance and monitoring to fully understand the extent of the disease.

Currently, TWRA is beginning to grasp the distribution of CWD in western Tennessee. As of September 2022, CWD has been found in free-ranging white-tailed deer in sixteen counties including Chester, Crockett, Dyer, Fayette, Gibson, Hardeman, Hardin, Haywood, Henderson, Henry, Lauderdale, Madison, McNairy, Shelby, Tipton, and Weakley ([Figure 4 Appendix A. Background](#)). Additionally, five counties have been designated as high-risk after CWD was detected within 10 miles of their borders: Carroll, Decatur, Lake, Obion, and Wayne County borders ([Figure 4 Appendix A. Background](#)). Surveillance of Tennessee's elk population is ongoing through the sampling of all harvested elk and any elk found dead (e.g., roadkill). Currently, free-ranging elk in Tennessee remain unaffected by CWD.

New CWD detections outside of the current affected area will likely occur at a far lower prevalence compared to the prevalence found in western Tennessee. Effective management in response to any CWD detections in novel areas will require immediate and focused action and may include increased sampling of deer in the immediate vicinity, implementation of the targeted removal program, and issuance of CWD Management Permits. Hunting regulations, such as increased bag limits and liberalized method of take, may not be implemented within the first year of a new detection to ensure management activities are based on a complete understanding of the specific circumstances surrounding the new detection.

Acronyms

Acronyms are defined during their initial use in the body of the text and provided here for quick reference.

AFWA – Association of Fish and Wildlife Agencies

APHIS – Animal and Plant Health Inspection Service

APR – Antler Point Restriction

BMPs – Best Management Practices

BSE – Bovine Spongiform Encephalopathy

CDC – Center for Disease Control and Prevention

CJD – Creutzfeldt-Jakob Disease

CWD – Chronic Wasting Disease

DMU – Deer Management Unit

ELISA – Enzyme-linked Immunosorbent Assay

FSE – Feline Spongiform Encephalopathy

iCJD – Iatrogenic Creutzfeldt-Jakob Disease

IHC – Immunohistochemistry

HD – Human Dimensions

PMCA – Protein Misfolding Cyclic Amplification

PrP – Prion Protein

PSA – Public Service Announcement

RPLN – Retropharyngeal Lymph Node

RT-QuIC – Real-time Quaking-induced Conversion

sCJD – Sporadic Creutzfeldt-Jakob Disease

SOP – Standard Operating Procedure

SOP4CWD – Surveillance Optimization Project for Chronic Wasting Disease

TCA – Tennessee Code Annotated

TDA – Tennessee Department of Agriculture

TDEC – Tennessee Department of Environment and Conservation

TFWC – Tennessee Fish and Wildlife Commission

TME – Transmissible Mink Encephalopathy

TSE – Transmissible Spongiform Encephalopathy

TWRA – Tennessee Wildlife Resources Agency

USDA – United States Department of Agriculture

UT – University of Tennessee

vCJD – Variant Creutzfeldt-Jakob Disease

WB – Western Blot

WMA – Wildlife Management Area

WS – USDA APHIS Wildlife Services

Abbreviated Glossary

Please refer to the [Glossary of Terms \(Appendix B\)](#) for a comprehensive list of terms.

- Adaptive management** – A rigorous approach for learning through deliberately designing and carrying out management actions as experiments, specifically to learn how the system responds to management and to increase the level of certainty regarding how best to achieve desired results (Western Association of Fish and Wildlife Agencies 2017).
- Cervid** – Any member of a family (Cervidae, the deer family) of ruminant artiodactyl mammals (such as the elk, moose, or white-tailed deer) that have solid deciduous antlers borne only by males except for the caribou in which both males and females bear antlers.
- Captive cervid facility** – A location that houses, raises, and/or sells cervid species or their products (urine, velvet, venison, antlers, shooting opportunities), these facilities may or may not be required to have a permit.
- Deer management unit** - The spatial units at which management alternatives will be applied and responses in program metrics will be monitored.
- Epidemiology** – The study of factors affecting the frequency and distribution of disease within populations.
- Epizootic** – A disease of animals that is occurring in a time or place where it is not expected or at a rate greater than expected as compared to past experience or pertaining to such an outbreak.
- Human dimensions** – How and why humans value natural resources, how humans want resources managed, and how humans affect or are affected by natural resources management decisions.
- Initial detection** – The first case of a disease in a new area, for purposes of this document in a Tennessee county.
- Infection** – The presence of a pathogen or infectious agent within a host, where it may or may not cause disease.
- Infectious agent** – A living organism or a molecule capable of inducing disease that can be transmitted from one individual to another, either directly or indirectly.
- Prevalence** – The number of animals testing positive for a disease divided by the total number of animals tested at a specific point or period of time. This is not a measure of the true prevalence of the population, but rather the apparent proportion of animals affected by the disease.
- Prion** – A transmissible misfolded protein, lacking nucleic acids, that induces abnormal folding of specific normal cellular proteins in the host to cause disease, the infectious agent of chronic wasting disease.
- Spark** – CWD detections that are along the leading edge of the known CWD distribution, in areas that contain low numbers of positive CWD detections, or at initial detections in areas previously unaffected by CWD (Green et al. 2014).
- Suspect, Not Confirmed** – A TWRA test result designation issued when a “suspect” ELISA test result is received from an accredited lab from a sample derived from outside a CWD-enzootic/established area, but results are inconclusive with follow-up diagnostics and additional characteristics of the case are not met (see [Appendix A. Background – Sampling and Diagnostics](#)).
- Targeted removal** – Removal of cervids from a focal area aside from, or in addition, to legal harvest. On private property, this activity is only undertaken with the clear consent and a written agreement (contract) between the landowner and TWRA’s contractor (i.e., USDA APHIS Wildlife Services).

1. Prevention Goal

Prevent the introduction or spread of CWD to areas where the disease has not been detected.

The Association of Fish and Wildlife Agencies' (AFWA) Technical Report on Best Management Practices (hereafter BMPs) for Prevention, Surveillance, and Management of Chronic Wasting Disease (Gillin and Mawdsley 2018) provides recommendations for prevention of CWD introduction and establishment based on peer-reviewed science. The objectives to support TWRA's Prevention Goal below were developed using these BMPs as a foundation and after consideration of the most recent scientific research. Implementation of BMPs for prevention can greatly reduce the risk of CWD spreading to areas not yet affected by the disease and is key for maintaining healthy cervid populations.

The targeted removal program is a management strategy TWRA may implement to prevent the spread of CWD along the leading edge of the known distribution, in areas that contain low numbers of positive CWD detections, or at initial detections in areas previously unaffected by CWD. These positive CWD cases are known as "sparks." Increased sampling at spark locations assists in understanding the extent of the disease as all deer removed are tested for CWD. Deer removal is accomplished through a partnership with US Department of Agriculture Wildlife Services (WS) and occurs after

the close of deer hunting seasons and before the start of turkey hunting season. Landowner participation is essential for the program to be effective as it occurs on properties surrounding the spark in which landowners have expressed written consent for WS staff access.

Targeted removal is also part of a rapid and focused response in newly affected areas. The intention of the program is not to eliminate all deer from the area, but to remove deer that are most likely to have been in contact with the CWD-positive case. Due to social behaviors, the probability of CWD infection to be found in adult females is increased if a closely related female is infected with the disease; thus, the matrilineal group should be targeted, especially at smaller spatial scales (Gear et al. 2010). Spark selection for implementing the targeted removal program will include consideration of the specific characteristics of the positive CWD detection and the most effective allocation of agency resources. The targeted removal program was initiated in Tennessee in 2021 and has been conducted on properties within a 3-mile radius of sparks. To better focus targeted removal resources in upcoming years of the program however, properties within a 1-mile radius of the spark will be prioritized for inclusion into the program.

Objective 1.1.

Minimize the spread of CWD from natural animal movements.

Target Audience: TWRA, Wildlife Veterinarian, partners, WS, landowners

Strategy 1.1.1.

Maintain or increase hunter participation in CWD-affected areas (see also Objective 5.3).

Timeframe: Ongoing

Action 1.1.1.1. Evaluate methods to increase hunter recruitment and retention in CWD-affected areas.

Action 1.1.1.2. Continue to provide incentives to maintain hunting pressure.

Action 1.1.1.3. Identify factors affecting changes in deer hunting practices and license numbers and the needs of deer hunters (informed by Objective 4.4.).

Action 1.1.1.4. Evaluate the value and feasibility of continuing to provide CWD service testing (i.e., at no cost to the hunter) for hunter harvested deer.

Action 1.1.1.5. Ensure that CWD-related hunting regulations are easily understood.

Action 1.1.1.6. Provide the CWD educational material as outlined in Objectives 5.1. and 5.2.

Strategy 1.1.2.

Conduct annual, post hunting season deer removal (targeted removal) in areas with isolated, low number of positive samples (hereafter: **sparks**) and/or in areas on the perimeter of the enzootic area.

Timeframe: Annually

Action 1.1.2.1. Annually evaluate sparks for either establishment of new targeted removal areas or discontinuation of established targeted removal areas (after three-year effort).

Action 1.1.2.2. Conduct outreach and communications with landowners in affected spark areas and prioritize acquiring land access to property of actual spark location.

Objective 1.2

Minimize the unnatural spread of CWD across the state from human activities.

Target Audience: TWRA, Wildlife Veterinarian, hunters, landowners, processors, taxidermists, stakeholders, partners, and wildlife rehabilitators

Strategy 1.2.1.

Limit the unnatural concentrations of free-ranging cervids due to feeding practices.

Timeframe: Ongoing

Action 1.2.1.1. Continue to restrict the placement of supplemental feed and/or minerals or other practices that contribute to unnatural concentrations of free-ranging cervids within CWD-affected areas.

Action 1.2.1.2. Evaluate the feasibility and value of applying restrictions on the placement of supplemental feed and/or minerals or other practices that contribute to unnatural concentrations of free-ranging cervids statewide.

Strategy 1.2.2.

Ban rehabilitation of free-ranging cervids statewide.

Timeframe: Spring 2024 – Fall 2025

Action 1.2.2.1. Collaborate with TWRA Law Enforcement to evaluate the current free-ranging cervid rehabilitation regulations (see [Appendix E. TWRA Statutes, Rules, and Regulations Related to CWD; TWRA Rule 1660-01-18](#)), develop a recommendation after outreach to current wildlife rehabilitators, and implement a ban statewide.

Strategy 1.2.3.

Maintain existing TWRA rules and regulations that have been established to limit the spread of CWD in the state (e.g., prohibition of use of bait, feeding and carcass transportation restrictions; see [Table 3 in Appendix A. Background – Best Management Practices](#)).

Timeframe: Ongoing

Action 1.2.3.1. Annually update any associated TWRA position statements and compile recent research findings relevant to each of the maintained rules.

Objective 1.3

Assist TDA to minimize risk of introduction and spread of CWD by the captive cervid industry.

Target Audience: TWRA, TDA, captive cervid facility owners

Strategy 1.3.1.

Support TDA’s captive cervid industry regulations as appropriate, including fencing, live movement prohibitions near CWD detections, enhanced surveillance, and CWD-free accreditation requirements (see [Appendix G. State of Tennessee Captive Cervid and CWD Regulations](#)).

Timeframe: Ongoing

Action 1.3.1.1. Collaborate with TDA annually or as detections occur to share information on positive free-ranging cervid CWD detections and their proximity to captive cervid facilities.

Action 1.3.1.2. Collaborate with TDA to obtain information on current CWD status of captive cervid facilities throughout the state.

Strategy 1.3.2. Maintain current prohibition on issuance of new TWRA Wildlife Preserve Permits (see [Appendix E. TWRA Statutes, Rules, and Regulations Related to CWD; TWRA Rule 1660-01-11](#)).

Timeframe: Ongoing

Strategy 1.3.3. Ensure that all existing TWRA Wildlife Preserves are carefully regulated/monitored to prevent the escape of captive animals and/or the entrance of wild animals into the facility.

Timeframe: Summer 2024 and annually

Action 1.3.3.1. Continue annual inspections of fencing surrounding Wildlife Preserves to ensure they are structurally sound.

2. Surveillance and Monitoring Goal

Maximize the probability of early detection in areas where CWD has not been detected and monitor the prevalence and geographic distribution of CWD in areas where it has been detected.

Disease surveillance refers to a systematic process intended to support early detection of a disease in a population. Surveillance for CWD in Tennessee’s white-tailed deer began in 2002 and has since been improved into a risk-based program and was developed in conjunction with Cornell University’s Wildlife Health Lab (Schuler et al. 2018). Our current sampling strategy focuses on the locations and demographic classes most likely to have the disease using a weighted quota system. Each county has a quota based on risk factors that might increase the likelihood of CWD introduction, including deer population density, the proximity to known CWD

occurrences, CWD prevention efforts in neighboring states, and the number of facilities (i.e., processors, taxidermists, captive cervid facilities) in an area that may increase the likelihood of prion movement into the county. ([Appendix A. Background - Surveillance](#)).

Once CWD is detected in an area, monitoring efforts, often involving increased sampling, are needed to determine prevalence over time, track any changes and to help evaluate management actions. This requires active participation from hunters, landowners, and agency partners to achieve sampling goals ([Appendix A. Background – Monitoring](#)).

Objective 2.1.

Maintain a systematic, rigorous risk-based surveillance strategy to promote early detection.

Target Audience: TWRA, Cornell University, partner agencies

Strategy 2.1.1.

Continue to apply risk-based surveillance target quotas in areas where CWD has not been detected through use of the Cornell University model (Schuler et al. 2018) and incorporate the use of SOP4CWD modeling applications.

Timeframe: Ongoing

Action 2.1.1.1. Annually update the list of known hazards and risks and incorporate into the risk-based surveillance model.

Action 2.1.1.2. Update county surveillance quotas for each new sample year (July-June).

Strategy 2.1.2. Collaborate with border states on surveillance efforts near borders.

Timeframe: Annually

Objective 2.2.

Within positive counties, monitor CWD prevalence to detect changes over time.

Target Audience: TWRA, research partners

Strategy 2.2.1.

Incorporate SOP4CWD modeling applications to determine sampling intensity required for accurate prevalence estimations over time.

Timeframe: Spring 2024 and annually

Strategy 2.2.2.

Confirm all harvest locations of positive CWD deer.

Timeframe: Fall 2023 and ongoing

Strategy 2.2.3.

Collect and consistently report prevalence data at, but not limited to, the county level scale.

Timeframe: Fall 2023 and ongoing

Action 2.2.3.1. Determine distribution of CWD sampling efforts within each county.

Action 2.2.3.2. Annually calculate prevalence from hunter-harvested deer (by March 15).

Action 2.2.3.3. Calculate and report annual prevalence from all CWD samples at the end of each sampling year (1 July – June 30).

Objective 2.3.

Maintain rigorous and contemporary CWD laboratory testing and reporting protocols.

Target Audience: TWRA, Wildlife Veterinarian, diagnostic laboratories, partner agencies

Strategy 2.3.1.

Consult diagnostician and practitioners and evaluate emerging research on CWD laboratory testing and diagnostic methods and procedures.

Timeframe: Ongoing

Strategy 2.3.2.

Update the TWRA CWD Testing and Reporting Protocol (see [Appendix F. Updated CWD Testing and Reporting Protocol](#)) as needed.

Timeframe: Annually

Objective 2.4.

Optimize statewide CWD sampling of free-ranging cervids.

Target Audience: TWRA, hunters, taxidermists, processors, landowners, interested public, research partners, diagnostic laboratories

Strategy 2.4.1.

Use the SOP4CWD applications to efficiently allocate resources for sampling.

Timeframe: Summer 2023 and annually

Strategy 2.4.2.

Conduct CWD sampling on all elk possible including hunter harvested elk, roadkill, elk found dead, and elk removed due to exhibiting signs of illness.

Timeframe: Ongoing

Strategy 2.4.3.

Prioritize sampling of clinical cervids.

Timeframe: Ongoing

Action 2.4.3.1. Evaluate and improve the internal and external components of the current “sick deer reporting system” (see [Appendix A. Background - Surveillance](#)) to streamline submission and review of reports.

Action 2.4.3.2. Improve communications and outreach on the importance of reporting and how to report sick cervid sightings.

Action 2.4.3.3. Ensure staff review of sick cervid reports is timely.

Strategy 2.4.4.

Ensure staff are fully equipped to conduct CWD sampling

Timeframe: Annually

Action 2.4.4.1. Train staff on protocols for proper collection, handling, and packaging of CWD samples, including disinfection of tools and/or materials.

Action 2.4.4.2. Support regional and field staffs’ sampling efforts by obtaining and maintaining adequate stock of needed supplies for CWD sampling.

Strategy 2.4.5.

Continue to incentivize the submission of CWD samples by taxidermists and processors especially in areas where CWD has not been found.

Timeframe: Fall 2023 and annually

Action 2.4.5.1. Adjust incentives programs as needed based on the need for increased sampling.

Action 2.4.5.2. Improve quality control of data collected by processors and taxidermists.

Strategy 2.4.6.

Collaborate with and seek out partnerships with diagnostic laboratories to optimize result turnaround time and sample allocations based on laboratory testing capacity.

Timeframe: Ongoing

3. Response and Management Goal

Minimize and mitigate the impacts of CWD where the disease has been detected and proactively respond to detections in novel areas.

In wild populations CWD often becomes established prior to the disease being detected, creating reduced likelihood of full disease eradication (Baeten et al. 2007, Miller and Fischer 2016). Rather, the current tools and strategies available to wildlife managers are geared towards CWD prevalence stabilization and reduced spread to minimize and mitigate the impacts of the disease. The TWRA is dedicated to strategies that would reduce impacts to wildlife populations and affected stakeholders.

The AFWA Fish and Wildlife Health Committee's BMPs include recommendations for management of CWD based on peer-reviewed science. These BMPs have facilitated CWD programs that are relatively consistent across legislative (state) boundaries. The objectives to support TWRA's Response and Management Goal below were developed using these BMPs as a foundation and after consideration of the most recent scientific research. Implementation of BMPs for management can reduce the risk of CWD prevalence increasing.

Management programs for CWD should be adjusted to fit the specific circumstances that exist in

affected area. Factors that should be considered when referencing programs used in other areas include differences in the affected species, prevalence, environmental characteristics, population densities, stakeholder needs, and environmental changes influenced by human action. Often, effective CWD management tools and programs used in different states or regions are referenced but may need to be adjusted to become applicable to cervid management in Tennessee. For example, CWD management programs that are effective for mule deer with low population densities in arid terrain may not be effective for white-tailed deer found in high population densities in the subtropical climate of the southeastern United States. The best management options will not be identical for each situation between states or even within a state. Management tools should be selected and applied only after considering all the relevant factors and stakeholders should remain flexible in differences in management strategies that may occur across the state ([Appendix A. Background - Management](#)).

Objective 3.1.

Maintain a current 5-year TWRA CWD Response and Management Plan.

Target Audience: TWRA, Wildlife Veterinarian, agency partners, stakeholders

Strategy 3.1.1.

Develop a 5-year CWD Response and Management Plan for 2023-2027 (See [Appendix H. CWD Strategic Planning Process](#) for details on the development of this plan).

Timeframe: Ongoing

Strategy 3.1.2.

Evaluate level of accomplishment of objectives in the CWD Response and Management Plan 2023-2027.

Timeframe: Annually

Objective 3.2.

Respond proactively to initial detections of CWD in novel areas.

Target Audience: TWRA, Wildlife Veterinarian, TFWC, WS, agency partners, affected hunters and landowners

Strategy 3.2.1.

Conduct the prescribed communications actions to confirm and distribute accurate information about the initial detection.

Timeframe: As needed

Action 3.2.1.1. Follow initial internal notification process.

Action 3.2.1.2. Confirm harvest location and other relevant details with the hunter.

Action 3.2.1.3. Provide external communications containing detection information and

relevant general CWD information (see Objective 5.1. and 5.2.).

Strategy 3.2.2.

Identify the extent of the newly affected area.

Timeframe: As needed

Strategy 3.2.3.

Referencing [TWRA Rule 1660-01-34](#), consider designating a CWD management zone including the newly positive county and contiguous affected counties.

Timeframe: As needed

Strategy 3.2.4.

Evaluate characteristics of the initial detection and any applicable factors at the most biologically relevant scale to inform management actions.

Timeframe: As needed

Action 3.2.4.1. Consider age and sex class of the initial detection.

Action 3.2.4.2. Consider any reported or observed clinical symptoms of the initial detection.

Action 3.2.4.3. Consider timing within the fiscal year or hunting season the detection was made to adjust sampling quotas if possible.

Action 3.2.4.4. Consider fine-scale geographic distribution of historical sampling efforts within the affected area (informed by Objective 4.3.).

Action 3.2.4.5. Consider the known deer population densities and known deer movement patterns at the deer management unit (DMU) scale and if unknown, consider implementing density sampling methodologies (informed by Objective 4.1.).

Action 3.2.4.6. Consider current deer management strategies (i.e., harvest regulations) of the affected area (including at the DMU level).

Action 3.2.4.7. Consider human dimension data and hunting culture in the affected area (informed by Objective 4.4.) and if unknown, consider implementing surveys to gather.

Strategy 3.2.5.

Develop management actions based on findings from the evaluations of the initial detection (see Strategy 3.2.4.).

Timeframe: As needed

Action 3.2.5.1. Evaluate initial detection for possible inclusion in post-season targeted removal (see Strategy 1.1.2.).

Action 3.2.5.2. Communicate availability of CWD Management Permits to landowners for removal of deer outside of regular deer hunting seasons (see [Appendix A. Background – CWD Management Permits](#)).

Action 3.2.5.3. Implement hunter incentive programs that include, but are not limited to, the Replacement Buck Program and the Fight CWD Incentive Program.

Strategy 3.2.6.

Adjust county-level CWD sampling quotas in the newly affected area to begin monitoring disease prevalence and understand the extent of the disease (see Objective 2.2.).

Timeframe: As needed

Objective 3.3.

Develop and implement management actions to minimize and mitigate the impacts of CWD in areas where the disease is known to exist.

Target Audience: TWRA, Wildlife Veterinarian, TFWC, WS, agency partners, affected hunters and landowners

Strategy 3.3.1.

Monitor CWD prevalence to detect changes over time (See Objective 2.2.).

Timeframe: Spring 2023 and ongoing

Strategy 3.3.2.

Conduct and/or support field-based research projects that inform management recommendations at the appropriate spatial scale (See Goal 4).

Timeframe: Early 2023 and ongoing

Strategy 3.3.3.

Implement management actions that are informed by details gathered from Strategies 3.2.3 – 3.2.4.

Timeframe: As needed

Action 3.3.3.1. Conduct annual, post-season targeted removal of deer at spark locations along the leading edge of the distribution of the disease (see Objective 1.2.).

Action 3.3.3.2. Implement hunter incentive programs that include, but are not limited to, the Earn-a-buck Program, Replacement Buck Program, and Fight CWD Incentive Program (see [Appendix A. Background – Hunter Incentive Programs](#)).

Task 3.3.3.2.1. Collaborate with other state agencies to develop new and/or more effective hunter incentive programs.

Action 3.3.3.3. Implement hunting regulation changes as warranted and at appropriate spatial scales that may include, but are not limited to, liberalized

method of take, increased bag limits, prohibition of antler point restrictions (APRs; public lands only), extended season(s), and allowing harvest on public lands during the August hunt.

Action 3.3.3.4. Maintain and/or improve on existing TWRA rules and regulations that limit the spread of CWD in the state (see [Table 3 in Appendix A. Background – Best Management Practices](#)).

Strategy 3.3.4.

Evaluate management actions applied in an affected area after a 5-year period and consider removing or adding management actions as warranted.

Timeframe: Spring 2024 and annually

Action 3.3.4.1. Evaluate the efficacy of the CWD Management Permit program to determine/adjust the spatial scale around individual positive locations at which permits are issued.

Objective 3.4.

Incorporate Suspect, Not Confirmed CWD cases (see Appendix F. Updated CWD Testing and Reporting Protocol) into Agency designation, response, and communication efforts.

Target Audience: TWRA, Wildlife Veterinarian, TFWC, agency partners, affected hunters and landowners

Strategy 3.4.1.

Continue to provide internal and external educational materials that promote understanding of *Suspect, Not Confirmed* cases and the current CWD Testing and Reporting Protocol.

Timeframe: Ongoing

Strategy 3.4.2.

Conduct the prescribed communications to confirm and distribute accurate information about the *Suspect, Not Confirmed* case.

Timeframe: As needed

Action 3.4.2.1. Follow prescribed notification streams for internal communications.

Action 3.4.2.2. Confirm harvest location and other relevant details with the hunter.

Strategy 3.4.3.

Evaluate surveillance efforts in the areas surrounding the *Suspect, Not Confirmed* sample and increase surveillance as necessary (see Objective 2.1.).

Timeframe: As needed

Action 3.4.3.1. Collaborate with landowners to support focused surveillance as close as possible to the location of the *Suspect, Not Confirmed* case.

4. Research Goal

Optimize the contribution of research to TWRA's CWD programs.

A strong foundational understanding of cervid population dynamics, CWD characteristics and the social implications of CWD is needed to inform disease management decisions. However, cervid population dynamics vary significantly throughout their range and obtaining data at the most biologically and sociologically relevant scale allows for maximizing the efficacy of CWD programs. Therefore, research and data collection will be prioritized to address knowledge gaps in Tennessee cervid populations and to measure the impacts of CWD management actions. For TWRA

to adequately base management recommendations, collaborative research is warranted to assess these variations at the deer management unit (DMU) scale where deer populations are most similar across space and where sociological characteristics in stakeholder perspectives may be similar. Ideally, all research objectives would support the development of an informative model to better determine the spatial scale at which CWD programs are applied ([Appendix A. Background – CWD Research](#)).

Objective 4.1.

Understand the population dynamics and movement patterns of free-ranging white-tailed deer in Tennessee.

Target Audience: Universities, Wildlife Veterinarian, partner agencies, TWRA

Strategy 4.1.1.

Measure free-ranging cervid population densities in each DMU through aerial monitoring, camera trap surveys, or other reliable methods (Tennessee Wildlife Resource Agency 2019).

Timeframe: Spring 2027 and annually

Strategy 4.1.2

Measure free-ranging cervid movement patterns to understand the likely natural spread of CWD to inform the risk-based surveillance model (see Strategy 2.1.1.) and the spatial scale at which to apply CWD management actions more accurately.

Timeframe: Pilot study: Early 2023 – Fall 2024; Additional DMUs: Winter 2025 – Fall 2027

Action 4.1.2.1. Initiate a pilot collared deer study to identify deer home ranges by sex and age class, document deer excursion events, and yearling dispersal distances in a CWD affected area within Tennessee.

Action 4.1.2.2. Replicate the collared deer study in each DMU to create a baseline understanding of deer movement patterns in various terrain types across the state.

Objective 4.2.

Improve understanding of the characteristics of CWD, its infectious agent, and management-related options.

Target Audience: Universities, Wildlife Veterinarian, partner agencies and universities, TWRA

Strategy 4.2.1.

Collaborate with other agencies and/or universities in a genetic analysis of CWD-sampled cervids.

Timeframe: Spring 2023

Action 4.2.1.1. Archive tissue samples and their CWD test results for future use.

Strategy 4.2.2.

Explore opportunities to support or conduct research for the development of novel CWD detection methods.

Timeframe: Spring 2023 and ongoing

Action 4.2.2.1. Continue to collaborate with Colorado State University to train canines as biosensors for CWD infection in various tissues and in soil.

Strategy 4.2.3.

Seek opportunities to support or conduct research to improve the understanding of prions on the landscape.

Timeframe: Spring 2023 and ongoing

Action 4.2.3.1. Continue to collaborate with the University of Wisconsin and the University of Minnesota in prion dynamics study.

Strategy 4.2.4.

Seek opportunities to support or conduct research to improve the understanding of CWD epidemiology.

Timeframe: Spring 2024 – Fall 2027

Strategy 4.2.5.

Seek opportunities to support or conduct research to improve the understanding of CWD pathogenesis.

Timeframe: Spring 2024 – Fall 2027

Objective 4.3.

Understand free-ranging white-tailed deer mortality by county, including harvest rate, hunter distribution, and deer-vehicle collisions.

Target Audience: TWRA, hunters, universities, insurance agencies

Strategy 4.3.1.

Develop methodology (and outreach materials) for hunters to provide location of harvested deer, regardless of intent to submit for CWD sampling.

Timeframe: Winter 2024

Strategy 4.3.2.

Obtain geographical data of deer-vehicle collisions throughout the state.

Timeframe: Annually

Strategy 4.3.3.

Incorporate data collected in this Objective into modeling efforts to improve precision of surveillance and monitoring efforts.

Timeframe: Spring 2025 and ongoing

Objective 4.4.

Understand and detect changes over time in stakeholder perspectives of and attitudes towards CWD and associated management.

Target Audience: Hunters, landowners, TWRA, universities, partner agencies and universities

Strategy 4.4.1.

Administer a periodic statewide survey to measure knowledge, attitudes, perceptions, and support for management actions related to CWD.

Timeframe: Spring 2024 and periodically thereafter

Action 4.4.1.1. Determine frequency at which to administer the statewide survey.

Action 4.4.1.2. Identify any perceived devaluation of deer in relation to CWD and management actions.

Action 4.4.1.3. Identify knowledge gaps affecting the acceptance of CWD management actions.

Action 4.4.1.4. Assess how proximity to CWD affected areas and length of time within proximity to CWD affected areas influences stakeholder attitudes and opinions.

Action 4.4.1.5. Assess changes in hunting practices (e.g., number of trips per hunter, party size, license purchase) with respect to length of exposure and proximity to CWD affected areas (this strategy informs Objective 5.3.).

Action 4.4.1.6. Assess the impact of CWD on hunting-related expenditures (this strategy informs Objective 5.3.).

Action 4.4.1.7. Identify public preferences for learning methods about CWD.

Strategy 4.4.2.

Develop and administer a survey of hunters to assess their experience and satisfaction with interactions after being contacted by TWRA staff to confirm harvest location information. Currently, TWRA contacts all hunters that have received positive test results on their deer harvest to confirm harvest locations and additional harvest details.

Timeframe: Fall 2025 and annually

Objective 4.5.

Obtain external funding to support CWD research projects as principal investigators or in collaboration with partners.

Target Audience: State, federal, and private funding agencies, TWRA, Wildlife Veterinarian

Strategy 4.5.1.

Develop and maintain an ongoing list of research needs for understanding and managing CWD in Tennessee.

Timeframe: Spring 2023 and ongoing

Strategy 4.5.2.

Develop partnerships with universities and other agencies that have common goals in CWD research.

Timeframe: Spring 2023 and ongoing

Strategy 4.5.3.

Identify CWD related grant sources and funding agencies.

Timeframe: Ongoing

Action 4.5.3.1. Develop short synopses for priority research projects.

Action 4.5.3.2. Pursue identified grant opportunities with partnerships as appropriate.

5. Outreach and Communications Goal

Foster stakeholder partnerships in support of CWD programs through increased understanding about CWD.

Stakeholder engagement throughout the state is an essential component of a successful CWD Response and Management Plan and must be integrated into all aspects of the plan. To be effective, management strategies for CWD require active support and long-term commitment from hunters, landowners, processors, taxidermists, TWRA staff, TFWC, partner agencies, and wildlife enthusiasts.

The focus is to distribute accurate and effective information while combating misinformation on CWD and gain support from stakeholders in CWD management activities. Outreach and communications materials based on the best available science that are shared by well-trained TWRA staff will ideally ensure stakeholder trust in Agency management decisions.

Objective 5.1.

Develop and distribute scientifically based information regarding CWD and its management.

Target Audience: TWRA, Wildlife Veterinarian, hunters, landowners, processors, taxidermists, TWRA social media followers, interested public

Strategy 5.1.1.

Develop relevant CWD informational materials.

Timeframe: Ongoing

Action 5.1.1.1. Publish an Annual CWD Report by August 15 that documents TWRA and partner CWD programs. This report will cover the CWD data collection year from July 1 through June 30.

Task 5.1.1.1.1. Submit draft for review to the Wildlife and Forestry Division Chief and Assistant Chiefs by July 15th.

Task 5.1.1.1.2. Complete reviews and provide final draft to the Director by August 15th.

Task 5.1.1.1.3. Present an overview of the report at a publicly noticed TFWC meeting.

Action 5.1.1.2. Annually update the TN CWD 101 informational presentation.

Action 5.1.1.3. Annually update the “Hunting with CWD” informational flyer, talking points document, and frequently asked questions document.

Action 5.1.1.4. Create videos and podcasts with pertinent CWD information for TWRA programs such as Drop the Tailgate, Tennessee Wildcast, the TWRA YouTube channel, and Tennessee Outdoor Journal.

Action 5.1.1.5. Create and maintain a section on the TWRA Wildlife Diseases webpage that explains diseases which affect cervids and those that appear clinically similar to CWD.

Action 5.1.1.6. Explore the value of publishing a quarterly or monthly newsletter containing CWD updates for external stakeholders.

Strategy 5.1.2.

Distribute education materials to the public, partners, and all TWRA staff.

Timeframe: Ongoing

Action 5.1.2.1. Utilize the www.CWDinTN.com website as a resource for all CWD-related information in Tennessee and maintain with current information.

Task 5.1.2.1.1. Annually review and update as needed the www.CWDinTN.com website prior to the start of deer hunting season and update with new information when it becomes available.

Action 5.1.2.2. Announce new CWD-affected areas through press releases and social media posts as appropriate.

Action 5.1.2.3. Hold public meetings (in-person, virtually, or hybrid formats) in newly affected counties and otherwise as needed.

Action 5.1.2.4. Incorporate CWD informational videos and printed materials into the Hunter Education classroom and online course.

Action 5.1.2.5. Use social media platforms for informational posts and advertising prior to season start date and throughout the deer hunting seasons.

Task 5.1.2.5.1. Post information related to CWD on Fridays throughout deer hunting seasons (“Fight CWD Fridays”).

Task 5.1.2.5.2. Prevent sharing of misinformation on TWRA-supported social media platforms through the regular monitoring of comments on informational or educational posts.

Task 5.1.2.5.3. Seek partnerships with local social media influencers to provide CWD-related content and interviews.

Task 5.1.2.5.4. Use geofencing for advertisements on social media.

Action 5.1.2.6. Seek out opportunities to share public service announcements and to host question-and-answer sessions through local radio, television, and streaming outlets prior to the start of deer hunting seasons and as needed.

Action 5.1.2.7. Utilize the CWD email listserv to distribute information to external stakeholders and/or to distribute a CWD quarterly or monthly newsletter.

Action 5.1.2.8. Utilize billboard messaging in CWD affected areas, including on applicable TWRA-owned properties.

Action 5.1.2.9. Seek opportunities to contribute to and distribute CWD information with partners (e.g., TWRF, TWF, other NGOs) and incorporate CWD information into partner outreach programs (state parks and natural areas classrooms).

Action 5.1.2.10. Continue to host monthly conference calls to update partner agencies and stakeholders.

Task 5.1.2.10.1. Provide written summary of monthly call to staff and partners.

Action 5.1.2.11. Explore the potential of an annual CWD awareness day (similar to World Rabies Day) to increase public awareness of CWD.

Objective 5.2.

Ensure TWRA staff are well-trained and have accurate and current information on CWD and associated management.

Target Audience: Foundational knowledge: reference material for all staff

Comprehensive knowledge: statewide public-facing staff: Wildlife Officers, WMA staff, administrative staff

Strategy 5.2.1.

Provide CWD informational materials supporting a foundational knowledge of CWD for all agency staff (as outlined in Strategy 5.1.1.).

Timeframe: Spring 2024 and ongoing

Action 5.2.1.1. Incorporate CWD information into official agency new employee orientation.

Strategy 5.2.2.

Provide CWD informational material supporting a comprehensive knowledge for staff that take an active role in CWD programs (as outlined in Strategy 5.1.1. and the following Actions).

Timeframe: Spring 2024 and ongoing

Action 5.2.2.1. Annually provide CWD updates at TWRA Law Enforcement District meetings and during the TWRA Law Enforcement Academy.

Action 5.2.2.2. Incorporate training and/or updates annually during LE District or other meetings, the Wildlife Officer academy and the Wildlife and Forestry Division Wildlife Workshop.

Action 5.2.2.3. Add a page on TWRA’s staff-accessible intranet website to include CWD literature, other agency’s CWD plans, reliable websites, and additional information as applicable.

Strategy 5.2.3.

Develop and implement CWD 101 training programs for TWRA and make available to partner agencies.

Timeframe: Spring 2026 and ongoing

Action 5.2.3.1. Create an agency CWD continuing education certification program maintained annually by field staff in the affected area.

Objective 5.3.

Maintain or increase hunter participation in CWD-affected areas.

Target Audience: Deer hunters, TWRA (marketing), landowners, interested public

Strategy 5.3.1.

Evaluate methods to increase hunter recruitment and retention in CWD-affected areas.

Timeframe: Based on outcome of human dimensions survey in Objective 4.4.

Strategy 5.3.2.

Continue to provide incentives to maintain or increase hunting effort.

Timeframe: Ongoing

Strategy 5.3.3.

Identify factors affecting changes in deer hunting practices and license numbers and the needs of deer hunters (informed by Objective 4.4.).

Timeframe: See Objective 4.4.

Strategy 5.3.4.

Evaluate the value and feasibility of continuing to provide CWD service testing for hunter harvested deer.

Timeframe: Spring 2023 and annually

Strategy 5.3.5.

Ensure that CWD-related hunting regulations are easily understood.

Timeframe: Fall – Winter 2023 (Deer hunting seasons) and annually

Strategy 5.3.6.

Provide the CWD educational material as outlined in Objective 5.1.

Timeframe: Ongoing

Appendix A. Background

Scientific Foundation

Chronic wasting disease is caused by a prion, an infectious protein that lacks nucleic acids, or more simply put, an infectious, abnormal protein (Prusiner 1997; Prusiner 1998). Prions are not living organisms like bacteria, parasites, or fungi and are very difficult to destroy. Prions occur when the normal cellular prion protein (PrP^C) structure is transformed from containing α -helices into numerous pleated β -sheets (Pan et al. 1993). The resulting structure is an abnormally folded prion protein (PrP^{res}) that is capable of causing adjacent normal prion proteins to misfold. The accumulation of PrP^{res} in the lymphatic and central nervous system (CNS) does not trigger an immune response in the animal and leads to neurodegeneration that is eventually fatal (Haywood 1997; Prusiner 1998). These are all characteristics of the group of diseases called transmissible spongiform encephalopathies (TSEs) and can be presented as genetic, infectious, or sporadic disorders (Haywood 1997; Schneider et al. 2008).

Various forms of PrP^{res} (PrP^{sc}, PrP^{bse}, PrP^{cpd}, etc., according to the particular TSE involved) have been identified in a number of mammals (Chesebro 2003). The first TSE to be recognized in 1732 was scrapie, which affects sheep and goats. The protein was not proposed as the infectious agent until 1967 and Prusiner introduced the term prion in 1982 (Prusiner 1982, Zabel and Reid 2015). Other recognized TSEs include bovine spongiform encephalopathy (BSE) or “mad cow disease” in cattle, transmissible mink encephalopathy (TME) in mink, and feline spongiform encephalopathy (FSE) in nondomestic cats. Other TSEs documented in humans include kuru in the Fore people of New Guinea, iatrogenic Creutzfeldt-Jakob disease (iCJD), variant CJD (vCJD; caused by C-BSE), and sporadic CJD (sCJD) (Houston and Andréoletti 2019). These prion diseases have also been experimentally transmitted to various species including mice, rats, hamsters, and non-human primates, to model the study of CWD pathogenesis, to study transmission barriers to humans, and to study potential natural reservoir species (Haley and Hoover 2015).

Chronic wasting disease is the TSE specific to cervids and has been identified in mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), elk (*Cervus canadensis*), moose (*Alces alces*), caribou (reindeer; *Rangifer tarandus*), and red deer (*Cervus elaphus*) (Williams and Young 1980, 1982, Spraker et al. 1997, Kreeger et al. 2006, Baeten et al. 2007). Not all cervids are susceptible through normal transmission routes. In a seven-year experiment conducted by Rhyan et al. (2011), fallow deer (*Dama dama*) were housed in a CWD-contaminated enclosure with infected mule deer and none of the 41 exposed fallow deer became ill nor tested positive for CWD (Rhyan et al. 2011).

Chronic wasting disease is a slowly progressing disease causing neurologic damage over time. Visible signs of CWD do not begin to appear until 18 to 36 months post-infection. The clinical signs of CWD are similar to that of scrapie and BSE but tend to be more subtle. The most noticeable clinical signs of CWD in adults are weight loss and behavioral changes including altered stance with lowering of the head and drooping of the ears. The disease can also cause polydipsia (increased fluid intake), polyuria (increased urination), flaccid hypotonia of the facial muscles, bruxism (grinding of the teeth), general listlessness and depression, terminal anorexia, excessive salivation, and regurgitation of ruminal fluid. In the terminal stages, esophageal hypotonia and dilation as well as difficulty swallowing leads to secondary aspiration pneumonia (Haley and Hoover 2015).

Pathogenesis

Prions can essentially be found in all tissues of the body but become more highly concentrated in neurologic tissues as the disease progresses. The pathogenesis of CWD prions from natural exposure has been found to be similar to that of scrapie and vCJD (Haley and Hoover 2015). The animal is likely exposed orally to material contaminated with prions. Exposure to prions may also occur nasally; however, the pathways are not completely understood through this mechanism. Once contaminated materials are ingested, the prions move to gut-associated lymphatic tissue including the retropharyngeal lymph nodes and the mesenteric lymph nodes where accumulation occurs (Sigurdson et al. 2002, Williams 2005, Haley and Hoover 2015). Research suggests the passage of prions to the CNS may occur through the vagus nerve and accumulate in the dorsal motor nucleus of the vagus nerve in the obex region of the medulla oblongata (Haley and Hoover 2015). Prions have also been detected in peripheral tissues and organs including rectoanal lymph nodes, skeletal muscle, heart, spleen, liver, testes, interdigital glands, and antler velvet (Angers et al. 2006, 2009, Ness et al. 2022). Infectious prions can become detectable in the lymphatic tissues within weeks post-exposure while prions may not become detectable in the brain for months post-exposure (Sigurdson et al.

2002). Widespread distribution of prions throughout the CNS has been thought to occur near the onset of clinical signs. The distribution of prions throughout peripheral tissues has been described as occurring after accumulation in the brain. However, prions may become detectable in excreta much sooner. Prions can be shed by the secretions and excretions of the animal via urine, semen, blood, saliva, feces, and milk (Mathiason et al. 2006, Safar et al. 2008, Haley and Hoover 2015).

Epidemiology

Chronic wasting disease has a very complex epidemiology and has been studied in captive and wild cervid environments. The epidemiology of CWD must be understood to effectively apply management strategies to wild populations. The disease can be passed horizontally from one animal to another and vertically from mother to offspring. Horizontal movement of the disease is likely to occur within deer family groups due to increased interactions; however, CWD may also spread to individuals of different deer family groups where home ranges overlap (Xu et al. 2022). Although all age and sex classes of deer are susceptible to becoming infected with the disease, adult male deer are more likely to be infected than adult female deer (Gear et al. 2006). Due to buck dispersal behavior, adult males are more likely to spread CWD across the landscape and may also be responsible for horizontal transmissions to different family groups. In addition to horizontal transmission within a species, CWD transmission has been observed from elk to mule deer and white-tailed deer, from mule deer to elk, and from mule deer to white-tailed deer (Williams 2005). Vertical transmission of CWD has been documented from mother to full term offspring as well as to *in utero* fetuses (Nalls et al. 2013).

Direct transmission of CWD involves “deer-to-deer” contact with an infected animal while indirect transmission involves exposure to contaminated fomites in the environment. Both modes of transmission have been documented to be highly efficient in sustaining CWD in populations (Miller and Williams 2003). Exposure to prions in saliva from social grooming behaviors or the inhalation of prions in mucosa that have been aerosolized during behaviors such as blowing may explain the direct movement of prions from animal to animal (Denkers et al. 2013). In a study conducted by Miller et al. (2004), the transmission of CWD to mule deer was documented to occur directly in enclosures where infected and non-infected deer commingled as well as indirectly without the presence of infected deer but in enclosures contaminated with excreta and carcasses of CWD-infected deer years prior (Miller et al. 2004).

Environmental Persistence of Prions

The study by Miller et al. (2004) not only demonstrates the possible modes of transmission for CWD, but also that prions may persist in the environment and remain infectious for years (over two years in one portion of the study). Prions are extremely hardy and difficult to destroy, allowing them to resist common inactivation techniques including ultraviolet and ionizing radiation (Gibbs et al. 1978). Although the exact number of years in which prions may remain viable in the environment is currently unknown, studies suggest that this may be for several years, possibly decades (Haley and Hoover 2015).

Features of the environment may act as reservoirs for prions, potentially serving as sources of CWD infection for naive animals. Prions deposited into the soil bind quickly and strongly to various minerals and soil types, especially montmorillonite clay and quartz. This strong affinity for soils may limit the travel of prions through the water column, enable protection from physical, chemical, and enzymatic degradation, and allow for movement of prions with particles involved in overland flow and windborne dust (Smith et al. 2011, Gough et al. 2015). Nichols et al. (2009) detected prions at low levels in water samples taken from an enzootic area during a time of increased water runoff (Nichols et al. 2009). Cervids have a very close association with soil due to grazing behaviors and are especially at risk of the uptake of prions in contaminated soils. Locations used as feeding or bait sites which artificially congregate deer may become CWD hotspots when infected deer repeatedly shed prions at these focal points. In an ongoing study, prions have been detected in soil of historical bait sites using real-time quaking-induced conversion (RT-QuIC) assays (Lichtenberg et al., unpublished data). Elk wallows, antler rubs, and scrapes which may be frequented or investigated by multiple deer may also act as locations for environmental infection.

Sampling and Diagnostics

The standard tissues used for diagnostic evaluation are the obex of the medulla oblongata and the retropharyngeal lymph nodes (RPLNs). The RPLNs have become the preferred tissue for testing free-ranging white-tailed deer as it is easier and less labor intensive to remove than the obex, an important feature for agencies dealing with high sample volumes (Hibler et al. 2003, Bloodgood et al. 2020). Furthermore, autolysis of the brainstem may occur by the time a hunter brings a deer in for sampling, or the portion of the brainstem necessary for sampling the

obex is often not included if the head of the animal is not removed properly. The pathogenesis of CWD in mule deer and white-tailed deer also suggests that testing RPLN as opposed to the obex could allow for earlier detection of disease in the animal as prions accumulate in lymphatic tissues before the CNS. In a study conducted by Hibler et al. (2003), 22% of mule deer obex tissue samples tested negative while the RPLN tested positive. Conversely, it is more common in elk for the obex to test positive while RPLN tests negative (10-15%), therefore the obex is the preferred tissue for diagnostics in elk (Williams 2005). The caveat of using RPLN for CWD testing is that both lymph nodes should be tested whenever possible as the disease may be detected in one lymph node and not the other. Multiple sections of each RPLN should be used since the prions may not be evenly distributed throughout the tissue (Williams 2005, Bloodgood et al. 2020).

Accurately identifying CWD was initially limited to microscopic examination of CNS tissues for the presence of the signature cellular degradation exhibited by the disease. This histopathology is not capable of diagnosing early CWD infection since spongiform encephalopathy does not tend to occur until clinical signs appear in the later stages of the disease (Williams 2005). Over time, diagnostic tests have been developed with high sensitivity and specificity for detection of CWD prions (PrP^{res}) and have evolved from strictly postmortem to antemortem testing (Haley and Hoover 2015). These tests are capable of distinguishing between the normally folded cellular prion protein from the misfolded, infectious isoform in formalin fixed tissues in the preclinical stage of the disease (Haley and Richt 2017). Immunohistochemistry (IHC) has been considered the “gold-standard” for CWD diagnostics and uses various antibodies for antigen identification resulting in high sensitivity and specificity for PrP^{res} (Williams 2005). Rapid tests have also been developed for CWD diagnostics. Most notably, enzyme-linked immunosorbent assay (ELISA; Bio-Rad Chronic Wasting Disease Test, BioRad Laboratories, Hercules, CA) is a high throughput test that has been shown to have 98.3% sensitivity and 100% specificity when compared to IHC in mule deer (using RPLN; Hibler et al. 2003). The sensitivity of a diagnostic test is the probability of a true positive or detection of the presence of the disease. The specificity of a diagnostic test is the probability of a true negative result in the absence of the disease. The use of ELISA has benefits for large-scale surveillance of free-ranging cervid populations as it is less costly and less labor-intensive than IHC. Furthermore, IHC testing is not available at all diagnostic labs and protocol requires a minimum of three to five days of preparation time (i.e., if samples were already adequately preserved in formalin) before specimens are ready for microscopic evaluation. Processing ELISA tests can be halted overnight for convenience but can otherwise provide results within five hours. Hibler et al. (2003) noted that the antibodies used in ELISA may have a greater affinity for PrP^{res} than the monoclonal antibody (MAb F99/97.6.1) used in IHC. It should be noted that results from these laboratory tests are reported as “not detected” rather than negative because of the unknown sensitivity of modalities for CWD detection in the very early stages of the disease.

The above-mentioned tests are not practical for detection of prions in samples that may contain extremely low concentrations of prions such as bodily fluids and soils, and, as such, alternative diagnostic tests should be used. Seeded amplification methods such as real-time quaking-induced conversion (Rt-QuIC) and protein misfolding cyclic amplification (PMCA) are in vitro tests that provide high sensitivity for PrP^{res} and have been at the forefront of antemortem testing and investigations of pathogenesis, transmission, and environmental persistence of prions (Haley and Hoover 2015).

An updated protocol for CWD testing and reporting has been created for testing free-ranging cervids in Tennessee (see [Appendix F – Updated CWD Testing and Reporting Protocol](#)). This protocol supports a more proactive response in the case of inconclusive test results by the addition of a third test result category, “suspect, not confirmed.” A suspect, not-confirmed result will be issued only outside of the currently known CWD enzootic area, when a suspect ELISA result is returned but receives a not detected result in any subsequent tests, and there is insufficient evidence to support the designation of a positive test result. Additional evidence to consider may include reported CWD clinical signs, the age and sex class of the animal, proximity to CWD detections, proximity to suspect, not confirmed cases, proximity to current and historic captive cervid facilities, and proximity to sick deer reports.

Surveillance

Early detection of CWD is imperative to keep the disease from becoming established in an area. In the case of New York in 2005, an early detection of CWD in five captive white-tailed deer was made in Oneida County. The aggressive and quick response that followed resulted in the detection of three additional cases in the captive herds through depopulation efforts and the detection of two positive free-ranging deer in targeted removal efforts. Since this event, surveillance efforts were adjusted accordingly and there have been no additional detections of CWD in the state.

TWRA has tested deer and elk in Tennessee since 2002. Historical surveillance strategies have been summarized in the AFWA Technical Report on Best Management Practices for Prevention, Surveillance, and Management of Chronic Wasting Disease (Gillin and Mawdsley 2018). These practices have been studied by experts who are well-versed in management and research of CWD. In summary, these strategies comprised a mixture of general sampling quotas and weighted surveillance based on qualitative risk factors but were not sufficient to facilitate early detection of the disease (Walsh 2012, Ballard et al. 2021).

In 2016, CWD was discovered in Arkansas, prompting TWRA to improve and intensify CWD surveillance efforts. Previously, surveillance efforts in Tennessee were primarily conducted through convenience sampling rather than sampling based on associated risks. The need to improve CWD surveillance culminated in a risk-based surveillance plan that the Cornell Wildlife Health Lab helped design and provides a sampling strategy for white-tailed deer (Schuler et al. 2018). The surveillance program focuses on the locations and demographic classes most likely to have the disease using a weighted quota system. A targeted quota is generated for each county based on factors that might increase the risk of CWD introduction (Figure 1). Risk factors considered for developing quotas include deer population density, the proximity to CWD occurrences, CWD prevention efforts in neighboring states, and the number of facilities that may increase the likelihood of prion movement into the county (processors, taxidermists, and captive cervid facilities).

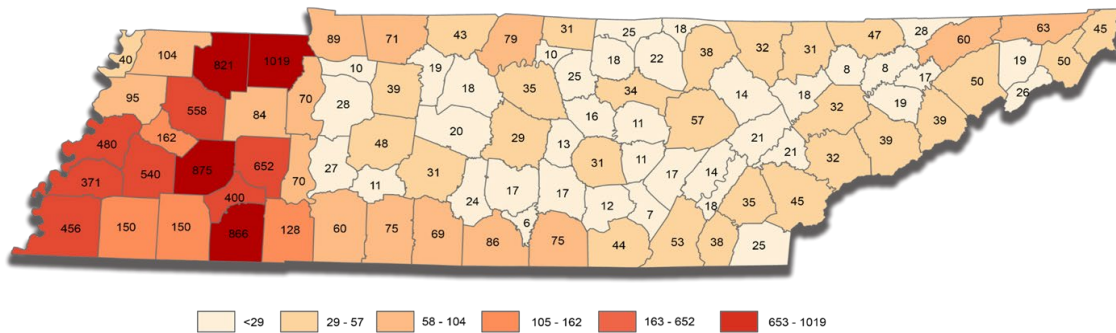


Figure 1. Surveillance for CWD point quota map developed for the 2021-2022 fiscal year (map created by Lynn Barrett, TWRA).

The point quota assigned to each county does not equate to the number of deer necessary for adequate surveillance. Rather, each animal is assigned a point value based on its potential for being detected with the disease. For example, adult males are worth more points than adult females as older aged bucks are more likely to be detected with the disease. Hunter harvested deer are the primary source for meeting the established sample quotas; however, deer collected because of a sick deer report and those removed through the targeted removal program are also sampled for CWD.

Agency staff rely on the public to report sightings of sick deer and elk. To efficiently collect and respond to such reports, TWRA hosts an online reporting form accessible to the public which informs efforts to gauge disease and health issues that might affect the Tennessee deer population (<https://www.tn.gov/content/tn/twra/sickdeer.html>). All reports are reviewed by a biologist to evaluate the severity of the circumstances. If the reviewing biologist determines an attempt for disease sampling is warranted and the contact information was included in the report, the biologist may contact the person who reported the sick deer for more information. Although many reports may not necessitate an onsite visit by TWRA, reports that meet the criteria for a suspect CWD case are prioritized for sampling.

TWRA has also worked closely with processors and taxidermists through an incentive program that assists in obtaining samples from hunter harvested deer. The incentive program is designed in a tiered system to incentivize participants to either (1) save deer heads for TWRA to later retrieve for sampling, or (2) remove lymph node samples in preparation for TWRA to submit for laboratory testing. Processors and taxidermists are paid based on the tier level of their participation. This program may not be utilized to the same extent across all regions of the state as sample target quotas and staff availability vary.

Geographic Distribution

Chronic wasting disease has been present in North America for over 50 years. The disease was first identified in a Colorado captive mule deer in 1967 and not knowing the disease agent at the time, it was described as a wasting syndrome. It was not until the early 1980s that CWD was classified as a TSE (Williams and Young 1980). Eventually, chronic wasting disease was detected in free-ranging mule deer as well as other captive and free-ranging cervids including rocky mountain elk (i.e., wapiti), white-tailed deer, and moose (Williams and Young 1982, Spraker et al. 1997, Sohn et al. 2002, Williams 2005, Kreeger et al. 2006). The first free-ranging detections of CWD were located in Colorado and Wyoming but detections in captive and/or free-ranging populations have since expanded to 28 additional states and four Canadian provinces (Richards 2021; Figure 2). Detections have also occurred in South Korea from the importation of a Canadian cervid. The first CWD detection in Europe was in 2016 and of free-ranging reindeer in Norway. Subsequently, CWD was detected in moose in Finland and Sweden in 2018 and 2019, respectively (Averhed et al. 2019, Richards 2021). Natural and anthropogenic movement of animals have both certainly played a role in the spread of CWD across the landscape.

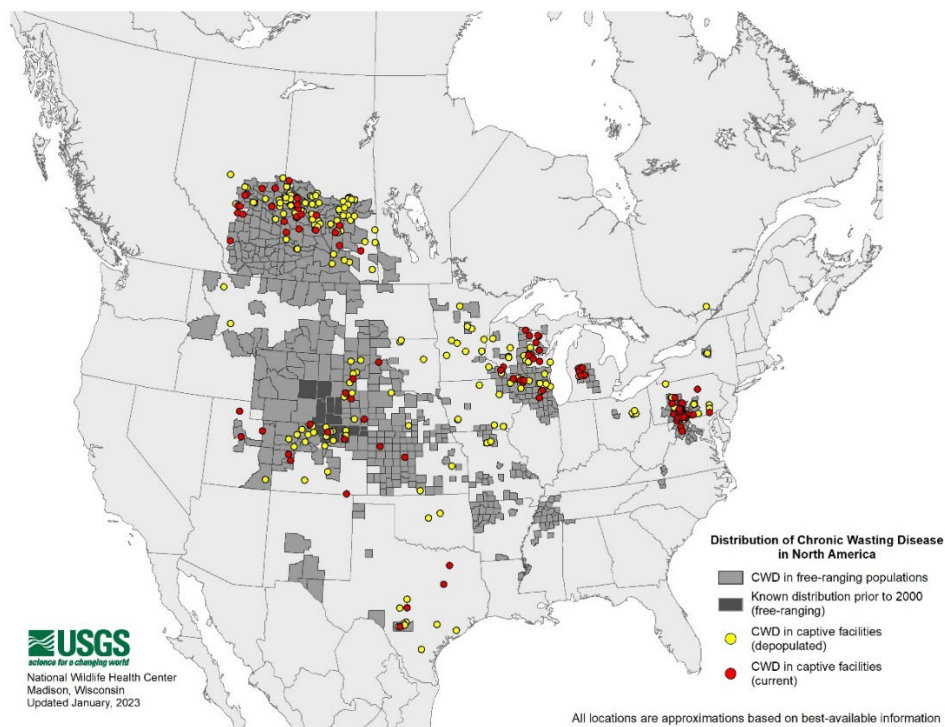


Figure 2. Distribution of Chronic Wasting Disease in North America, updated January 26, 2023. (Expanding Distribution of Chronic Wasting Disease | U.S. Geological Survey (usgs.gov))

CWD in Tennessee

In 2002, following the discovery of CWD in Wisconsin, TWRA began to survey deer across the state for CWD. In 2016, CWD was discovered in Arkansas, prompting TWRA to improve and intensify CWD surveillance efforts culminating in a risk-based surveillance plan developed in partnership with the Cornell Wildlife Health Lab. This CWD surveillance program is still ongoing from year to year in every county in Tennessee. During this period, TWRA implemented measures to keep CWD out of Tennessee, including interstate carcass transportation and urine lure restrictions.

On December 14, 2018, TWRA was informed by its CWD diagnostic laboratory that 10 hunter-harvested white-tailed deer taken from Hardeman and Fayette Counties tested positive for CWD. This notification began a chain of communication and management actions prescribed in TWRA’s CWD Response Plan (Tennessee Wildlife Resource Agency 2016). Unit CWD was created as a deer hunting unit which included the two newly affected counties and an additional six surrounding, at-risk counties. Carcass transportation and feeding restrictions were implemented, and the deer hunting season was extended with mandatory check stations. As result of the extended deer hunting season and mandatory check stations, over 3,100 deer were sampled to reveal a baseline extent and prevalence of CWD in the area.

Currently, the deer hunting Unit CWD includes twelve counties (Figure 3); However, as of September 2022, the disease has been found in wild white-tailed deer in sixteen Tennessee counties including Chester, Crockett, Dyer, Fayette, Gibson, Hardeman, Hardin, Haywood, Henderson, Henry, Lauderdale, Madison, McNairy, Shelby, Tipton, and Weakley (Figure 4). Additionally, five counties have been designated as high-risk after CWD was detected within 10 miles of Carroll, Decatur, Lake, Obion, and Wayne County borders (Figure 4).

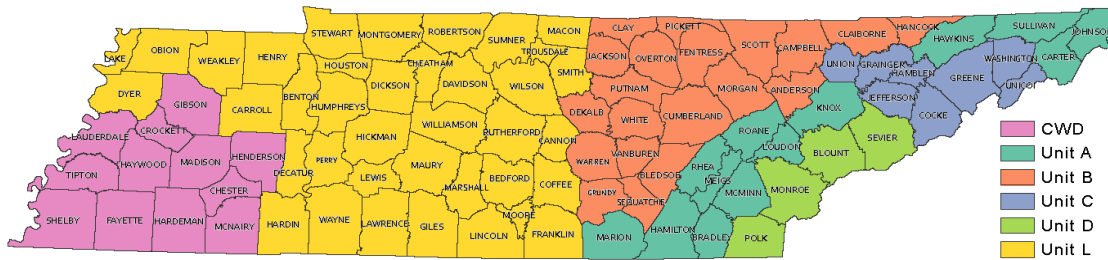


Figure 3. Deer Hunting Units (including Unit CWD) in Tennessee for the 2022-2023 deer hunting season (map created by Lynn Barrett, TWRA).

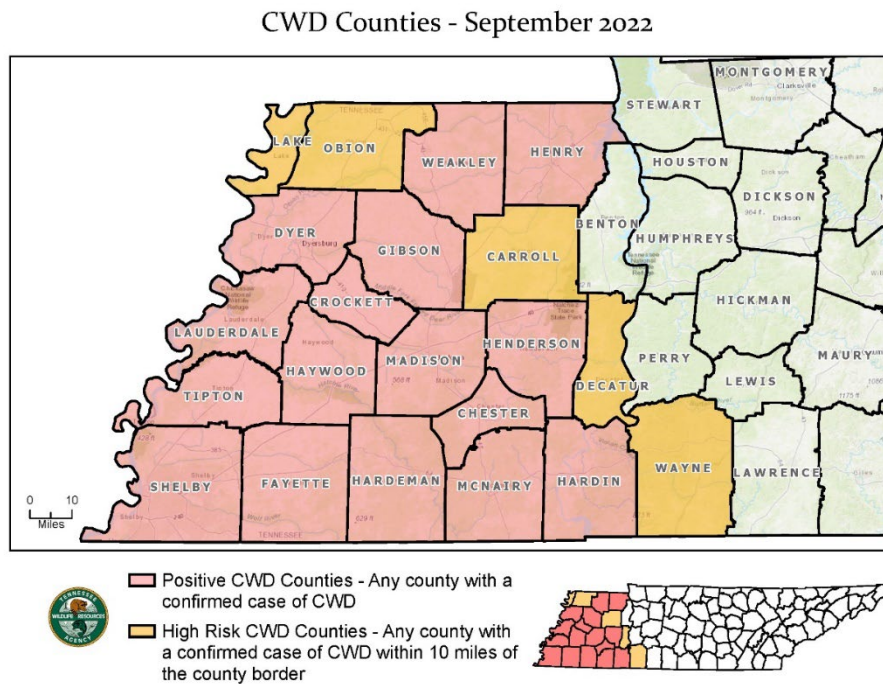


Figure 4. Map of CWD affected counties in Tennessee (updated September 2022; map created by Lynn Barrett, TWRA).

Monitoring

During the 2021-2022 fiscal year (July 1, 2021 - June 30, 2022) 16,315 deer were sampled for CWD testing, 11,039 of these deer were sampled from within Unit CWD. Detections of CWD have not been found to be evenly distributed across the landscape but instead are found in a clustered distribution (Figure 5). Within Tennessee, the enzootic area remains in Fayette and Hardeman counties where the disease prevalence has increased since 2018 and is much higher than the surrounding areas (<2%; Table 1 and Table 2). Within these two high-prevalence counties, the disease is not distributed evenly, and the prevalence essentially represents an average for the county. The remaining counties where CWD has been detected all had a prevalence below 2% and range from 1.5% (Shelby) to 0.16% (Gibson). Although it may seem as if the disease has spread rapidly across southwest Tennessee, the reality is the disease was likely present for many years before being detected. The prevalence also shows an uneven distribution across the sex and age classes with adult (>2.5 years) bucks having approximately twice the disease prevalence as compared to adult does within the enzootic zone (Table 1 and Table 2).

CWD Positive Locations in Tennessee

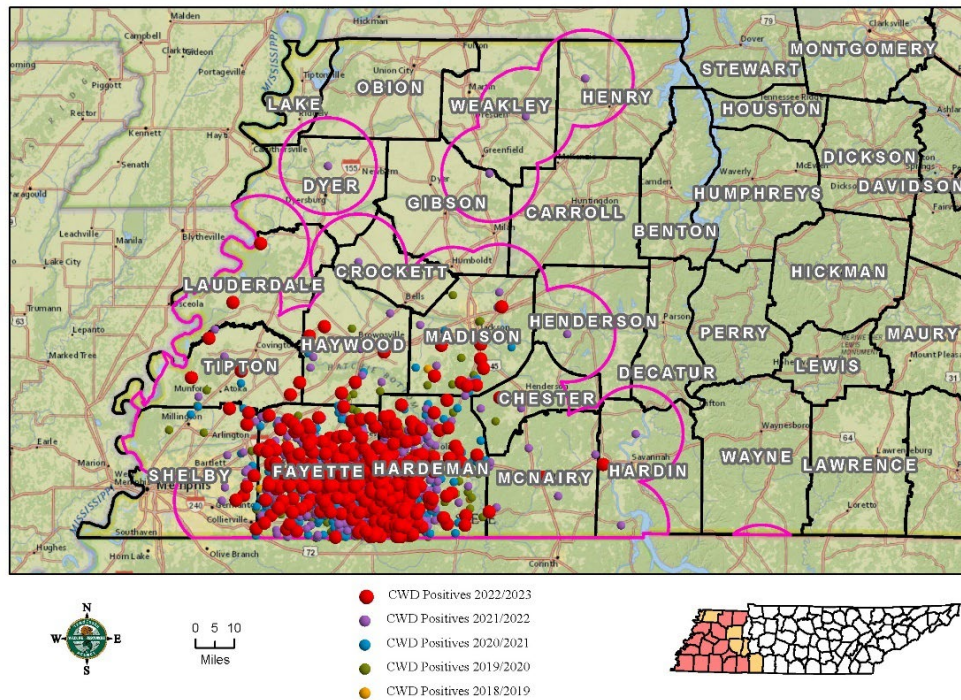


Figure 5. Distribution of CWD-positive detections across Tennessee (updated February 2023) with 10-mile buffer circle (map created by Lynn Barrett, TWRA).

Table 1. CWD prevalence (represented as a percentage: total number of suspect positives divided by total number of deer sampled multiplied by 100) for all deer sampled with number of suspect positives in parentheses for all positive counties in Tennessee since initial detection in 2018.

County	2018-19	2019-20	2020-21	2021-22
Chester	0.00 (0)	0.17 (1)	0.00 (0)	0.36 (2)
Crockett	0.00 (0)	0.00 (0)	0.00 (0)	0.54 (1)
Dyer	0.00 (0)	0.00 (0)	0.00 (0)	1.09 (1)
Fayette	10.62 (108)	13.52 (303)	13.74 (376)	17.86 (346)
Gibson	0.00 (0)	0.00 (0)	0.00 (0)	0.16 (1)
Hardeman	6.81 (77)	7.85 (167)	9.18 (256)	11.82 (236)
Hardin	0.00 (0)	0.00 (0)	0.00 (0)	0.84 (2)
Haywood	0.00 (0)	0.62 (6)	0.16 (2)	1.13 (10)
Henderson	0.00 (0)	0.00 (0)	0.00 (0)	0.18 (1)
Henry	0.00 (0)	0.00 (0)	0.00 (0)	0.10 (1)
Lauderdale	0.00 (0)	0.00 (0)	0.12 (1)	0.00 (0)
Madison	0.76 (1)	0.47 (8)	0.32 (7)	0.62 (10)
McNairy	0.00 (0)	0.00 (0)	0.00 (0)	0.61 (6)
Shelby	0.00 (0)	0.70 (6)	0.58 (6)	1.52 (13)
Tipton	0.00 (0)	0.27 (2)	0.46 (4)	0.77 (5)
Weakley	0.00 (0)	0.00 (0)	0.00 (0)	0.20 (1)

Table 2. Adult male CWD prevalence (represented as a percentage: total number of suspect positives divided by the total number of deer sampled multiplied by 100) with number of suspect positives in parentheses for all positive counties in Tennessee since initial detection in 2018.

County	2018-19	2019-20	2020-21	2021-22
Chester	0.00 (0)	0.00 (0)	0.00 (0)	0.41 (1)
Crockett	0.00 (0)	0.00 (0)	0.00 (0)	1.30 (1)
Dyer	0.00 (0)	0.00 (0)	0.00 (0)	3.85 (1)
Fayette	17.89 (44)	21.53 (177)	21.58 (216)	30.20 (212)
Gibson*	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
Hardeman	12.88 (42)	11.63 (110)	14.27 (170)	17.25 (148)
Hardin*	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
Haywood	0.00 (0)	1.33 (5)	0.20 (1)	1.56 (6)
Henderson	0.00 (0)	0.00 (0)	0.00 (0)	0.49 (1)
Henry*	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)
Lauderdale	0.00 (0)	0.00 (0)	0.34 (1)	0.00 (0)
Madison	0.00 (0)	0.66 (5)	0.62 (5)	1.35 (9)
McNairy	0.00 (0)	0.00 (0)	0.00 (0)	1.41 (5)
Shelby	0.00 (0)	0.96 (3)	0.76 (3)	1.52 (5)
Tipton	0.00 (0)	0.36 (1)	0.32 (1)	1.34 (3)
Weakley*	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)

* = counties in which only CWD-positive females have been detected

Best Management Practices

Programs for CWD should focus on prevention strategies, surveillance for early detection, and management of disease at low prevalence levels. The AFWA Fish and Wildlife Health Committee developed a document depicting the BMPs for prevention, surveillance, and management of CWD (Gillin and Mawdsley 2018). The BMPs are recommendations based on peer-reviewed science and have been applied by many wildlife management agencies, facilitating consistent CWD programs across legislative boundaries. Tennessee Wildlife Resources Agency is no exception to this and has looked to these BMPs for guidance when developing its CWD programs.

Prevention

Many of the BMPs are designed to limit the anthropogenic movement of prions across the landscape and reduce the likelihood of CWD being brought into a new area. One such BMP is to prohibit the movement of live cervids. The importation of white-tailed deer is prohibited in Tennessee; however, importation of other CWD susceptible cervids is allowed conditionally, under guidelines set by the TDA to ensure the health of the individual and the herd of origin ([TWRA Rule 1660-01-15](#)).

The movement of cervid carcasses and carcass parts is also a means for potential anthropogenic transport of prions across the landscape. The TWRA has taken steps to minimize this risk by setting statewide carcass importation restrictions. If a hunter harvests a deer, elk, or moose from anywhere outside the state, it must be processed to remove neurologic and other tissue types that tend to have relatively higher concentrations of prions, before bringing it back into the state of Tennessee ([TWRA Rule 1660-01-15-02](#)). Importation, transportation, or possession of a cervid carcass or carcass parts is prohibited from anywhere outside of the state unless it is on the approved parts list:

- Meat that has been deboned
- Antlers, antlers attached to cleaned skull plates, or cleaned skulls where no meat or tissues are attached to the skull
- Cleaned teeth
- Finished taxidermy and antler products
- Hides (tanned or green) and tanned products

Furthermore, TWRA has created rules for movement of cervid carcasses and carcass parts from harvested deer to limit the movement of prions from affected CWD areas to unaffected areas ([TWRA Rule 1660-01-34](#)). The current system designates counties as “positive” when a CWD detection occurred within the county, “high risk” when a CWD detection occurred within ten miles of the county border, or “outside CWD area” when the county does not meet either of the previous criteria. These three designations are color-coded on a map (Figure 7) depicting the acceptable directions of movements of whole carcasses and unapproved cervid parts. As TWRA has developed a more complete understanding of the geographic distribution of CWD in Tennessee and learned more of the needs of stakeholders, it has become apparent that the current CWD carcass transportations rules may not be adequate. The current system will be revised to provide stakeholders with improved ease of moving whole carcasses and unapproved parts while still restricting the anthropogenic movement of potentially infectious materials. A rulemaking hearing was conducted on September 16, 2022, and revisions to TWRA Rule 1660-01-34 were adopted by the Tennessee Fish & Wildlife Commission (TFWC). The revisions will be implemented once reviewed and accepted by the Attorney General and Reporter.

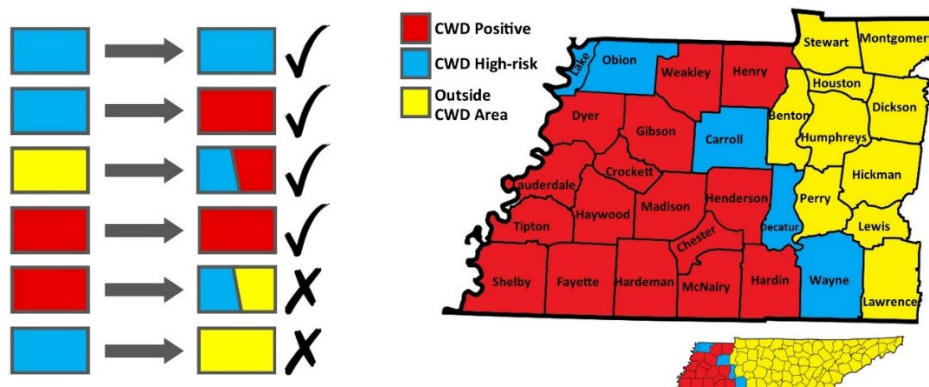


Figure 7. Transportation rules for movement of approved cervid parts within the state of Tennessee as of October 2022.

Baiting and feeding practices cause unnatural congregations of wildlife into focused areas, increasing the potential for disease transmission. Direct transmission of CWD, among other diseases of concern, can occur through nose-to-nose contact but also indirectly when the infectious materials are deposited into and remain in the environment. Bait and feed sites may then become reservoirs of these infectious agents. Baiting increases the risk of disease transmission not only among individual deer, but also to other matriarchal deer family groups and even other species of wildlife and consequently can increase the risk of disease introduction, amplification, and spill-over events. The AFWA BMP recommendation is to eliminate wild cervid feeding and baiting practices. Tennessee has a long-standing ban on hunting over bait ([Tenn. Code Ann. § 70-4-113](#)), and as part of TWRA CWD response, wildlife feeding restrictions ([TWRA Rule 1660-01-34](#)) automatically go into effect when a county becomes positive or high-risk for CWD.

Through this plan, TWRA will continue to support rules and regulations that prevent the spread of CWD into new areas. A summary of the current Tennessee rules and regulations relevant to prevention of spread are listed in Table 3.

Table 3. Established rules and regulations that aid in the prevention of spreading CWD to new areas from human activities.

Rules and Regulations	Title	Preventative Measure
Tenn. Code Ann. § 70-4-113	Use of bait, pitfalls, and certain other devices in taking birds and animals prohibited	Prohibits the use of bait (any grain or mixture of any ingredients, used as or for food purposes) as a hunting practice.
TWRA Rule Chapter 1660-01-11	Rules and Regulations Governing Shooting	Operation of Private Wildlife Preserves.
TWRA Rule Chapter 1660-01-15	Rules and Regulations for Animal Importation	Requirements for importation permits and lists unapproved wildlife carcass, parts, and products that may not be imported.
TWRA Rule Chapter 1660-01-18	Rules and Regulations of Live Wildlife	Prohibits possession & movement of live white-tailed deer (distinguished from captive-cervids, under the jurisdiction of TN Dept. of Agriculture)
TWRA Rule Chapter 1660-01-34	Rules and Regulations for Chronic Wasting Disease (CWD)	Establishment of CWD Management Zones and carcass transportation and wildlife feeding rules within CWD management zones. In process of being filed Replaces “Rules and Regulations for Chronic Wasting Disease Counties.”
TWRA Proclamation 21-05	Manner and Means of Hunting, Taking, and Trapping	Regulation of the use or possession of natural cervid urine products while hunting.

Management

With the current tools and strategies available to wildlife managers, it is likely that the eradication of CWD in wild populations is infeasible (Baeten et al. 2007, Miller and Fischer 2016). The focus of disease management should be to maintain a low disease prevalence. Prevalence levels that are allowed to increase eventually lead to negative population impacts. Edmunds et al. (2016) found in an area of high prevalence (28.8% in bucks) that survival was significantly lower for CWD-positive deer and CWD-positive deer were 4.5 times more likely to die than CWD-negative deer (Edmunds et al. 2016). During the 2021-2022 deer season in Tennessee, prevalence within the endemic

zone of Fayette and Hardeman counties were found to be at a level that could lead to these negative population-level impacts and adult buck prevalence was found to be approximately twice that of the adult doe prevalence (22.8% prevalence in adult bucks, 9.7% prevalence in adult does; Figure 6). The BMPs for managing CWD prevalence include the previously addressed strategies for limiting anthropogenic movement and environmental contamination but also the utilization of harvest or other removal mechanisms. Specifically, the recommendation is to target the portion of the population most likely to have CWD, animals in known CWD hotspots, and adjusting the timing of removal to most effectively target infected animals and reduce cervid density in CWD positive areas with high density populations.

Management efforts need to be tailored to the particular situation, especially considering disease prevalence. In areas where CWD has not been detected, optimization of surveillance and implementation of prevention strategies should be the focus. These strategies can include, but are not limited to, restrictions to interstate transport of high-risk cervid carcass parts and the statewide prohibition on baiting practices. In areas in which CWD prevalence is detectable at low levels, the previous strategies should continue to be applied to reduce the risk of further disease influx, as well as the implementation of feeding restrictions and in-state carcass transport restrictions. At these lower levels of prevalence, the portions of the population that are most likely to be detected to have CWD should be targeted. The social behaviors of white-tailed deer influence the rate of disease spread between the different age and sex classes. Males have larger home ranges and more social interactions than females and, thus, have increased risk of encountering infected animals and contaminated environments (Gear et al. 2006). Adult bucks are affected by CWD at higher rates than adult does in Tennessee; therefore, incentivizing hunter harvest of bucks will aid in targeting the portion of the population most likely to be detected to have CWD.

Management programs within Tennessee especially rely on landowners and hunters for participation. Landowner programs include CWD Management Permits and Targeted Removal. A number of hunter incentive programs are available to encourage hunting in areas with CWD detections.

CWD Management Permits

These permits are issued by county Wildlife Officers directly to landowners or their designated agents at their request to allow the removal of deer on their property outside of deer season for the purpose of CWD management. This program is available only in Fayette and Hardeman counties or on properties that are within a 3-mile radius of a TWRA-confirmed CWD-positive location. If the property lies within a county other than Fayette County or Hardeman counties, the property owner must submit all deer harvested on the property to TWRA for CWD testing. TWRA provides CWD testing services for deer removed as a part of this program in all counties except for Fayette and Hardeman.

Targeted Removal

The targeted removal program is a management strategy TWRA may implement to prevent the spread of CWD along the leading edge of the known distribution, in areas that contain low numbers of positive CWD detections, or at initial detections in areas previously unaffected by CWD. These positive CWD cases are known as “sparks”. Increased sampling at spark locations assists in understanding the extent of the disease as all deer removed are tested for CWD. Targeted removal is also part of a rapid and focused response in newly affected areas. Deer removal is accomplished through a partnership with USDA APHIS Wildlife Services (WS) and occurs after the close of deer hunting seasons and before the start of turkey hunting season. Landowner participation is essential for the program to be effective as it occurs on properties surrounding the spark in which landowners have expressed written consent for WS staff access.

The intention of the program is not to eliminate all deer from the area, but to remove deer that are most likely to have been in contact with the CWD-positive case. Due to social behaviors, the probability of CWD infection to be found in adult females is increased if a closely related female is infected with the disease; thus, the matrilineal group should be targeted, especially at smaller spatial scales (Gear et al. 2010). Spark selection for implementing the targeted removal program will include consideration of the specific characteristics of the positive CWD detection and the most effective allocation of agency resources. Evaluation of new sparks for inclusion into the program will occur at the end of each sampling year (July 30) and sparks will be considered for discontinuation at the end of a three-year establishment period.

The targeted removal program was initiated in Tennessee in 2021 and has been conducted on properties within a 3-mile radius of sparks. To better focus resources and communications efforts in upcoming years of the

program however, properties within a 1-mile radius of the spark will be prioritized for inclusion into the program. In the 2021 and 2022 targeted removal seasons, 100 and 98 deer, respectively, were removed from spark locations, none of which tested positive for CWD. The TWRA plans to continue to work with WS and affected landowners to carry out this program.

Hunter Incentive Programs

Incentive programs are agency developed regulations designed to encourage hunters and landowners to participate in CWD management efforts. The goals of these programs often focus on motivating hunters to harvest more deer; thereby increasing the scale of CWD sampling throughout target areas. To date, TWRA has implemented multiple incentive programs – not only in Unit CWD, but throughout the state.

Earn-A-Buck

This incentive program allows hunters to become legally eligible to harvest additional antlered deer within Unit CWD. Hunters can “earn” the take of additional antlered deer within Unit CWD by harvesting antlerless deer (male or female deer with no antlers or with antlers that are less than three inches in length) and submitting them for CWD testing, regardless of the test results. This helps to increase the number of deer that are harvested and submitted for CWD testing. While the regulations associated with the Earn-A-Buck incentive program have changed since its creation, at the time of this strategic plan, an additional antlered deer is earned for each antlerless deer harvested in Unit CWD and submitted for CWD testing, regardless of the test results. Earned antlered deer must be harvested in Unit CWD and may only be harvested in the current deer season.

Replacement Buck

Hunters will receive a replacement buck if they harvest an antlered deer with an official test result of positive. There is no limit on the number of replacement antlered deer. Replacement bucks may only be harvested in Unit CWD or in the county where the qualifying CWD-positive antlered deer was harvested. Replacement bucks must be harvested in the current deer season or during the following year's deer season. The next antlered deer harvested counts as the replacement buck.

Fight CWD Incentive Program

Hunters who receive a CWD-positive test result for a harvested deer will receive a voucher redeemable for \$75 of processing fees at participating processors. The voucher is not redeemable for cash but may be gifted to another individual. The voucher may be redeemed during the season year that the CWD-positive deer was harvested or the following deer season year. Additionally, any resident hunter who harvests two or more CWD-positive deer will be given an Annual Sportsman license (i.e., an all-inclusive license valid for hunting, trapping, and sport fishing without any TWRA supplemental licenses or non-quota permits; allows holders to apply for quota permits at no additional fee for the following hunting season). If hunter has a lifetime license, the earned license may be gifted to another Tennessee resident.

Deer Management Unit Alignment

Refined delineations of deer management units (DMUs) were proposed in the TWRA Deer Management Plan (Tennessee Wildlife Resource Agency 2019) and are intended to be the default scale at which deer research, deer harvest management, and deer population monitoring occurs. These units are optimally sized and grouped aggregations of Tennessee's 95 counties and are intended to **remain static over time** (Cohen et al. 2021). Since this CWD Management and Response Plan (2023-2027) is a supplement to the 2019 - 2023 TWRA Deer Management Plan, efforts will be made to align CWD management strategies with the goals and objectives within the Deer Management Plan. While the scale at which deer management strategies and disease management strategies are applied may not always align, integration of approaches between both plans whenever possible will likely still be beneficial for adaptive harvest management of deer populations in Tennessee.

Elk Implications

The current elk population in Tennessee is a result of reintroduction efforts started in 2000 which brought elk into an established elk restoration zone (ERZ) in the Cumberland Plateau. The ERZ is centered on the North Cumberland Wildlife Management Area (WMA) and includes portions of Anderson, Campbell, Claiborne, Morgan, and Scott counties. As of August 2008, 201 elk from Canada and Kentucky have been released into the area after undergoing thorough disease screening. Chronic wasting disease has not been detected in Tennessee's elk population to date, but it remains crucial for TWRA to remain vigilant in its efforts to keep the disease out of Tennessee's elk herd and continue surveillance efforts to ensure early detection if it were to occur. Surveillance for CWD in elk follows guidelines set forth in this plan and the TWRA will continue to collaborate on projects involving elk herd health monitoring in support of early detection. Elk sampled for CWD include all hunter harvests, roadkill, and any elk targeted for removal due to it exhibiting signs of illness. All non-hunter harvested elk carcasses are submitted for necropsy to the University of Tennessee, School of Veterinary Medicine for further investigation.

If CWD were to be detected in Tennessee's elk population, CWD programs would be implemented to monitor prevalence rates and slow the spread of the disease where possible. Tennessee Wildlife Resources Agency will consider options for reducing elk densities in select areas and may implement additional hunting opportunities or an agency targeted removal program. The movement or relocation of nuisance elk will be halted to eliminate the risk of moving potentially infected elk across the landscape. Guidelines will be provided to hunters for best management practices on carcass disposal and restrictions may be enacted to address carcass movement and feeding or baiting practices within the ERZ or other affected areas. The CWD Management and Response Plan (2023 – 2027) often refers to CWD programs as they relate to white-tailed deer since this is the species in Tennessee that is currently being affected by CWD.

CWD Research

A strong foundational understanding of CWD characteristics, cervid population dynamics, and the human dimension implications of CWD will support informed disease management decisions. Cervid population dynamics vary drastically throughout their range and obtaining data to base management decisions at the most biologically and sociologically relevant scale should be implemented at every opportunity to maximize efficacy of CWD programs. The southern deer herd, Tennessee's included, will have an epidemiological response to CWD that is both similar to other parts of the country and unique to its own dynamics. Therefore, TWRA would like to prioritize research and data collection to address knowledge gaps in Tennessee specific cervid populations and measure the effects of applied CWD programs. Research efforts will be strategically partnered within the state and nationally to remain adaptively focused on Tennessee's herd with the goals of understanding transmission and environmental factors along with development of effective control and mitigation at the highest possible levels.

Since the detection of CWD in Tennessee, TWRA has been the recipient of multiple USDA APHIS funded cooperative agreements that have supported the collaboration between TWRA and universities to better understand CWD characteristics and its infectious agent. In an ongoing study, TWRA has partnered with researchers at the University of Wisconsin to understand the persistence of prions in the environment. Through this project, methodologies in RT-QuIC have been improved to detect prions in soil and the persistence of prions has been documented at historical mineral bait sites. Future collaborations with the University of Minnesota will investigate the environmental persistence of prions with the application of fire as a tool for mitigation and the response of prions in various soil types over time.

In an additional series of cooperative agreements, TWRA has partnered with Colorado State University to investigate the ability of biodetectors (i.e., trained dogs) to detect the change in chemical signature of CWD in infected white-tailed deer tissues. The first phase of the project (testing behavioral responses of biodetectors to white-tailed deer fecal samples) has been completed and researchers have had success in training dogs to correctly identify fecal samples from CWD infected white-tailed deer in both laboratory and controlled field settings. The second phase of the project began in April 2022 and focuses on laboratory trials of dogs to identify CWD infections from gastrointestinal tract samples with results forthcoming. A third phase of the project has been funded and will focus on canine abilities to detect the CWD chemical signature in soils.

Monitoring impacts of CWD and CWD management in Tennessee has continued by outsourcing thermal aerial surveys on twelve focal areas, each roughly 36 mi² in size, in west Tennessee. Eight of these sites were sampled last year, with four new sites added to periphery zones outside the core CWD area. Using distance sampling, estimated densities ranged from a low of 17.7 deer/mi² in Madison County to a high of 70.0 deer/mi² in western Hardeman County.

More research is still required to understand CWD dynamics, free-ranging cervid population dynamics throughout the state, and the effects of CWD management programs over time. To create a baseline knowledge of these aspects of the disease and free-ranging cervids specific to Tennessee, it will be critical for TWRA to begin conducting primary research.

Human Dimensions of CWD

Human Dimensions of CWD in the United States

Human dimensions (HD) research is crucial for understanding the social impacts of wildlife and disease management and for developing effective, durable, and socially acceptable wildlife management strategies. In particular, HD of CWD has been studied for numerous years across the country, although the social aspects have not been investigated to the same level as biological aspects of the disease. The social aspects of CWD research have been mainly focused on hunter behaviors since hunters are the primary stakeholders impacted by CWD. These studies examined hunter participation in response to the disease and associated wildlife management actions, perceptions of potential human health risks associated with CWD, and concerns about impacts of the disease on wildlife (Jerry J. Vaske 2010). Many studies have also evaluated changes in hunter behavior after the first detection of CWD in an area. Most studies found a minimal effect of CWD in hunter participation (Vaske et al. 2004, Haus et al. 2017) while few studies found a decline in participation after the discovery of CWD (Heberlein 2004, Vaske et al. 2004). Generally, hunter perceptions and behaviors change over time as they become less concerned about diseases and its associated risk (Holsman and Smail 2006, Vaske and Miller 2019, Holland et al. 2020).

Human Dimensions Research of CWD in Tennessee

Since CWD was first detected in 2018, we have initiated two studies in Tennessee to assess perspectives of hunters, landowners, and the public regarding the disease. Using a mixed-mode survey method (i.e., mail and electronic mail), the first study surveyed a sample of deer hunters in CWD positive and CWD high-risk counties to investigate:

- CWD awareness,
- satisfaction with TWRA response,
- attitudes towards best management practices,
- hunting in CWD counties,
- harvest incentives,
- the cost of CWD testing, and
- land access for targeted removal.

The second study focused on similar issues, however included samples of landowners and the public, or residents.

Based on the data collected through these surveys, three peer-reviewed articles have been published (Meeks et al. 2021, 2022, Adhikari et al. 2022). Meeks et al. (2021) found that hunter acceptability of alternative CWD management actions significantly increased between preseason and postseason surveys (Meeks et al. 2021). Furthermore, hunter acceptability was significantly affected by concerns related to human health implications, regulatory changes, trust and confidence of wildlife agencies, and experience of hunting in other states with CWD. This study was integral to finding management actions acceptable to hunters with little to no conflict. The results

highlighted an understanding of hunter perception of risk, influences of those risks on behavior, and agency trust in CWD management.

Using hunter responses before and after the 2019-2020 deer season, Meeks et al. (2022) found a significant change in hunter concerns with CWD after the first deer season since the discovery of disease (Meeks et al. 2022). The hunters' short and long-term intentions to hunt deer were positively related with their experience of hunting in CWD-affected areas, their beliefs in the effectiveness of herd reduction to control CWD, their concerns regarding potential decline in deer quality, the changes in hunting regulations due to CWD, and their trust in wildlife agency action. The hunters who harvest on public land and those who were concerned with human health risk associated with CWD were less likely to hunt in the CWD affected areas. The results of this study were useful to identify factors that impact immediate as well as long-term change in hunter harvest in disease affected regions.

Using the same hunter survey data, Adhikari et al. (2022) assessed hunters' willingness to participate in a market-based solution to recover the costs associated with processing diseased game (if the processed deer tested positive) and estimated an average willingness to pay value of \$20 per deer (Adhikari et al. 2022). Adhikari et al. (2022) also found that half of the hunters surveyed were interested in participating in a financially profitable program to encourage hunters to harvest more deer to reduce herds and facilitate effective disease surveillance. The unwillingness to participate in such a program from the remaining respondents may be attributed to self-processing practices, risk of CWD contamination in venison when a deer processing service is used, and the general attitude that the wildlife agency should reimburse them for the lost processing cost. In addition, this half of hunters surveyed expressed concern regarding the program details including whether a purchased voucher would be transferable to another season, year, or person, and the wildlife agency's role in implementing such a solution. The study showed the demand for processing services and suggested options to enhance disease surveillance. It also provided information on the proportion of the harvest that could be reached through local processors and evaluated processors' ability to help collect deer samples for disease testing.

Statewide Opinions on Deer Management in Tennessee

The surveys of hunters and residents and landowners were both conducted in summer 2021. For the landowner and resident survey, a total of 5,995 residents and 6,003 landowners from across the state were selected randomly to assess their opinions and attitudes towards deer management in Tennessee. Out of 11,998 surveys, 2,613 responses were obtained with a response rate of 22%. Among the eight different issues related to deer management disease risks, CWD was one of the top three concerns of both residents and landowners statewide. When asked about CWD, landowners and residents indicated a high level of concern with CWD. Landowners were slightly more concerned with CWD than residents and the majority of landowners (66%) agreed that they would allow TWRA to remove additional deer following the hunting season if CWD was on their land.

In April and May of 2021, the statewide survey of deer hunters was conducted to assess hunters' opinions on deer management. A total of 7,200 hunters were selected randomly to ensure representation of hunters from each of the nine DMUs in which they hunted. The majority of hunters were very concerned with potential effects of the disease including deer population decline, fewer mature bucks to hunt, safety of consuming infected deer meat, and risk of CWD spreading throughout the state. About half of the hunters surveyed were very concerned about local processors no longer processing deer. Hunters were asked to indicate the extent to which the potential detection of CWD might affect their number of hunting trips to those affected sites. More than two thirds (72%) mentioned they would continue hunting and take approximately the same number of trips as they did in the previous season. A small percentage of hunters (4%) reported they would stop hunting altogether if CWD was discovered in a county in which they hunt frequently. The DMU level results were largely consistent with the statewide results except in the case of the DMU most impacted by CWD, where 36% of hunters said they already have CWD and therefore, only 57% reported they would take the same number of hunting trips as during the previous season.

Perspectives in CWD Affected Tennessee Counties

A series of studies were conducted to investigate hunter, non-hunting public, resident, and landowner perspectives regarding CWD in West Tennessee. In these surveys, the majority of respondents were aware of the presence of CWD; Respondents were mostly concerned with the spread of the disease throughout the state, the safety of consuming infected deer meat, and the potential for a decline in deer population. The majority of respondents were satisfied with TWRA's response to CWD and were confident in TWRA's ability to have an appropriate management plan to suppress further spread of CWD. Respondents showed the most acceptable actions to manage CWD and motivators for continued deer harvest included

- requiring hunters to provide samples for testing,
- requiring appropriate disposal of unused deer parts from CWD counties,
- using regulated hunting seasons with liberal bag limits to allow for increased hunter harvest,
- allowing hunters the use of firearms in CWD affected counties that have been limited to muzzleloader or archery only,
- issuing permits to landowners and hunters to harvest outside of hunting seasons,
- shorter turnaround time for CWD testing,
- receiving a voucher for free processing of a CWD positive deer, and,
- extending the deer season through January 31.

When responses from preseason and postseason in 2019-2020 deer season surveys were compared, a higher proportion of respondents in the postseason survey believed CWD would have no impact on their hunting activities. Few respondents said they would stop or reduce hunting in CWD counties, despite the emergence of CWD in West Tennessee. Some respondents planned to continue to hunt in CWD affected counties due to ease of access to those areas and low interest in CWD testing for their harvest. For those that planned to reduce hunting, it was due to concern of consuming or handling diseased deer and fear of paying for processing a deer that may turn out positive for CWD.

The majority of hunters were willing to pay the CWD testing fee of \$18 if TWRA were to continue handling the testing process. Those unwilling to pay the testing fee indicated an average willingness to pay \$8.61 to share the cost with TWRA or other institutions. Similarly, there was willingness to pay on average \$21 to purchase a voucher, if offered by their processor, to earn free processing of a second deer if the first deer tested positive for CWD. Slightly less than half of respondents in the hunter survey considered a herd reduction strategy that relies entirely on hunters to harvest deer a viable option. However, the majority of respondents from both surveys were unsure about the effectiveness of herd reduction and wanted to see evidence of success from other states first to believe it would work in Tennessee.

In the resident survey, the majority of residents (60%) considered a targeted removal program by TWRA or other contractors as an acceptable management method, however, less than half (42%) were willing to allow access on their private land for targeted removal by TWRA or contractors. The resident survey suggested motivators to increase landowner's cooperation in targeted removal included demonstrating evidence of success in other areas/states and the removal of participation costs (i.e., no liability, no responsibility for any cost).

Resident respondents in general were not opposed to adopting CWD best management practices on their property to prevent the spread of the disease. The majority (64%) of respondents were willing to have deer harvested on their land tested for CWD. Slightly less than half (43%) of the respondents were willing to prohibit the use of mineral licks, encourage hunters to harvest their bag limit, and avoid planting small food plots.

Future Human Dimensions Research in Tennessee

Studies show hunter behaviors and perceptions related to CWD change over time (Heberlein 2004, Vaske et al. 2004, Haus et al. 2017). The duration of the Tennessee studies on hunters, residents, and landowner perceptions on CWD were over two consecutive hunting seasons, a relatively short time period; therefore, further studies are needed to evaluate long-term changes. Similarly, the study conducted in Tennessee shows the impact of CWD on hunter behavior may be more significant on public hunting lands. Future research should explore potential spillover impacts on private lands or whether any incentives are needed to encourage hunters to continue harvesting deer on public lands. Considering the increased number of detections of the disease across the state since its discovery in 2018, continued statewide surveys of residents, landowners, and hunters are necessary to compare perception and attitude among stakeholders in CWD positive, high-risk, and unaffected counties in Tennessee. There is also a need for understanding the preferred source for acquiring CWD news and educational material.

Fiscal Considerations and Expenditures

- Overview of TWRA funding sources
 - License sales and boat registrations
 - Federal Wildlife/Sport Fish Restoration Program
 - General State Fund Appropriation
- CWD Expenditures
 - Initial response
 - Testing and surveillance, service testing
 - CSU/MSU \$170,000 (FY22 budgeted)
 - KORD \$170,000 (FY22 budgeted)
 - Targeted removal, roadkill \$50,000 (FY22 budgeted)
 - part-time staff
 - TWRA part time technicians: \$140,000 (FY22 budgeted)
 - Central office CWD biologist
 - Full-time positions added
 - Wildlife Vet Position \$150,000
 - 5 Field staff
 - Central office positions
 - Processor/Taxidermist incentive
 - FY22: \$140,615 actual expenditure
 - FY21: \$179,730 actual expenditure
 - FY20: \$117,745 actual expenditure
 - Equipment - incinerators, backhoe, skidsteer
 - Mobile incinerator: \$26,000 for new unit, \$8000 for repair of donated unit
 - Stationary incinerator: \$46,000
 - Backhoe
 - Skidsteer: \$85,000
 - Work base and crematory
 - 1.5M for work base - budgeted
 - 1M for crematory - budgeted
 - Harvest incentives
 - Fight CWD Incentive Program: \$68,000 budgeted
 - Other Expenditures
 - DJ Case & Associates (Strategic Plan): \$50,000
 - USDA APHIS Wildlife Services: shared budget between targeted removal program and feral swine
 - Aerial Monitoring WTD Population: \$300,000
 - SOP4CWD: \$24,000
- Outside funding sources
 - USDA APHIS grants
 - Colorado State University Canine detection (Phase 1): \$187,000
 - Colorado State University Canine detection (Phase 2): \$223,000
 - Colorado State University Canine Detection (Phase 3): \$239,500
 - University of Wisconsin Madison – CWD Prion Accumulation (Phase 1): \$246,000
 - University of Minnesota – Fire as a Remediation tool for CWD Prions (Phase 2): \$164,500

Appendix B. Glossary of Terms

- Adaptive management** – A rigorous approach for learning through deliberately designing and carrying out management actions as experiments, specifically to learn how the system responds to management and to increase the level of certainty regarding how best to achieve desired results.
- Adequate contact** – An interaction between an infective and susceptible individual that is sufficient for transmission to the susceptible individual.
- Agent-based model** – A simulation model incorporating random variation to describe populations of interacting agents, such as insects and people, using simple rules that dictate their behaviors.
- Antler point restrictions** – Antler point restrictions are a type of selective harvest criteria (SHC) for antlered deer to recruit males into subsequent age classes. Selective harvest criteria require antlered deer eligible for harvest to have a minimum number of antler points (antler point restrictions; APRs), main beam length, spread width, or some combination thereof.
- Aspiration pneumonia** – A disease of the lungs characterized by inflammation of the necrosis commonly due to intake of liquid into the lungs and possibly a secondary result of [esophageal hypotonia](#).
- Average period of infectivity** – The average time that an infective individual can spread a disease to a susceptible individual.
- Basic reproduction/reproductive number** – The average number of secondary infections that occur when one infective individual is introduced into a completely susceptible host population. R_0 is often used as the threshold quantity that determines whether a disease can invade a population. When $R_0 > 1$ the infection will spread in a population, but not if $R_0 < 1$.
- Bait** – Any grain, or mixture of any ingredients, used as or for food purposes, or other devices for the purpose of killing, injuring, or capturing any birds or animals protected by the wildlife laws of this state
- Biosensor** – A living organism that is able to detect chemicals, often through scent.
- Birth rate** – The number of births in the population during a specified period of time.
- Bruxism** – A medical condition of teeth grinding or clenching.
- Captive cervid facility** – A location that houses, raises, or sells cervid species or their products (urine, velvet, venison, antlers, shooting opportunities) for which a permit may be required depending on state regulations.
- Captive cervid import requirements TN** – See Appendix G. for TDA Statutes and Rules. Requirements include Certificate of Veterinary Inspection (valid for 30 days), Official Individual Identification, Entry Permit, must have a Whole Herd Test or be from an accredited herd AND have one negative Tuberculosis test within 30 days of entry OR 2 negative TB tests at least 90 days apart with the second test within 30 days of entry, one negative Brucellosis test within 30 days of entry or originating from a certified Brucellosis-free cervid herd. Chronic Wasting Disease (CWD) susceptible species such as red deer, Japanese Deer ("sika deer"), mule deer, moose, elk ("wapiti") must have participated in an approved CWD surveillance program for at least 5 years prior to shipment. The herd of origin must be located more than 50 miles from any area where CWD has ever been diagnosed. *NO importation of White-tailed deer is allowed in Tennessee.*
- Cervid** – any member of a family (Cervidae, the deer family) of ruminant artiodactyl mammals (such as the elk, moose, or white-tailed deer) that have solid deciduous antlers borne only by males except for the caribou in which both males and females bear antlers. This family includes all genera in family Cervidae, regardless of CWD-susceptibility.
- Citizen science** – the collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists.

Class I Wildlife (1) – A TWRA wildlife classification that includes all species inherently dangerous to humans. These species may only be possessed by zoos, circuses and commercial propagators, except as otherwise provided in this part. The commission, in conjunction with the commissioner of agriculture, may add or delete species from the list of Class I wildlife by promulgating rules and regulations. The following is a listing of animals considered inherently dangerous:

- (A) Mammals: (i) Primates -- Gorillas, orangutans, chimpanzees, gibbons, siamangs, mandrills, drills, baboons, Gelada baboons; (ii) Carnivores: (a) Wolves -- All species; (b) Bears -- All species; and (c) Lions, tigers, leopards, jaguars, cheetahs, cougars -- All species; (iii) Order Proboscidea: Elephants -- All species; (iv) Order Perissodactyla: Rhinoceroses -- All species; and (v) Order Artiodactyla: Hippopotamus, African buffalo;
- (B) Reptiles: (i) Order Crocodylia: Crocodiles and alligators -- All species; and (ii) Order Serpentes: Snakes -- All poisonous species; and
- (C) Amphibians: All poisonous species; Tenn. Code Ann. § 70-4-403 (2015)

Class II Wildlife (2) – A TWRA wildlife classification that includes native species, except those listed in other classes; Title 70 Wildlife Resources Chapter 4 Miscellaneous Regulations Part 4 Exotic Animals Tenn. Code Ann. § 70-4-403 (2015).

Class III Wildlife (3) – A TWRA wildlife classification that requires no permits except those required by the department of agriculture, and includes all species not listed in other classes and includes, but is not limited to, those listed in subdivisions (3)(A)-(Q);

- (A) Non Poisonous reptiles and amphibians except caimans and gavials;
- (B) Rodents -- Gerbils, hamsters, guinea pigs, rats, mice, squirrels and chipmunks;
- (C) Rabbits, hares, moles and shrews;
- (D) Ferrets and chinchillas;
- (E) Llamas, alpacas, guanacos, vicunas, camels, giraffes and bison;
- (F) Avian species not otherwise listed, excluding North American game birds, ostriches and cassowary;
- (G) Semi-domestic hogs, sheep and goats;
- (H) All fish held in aquaria;
- (I) Bovidae not otherwise listed;
- (J) Marsupials;
- (K) Common domestic farm animals;
- (L) Equidae;
- (M) Primates not otherwise listed;
- (N) Bobcat/domestic cat hybrids;
- (O) Hybrids resulting from a cross between a Class II species and a domestic animal or Class III species;
- (P) Cervidae except white-tailed deer and wild elk.

Elk originating from a legal source while held in captivity for the purpose of farming shall be regarded as Class III wildlife. All other elk shall be wild elk and shall be regarded as Class II wildlife. No person shall possess elk in captivity within the eastern grand division of the state as defined in § 4-1-202 without having documentary evidence indicating the origin of the elk being held. This documentary evidence will be presented to the agents of the department of agriculture or the wildlife resource agency upon request. Sale documentation of offspring of purchased elk is not required; and

- (Q) Fur Bearing mammals, including those native to Tennessee, raised solely for the sale of fur.

Class IV Wildlife – A TWRA wildlife classification that includes those native species that may be possessed only by zoos and temporary exhibitors; provided, that rehabilitation facilities may possess Class IV wildlife as provided by rules established by the commission if authorized by a letter from the director of the agency:

- (A) Black bear (*Ursus americanus*);
- (B) White-tailed deer (*Odocoileus virginianus*);
- (C) Wild turkey (*Meleagris gallopavo*), including the eggs of wild turkey;
- (D) Hybrids of a Class IV species other than bobcat shall be Class IV; and
- (E) Animals that are morphologically indistinguishable from native Class IV wildlife shall be Class IV; and

Class V Wildlife – A TWRA wildlife classification that includes such species that the commission, in conjunction with the commissioner of agriculture, may designate by rules and regulations as injurious to the environment.

Species so designated may only be held in zoos under such conditions as to prevent the release or escape of such wildlife into the environment.

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.

CWD positive county – A Tennessee county shall be deemed a positive CWD county upon confirmation that a cervid has tested positive for CWD within the territorial boundaries of said county.

CWD high-risk county – A Tennessee county shall be deemed a high risk CWD county when there is a confirmed case of CWD within 10 miles of the territorial boundaries of said county.

CWD prevalence monitoring – CWD testing in an area known to have CWD that is sufficiently rigorous to detect changes in CWD prevalence over time at a biologically- relevant scale.

CWD-resistant genotype – Polymorphisms in the PRNP gene of white-tailed deer, mule deer, elk, fallow deer and reindeer have all been found to influence susceptibility to CWD in wild, farmed, and experimental populations.

CWD service testing – CWD testing provided by TWRA to detect CWD in harvested deer that is free for hunters. Testing is often beyond necessary sampling to achieve adequate surveillance or monitoring.

CWD surveillance – an active, on-going, formal, and systematic process aimed at early detection of CWD in a population, or early prediction of elevated risk of a population acquiring CWD, with a prespecified action that would follow the detection of the disease.

Depopulate – The action of reducing the density of captive cervids as a management tool in response to a disease outbreak. According to USDA CWD Program Standards for captive cervids, depopulation is listed as one of the options for response to CWD detection in a captive herd.

Disease severity – The impact that a disease process has on the physiological use of resources, comorbidities, and mortality.

DMU (deer management unit) – The aggregation of counties in the state of Tennessee to group deer based on characteristics that make them most similar within aggregates and most different between aggregates.

Environmental contamination – The binding of infectious prions shed in urine, feces, saliva, and carcasses of infected cervids to soil and plants.

Environmental pool (of prions) – Sources of prions for indirect transmission, such as feces deposited on the landscape.

Enzootic – A disease of animals that occurs with predictable regularity and rate in a population or area or pertaining to such a disease.

Epidemiology – The study of factors affecting the frequency and distribution of disease within populations.

Epizootic – A disease of animals that is occurring in a time or place where it is not expected or at a rate greater than expected on past experience or pertaining to such an outbreak.

Esophageal hypotonia – A medical condition of decreased muscle tone of the esophagus (See [hypotonia](#)).

Established – A stage of the pathogen invasion process of an emerging wildlife disease in which the pathogen is present in a population or area at a variable but stable prevalence and in which the host population is stable.

Exotic – Non-native or introduced to an area outside of a natural distribution.

Exposed – The class of individuals in a compartmentalized epidemic model that contains infected individuals that are not yet infectious.

Farmed or captive cervid – Privately or publicly maintained cervids or held for economic or other purposes within a perimeter fence or confined area or captured from a wild population for interstate movement and release. See Part 81 USDA 9 CFR Ch. I

Feeding – Providing feed supplements to wildlife for purposes other than hunting.

Focal area – A county where CWD has become established, prevalent, or newly introduced.

- Fomite** – an inanimate object that can be the vehicle for transmission of an infectious agent - CD glossary Just to be a little more specific a fomite can be any inanimate object that can transfer an infectious agent. Compared to a vector which is a living organism capable of transmitting infectious agents (i.e., mosquito, tick)
- Food plot** – A food plot is an annual or perennial planting of grain, cover crops, grass, forbes, legumes, or a mixture thereof, to provide food for a variety of wildlife.
- Free-ranging cervid** – Wild populations of animals of the family Cervidae.
- Freedom-from-disease** – For any given area where a disease has not been detected, the prevalence of that disease is ascertained to be below some designated target threshold with some level of "assurance" which is driven by sample sizes of surveillance efforts for that area (e.g., 95% confident that unit x has a prevalence $\geq 0\%$ and $< 1\%$).
- Hazard** – A condition or physical situation with a potential for an undesirable consequence or to cause harm, e.g., may introduce or spread CWD prions.
- Hemorrhagic disease (HD)** – A broad term for a group of vector borne Orbiviruses known to cause disease in wild cervids including EHD and BTB.
- High fence facility** – A captive cervid facility with a high fence (typically 8 ft.) along the border to prevent cervids from entering or exiting and deter trespassing. White-tailed deer, which have been incidentally contained, and exotic cervids may be present on these properties.
- Human Dimensions** – How and why humans value natural resources, how humans want resources managed, and how humans affect or are affected by natural resources management decisions.
- Hypotonia** – A medical term used to describe decreased muscle tone.
- Incentive programs** – Programs created to motivate hunters and landowners to harvest more deer in support of CWD Management efforts, therefore help reduce deer density and prevent the spread of CWD.
- Incidence** – The proportion or rate of individuals that become infected during a particular time period.
- Initial detection** – The first identified case of an infectious disease within a population or area.
- Infection** – The presence of a pathogen or infectious agent within a host, where it may or may not cause disease.
- Infection-associated mortality** – The increase in mortality (non-specific) hazard resulting from becoming test-positive relative to an animal that remains test-negative.
- Infectious agent** – An organism capable of inducing disease that can be transmitted from one individual to another, either directly or indirectly.
- Infectious period** – Period of time during which an infected individual is able to transmit an infection to a susceptible host or vector. The infectious period may or may not coincide with disease.
- Infectives** – The class of individuals in a compartmentalized epidemic model that contains infected individuals that are capable of transmitting the pathogen to other individuals.
- Invasive** – Non-native species to the ecosystem under consideration and whose introduction causes or is likely to cause economic or ecological harm or harm to human health.
- Immunity** – The ability of an individual to remain uninfected by an infectious agent or disease-free, despite adequate contact (link in glossary).
- Latent period** – The time during which an individual is infected but is not yet infectious.
- Leading edge** – A stage of the pathogen invasion process of an emerging wildlife disease in which pathogen invasion has just occurred or is imminent. Pathogen prevalence is zero or below 0.05%, and increasing, and the host population is stable with no detected declines.
- Lower-risk wildlife carcass parts** – Those carcass parts that have been identified as having a lesser risk of transmitting CWD infections
- (a) Meat that has bones removed.
 - (b) Antlers, antlers attached to cleaned skull plates, or cleaned skulls (where no meat or tissues are attached to

the skull).

(c) Cleaned teeth.

(d) Finished taxidermy and antler products.

(e) Hides and tanned products.

Management permits – Permits issued by County Wildlife Officers directly to landowners or their designated agents to allow the removal of deer on their property outside of deer season for the purpose of CWD management.

Mode of transmission – The way in which an infectious agent is passed from an infected host to a susceptible host, such as direct, vector-borne, food-borne, and air-borne transmission.

Native wildlife – Wildlife which is found in certain ecosystems due to natural processes such as natural distribution.

Neurodegeneration – The loss of functional integrity of cellular structures within the nervous system, especially in the brain.

Non-native wildlife – Wildlife not indigenous to or naturally occurring in a particular place.

One-and-done – A limited occurrence of infection in a population or area that disappears and does not expand into an epidemic or become established. An outbreak may be considered a one-and-done if the Replacement Number is less than one.

Pathogenesis – The origination and the manner of development of a disease.

Polydipsia – A medical condition of extreme thirst which may lead to increased fluid intake.

Polyuria – A medical condition of frequent or increased urination.

Population size – The total number of animals in a geographic area or particular group; In this case default will be DMU.

Pre-arrival – A stage of the pathogen invasion process of an emerging wildlife disease in which the pathogen is absent in a population or area and its arrival is not imminent.

Prevalence – The number of animals testing positive for a disease divided by the total number of animals tested at a specific point or period of time. This is not a measure of the true prevalence of the population, but rather the apparent proportion of animals affected by the disease.

Private wildlife preserve – A privately owned or lease-controlled tract of land on which a person may hunt captive wildlife originating from a legal source. 1660-01-11-.02 *OPERATION OF PRIVATE WILDLIFE PRESERVE*. As of July 1, 2009, no new facilities will be issued a permit for the purpose of possessing and/or harvesting big game species under the authority of a Private Wildlife Preserve Permit. Wildlife indigenous to Tennessee may not be held, released, or hunted on a wildlife preserve unless specifically authorized by the wildlife preserve permit. All Class I Wildlife species, white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), and black bear (*Ursus americanus*) are specifically prohibited from being held, released and hunted under the authority of a wildlife preserve permit. Any wildlife on the Endangered or Threatened Species list(s) published by the State of Tennessee, or the United States federal government are also prohibited from being held, released or hunted on a wildlife preserve. Game species, excluding black bear, that are naturally occurring within the boundaries of a wildlife preserve may be hunted in accordance with statewide regulations, license and permit requirements.

Prevalence – The number of animals testing positive for a disease divided by the total number of animals tested at a specific point or period of time. This does not reflect the true proportion of animals, but rather the apparent proportion of animals affected by the disease.

Prion – A transmissible misfolded protein that induces abnormal folding of specific normal cellular proteins in the host to cause disease; the infectious agent of CWD.

Rehabilitation centers – Rehabilitation centers are defined as those facilities which house and treat injured, diseased and displaced Class II and Class IV wildlife (except wild turkeys) which are temporarily incapable of surviving in the wild. The objective of the centers will be to return such wildlife to their natural habitat.

Reservoir – Any animal, plant, soil, or substance in which an infectious agent normally lives and multiplies that acts as a source of infection for susceptible individuals.

- Resistance** – The ability of an individual to remain non-clinical/asymptomatic or have low disease severity despite becoming infected.
- Risk** – Possibility that something unpleasant will happen or a situation involving exposure to danger.
- Risk analysis** – Analytical process to identify and assess factors regarding undesirable events.
- Risk communication** – The exchange of information between experts (risk assessors, risk managers) and those affected by both the risk and the decisions made before the final policy decisions are taken.
- Risk management** – The process of identifying, evaluating, and prioritizing policy alternatives in consultation with interested parties to minimize and control risks.
- Spark** – CWD detections that are along the leading edge of the known CWD distribution, in areas that contain low numbers of positive CWD detections, or at initial detections in areas previously unaffected by CWD (Green et al. 2014).
- Suspect, Not Confirmed** – A TWRA test result designation issued when a “suspect” ELISA test result is received from an accredited lab from a sample derived from outside a CWD-enzootic/established area, but results are inconclusive with follow-up diagnostics and additional characteristics of the case are not met (see Sampling and Diagnostics).
- Targeted removal** – Removal of cervids from a focal area aside from, or in addition, to legal harvest. 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 Wildlife Services).
- Transmission** – The transfer of an infectious agent from one individual to another by direct or indirect means, such as through direct contact, aerosols, contaminated environment, vectors.
- Transmission rate** – The rate at which an infectious agent is transferred from an infective individual to a susceptible individual.
- USDA CWD susceptible cervid** – Captive cervid industry term that identifies those genera whose members have been confirmed to be naturally infected with CWD. These are animals in the genera *Odocoileus*, *Cervus*, and *Alces* and their hybrids, i.e., deer, elk, and moose.
- See PART 81—CHRONIC WASTING DISEASE IN DEER, ELK, AND MOOSE - A term used in the captive cervid industry to identify any member of a species identified under United States Department of Agriculture (USDA) CWD Program Standards, as they may be amended from time to time and published by USDA, Animal and Plant Health Inspection Service, Veterinary Services.
- Vector** – An insect or other living organism that carries and transmits a disease agent from one animal to another. At this time, there are no known vectors in prions, but research is being conducted on the potential for ticks as a vector.
- Wildlife health** – The vitality and integrity of wildlife species at population levels that support their functional roles in sustaining ecological systems that benefit society and the natural world.

Appendix C. References

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Appendix D. Statutory Authority

TWRA's mission is "...to preserve, conserve, manage, protect, and enhance the fish and wildlife of the state and their habitats for the use, benefit, and enjoyment of the citizens of Tennessee and its visitors."

Tennessee Code Annotated (TCA) Title 70 provides the overall authority to TWRA for all native wildlife (e.g., white-tailed deer, wild elk, etc.) and its management, conservation, protection and propagation. Pursuant to TCA § 70-1-302(a)(5), the Agency has the authority to exercise control measures of undesirable species.

Pursuant to TCA § 70-4-107, the Tennessee Fish and Wildlife Commission (TFWC) has the authority to issue proclamations in order to set seasons, manner, means, etc.

TCA § 70-4-107(c)(3) authorizes the Commission to summarily close, reopen and/or extend seasons during emergency conditions.

Additionally, pursuant to TCA § 70-4-113 the Executive Director and his designees have the authority to use any device to capture or kill any animal for specific purposes, or when it is considered necessary by the Executive Director to reduce or control any species that may be detrimental to human safety, health or property.

TCA 70-4-115 provides landowners the opportunity to destroy such wildlife, including big game (white-tailed deer) that are damaging to that landowner's property. Landowners wishing to destroy big game must first obtain a permit from the agency. CWD permits are issued pursuant to this TCA.

Importation and possession of live white-tailed deer is illegal in Tennessee. White-tailed deer incidentally contained within a property with high enough fencing to prevent escapes remain property of the State. Tennessee Wildlife Resources Agency is responsible for permitting private big game wildlife preserves. A moratorium on the establishment of new private big game wildlife preserves exists (Rule and Regulation 1660-01-11-.02 (2)b). The Tennessee Department of Agriculture (TDA) regulates the possession of cervids other than white-tailed deer (e.g., fallow, sika, domestic elk, etc.). TDA Rule and Regulation 0080-02-01.

TCA 70-1-206 authorizes the fish and wildlife commission to promulgate necessary agency rules and regulations (Rules and Regulations).

Rule and Regulation 1660-01-34 Section .01 establishes those counties which are CWD positive counties and those which are CWD high risk counties. Section .02 enacts export rule of approved cervid carcass parts from CWD positive counties. Section .03 enacts an export rule of approved carcass parts from a CWD high risk counties. Section .04 establishes a wildlife feeding ban within CWD positive and CWD high risk counties.

Rule and Regulation 1660-01-15-.02 enacts restrictions to import, transport, or possess in Tennessee a cervid carcass or cervid carcass part from anywhere outside the state except approved carcass parts.

Appendix E. TWRA Statutes, Rules, and Regulations Related to CWD

Tenn. Code Ann. § 70-4-113. Use of bait, pitfalls and certain other devices in taking birds and animals prohibited — Penalty — Exceptions.

Tenn. Code Ann. § 70-4-113

Current through the 2022 Regular Session.

70-4-113. Use of bait, pitfalls and certain other devices in taking birds and animals prohibited — Penalty — Exceptions.

(a) It is unlawful for any person at any time to make use of any pitfall, deadfall, cage, snare, trap, net, baited hooks, poison, chemicals, explosives, set guns, spotlights, electric lights or torches, bait, which includes any grain, or mixture of any ingredients, used as or for food purposes, or other devices for the purpose of killing, injuring, or capturing any birds or animals protected by the wildlife laws of this state, except as otherwise expressly provided.

(b) The executive director or the executive director's designees may use any chemical, biological substance, poison or device under controlled conditions to capture or kill any bird or animal for scientific, propagating, enforcement, humane or rescue purposes or when it is considered necessary by the executive director to reduce or control any species that may be detrimental to human safety, health or property. No action on the part of the executive director, directed to the control of rabies or other diseases spread from wildlife to human beings, shall be taken until the following conditions have been met:

(1) The county board of health in the affected county shall have met in open session and, by appropriate resolution, declared that a condition detrimental to the human safety, health or property exists within the affected county;

(2) An official quarantine by the county board of health has been established on all dogs, cats and pets in the county; and

(3) An official request has been made by the county board of health, through and with the concurrence of the commissioner of health, to the executive director to take such action as is necessary by the executive director or the executive director's designees and by such means as are authorized in this section to bring the disease under control in the affected county. This subsection (b) is effective in every county in this state.

(c) A violation of this section is a Class C misdemeanor; provided, that spot, electric or torch lights may be used in the hunting and taking of raccoons, opossums and frogs, and box traps may be used for the taking of rabbits during the open shooting season for the same.

History

Acts 1951, ch. 115, § 37 (Williams, § 5178.66); Acts 1957, ch. 382, § 4; 1965, ch. 43, §§ 1, 2; impl. am. Acts 1974, ch. 481, §§ 6, 7; Acts 1982, ch. 738, § 17; T.C.A. (orig. ed.), § 51-421; Acts 1989, ch. 591, § 113; 1990, ch. 891, § 12.

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Tenn. Code Ann. § 70-1-302

Current through the 2022 Regular Session.

70-1-302. Duties and functions — Agency advertising.

(a) The wildlife resources agency is directed and authorized to perform the following duties and functions:

(1) Make such expenditures from funds in the wildlife resources fund and the boating safety fund as it deems advisable subject to titles 9 and 12, and § 70-1-306(c)-(h);

(2) Protect, propagate, increase, preserve and conserve the wildlife of this state, and enforce by proper action and proceedings, the existing laws of this state relating to wildlife;

(3) Acquire by purchase, condemnation, lease, agreement, gift or devise, lands or waters suitable for the following purposes and develop, operate and maintain them for these purposes, subject to § 70-1-306(c)-(h):

(A) Fish hatcheries and nursery ponds;

(B) Lands or waters suitable for game, birds, fish, or fur-bearing animal restoration, propagation, protection, management, or for access to such lands or waters;

(C) Public hunting, fishing or trapping areas to provide places where the public may hunt, trap or fish in accordance with law or the regulations of the agency; and

(D) The protection, preservation, and enhancement of Reelfoot Lake and the lands surrounding it;

(4) Extend and consolidate by exchange lands or waters suitable for the purposes set out in subdivisions (a)(3)(A)-(D);

(5) Capture, propagate, transport, buy, sell, or exchange any species of game, bird, fish, fur-bearing animal or other wildlife needed for propagation, enforcement or stocking purposes, or to exercise control measures of undesirable species;

(6) Enter into cooperative arrangements with farmers and other landowners or lessees for the utilization of lands under their ownership or control for the purpose of protecting, propagating, conserving, restoring, taking or capturing of the wildlife of the state, under such rules and regulations as the agency may prescribe; and

(7) Enter into cooperative agreements with educational institutions and state, federal, and other agencies to promote wildlife management and conservation.

(b) The agency may enter into cooperative agreements with the United States Tennessee Valley authority, United States fish and wildlife service, national park service, United States forest service, or with any other federal agency, or with any state for the purpose of regulating fishing, hunting, or trapping in the area under jurisdiction of the federal agencies or the state or in interstate waters, as the case may be. Such regulations shall become effective as soon as they shall have been accepted by all parties to the agreement and as soon as thirty (30) days shall have elapsed from the first publication of such regulations. Agreements involving reciprocal actions relative to wildlife violations shall become effective thirty (30) days after publication in the same manner as is required for proclamations.

(c) The wildlife resources agency may require creel census reports and reports of all fish taken under commercial fishing license and all mussels taken under commercial musseling license for any water or waters designated by it, such reports to be on forms provided by the executive director. This shall apply to license holders, wholesalers and others as required.

(d) The wildlife resources agency shall administer the Reelfoot Lake natural area, as provided in title 11, chapter 14, part 1.

(e) In order to further the public interest in the protection and preservation of wildlife and its habitat, the wildlife resources agency is authorized to participate in the federal wetlands mitigation banking program. Participation includes, but is not limited to, entering into agreements for agency or private development, construction and operation on lands that are affected by the program and that are owned, leased, or controlled in some manner through cooperative arrangement agreement or otherwise by the agency.

(f) The agency may sell advertising in any magazine or other publication of the agency, under terms and conditions to be set by the agency. The revenue generated from such advertising shall be deposited exclusively in the wildlife resources fund provided in § 70-1-401. Any person or entity purchasing such advertising shall include an appropriate disclaimer, as determined by and subject to approval of the agency, to ensure that the appearance of such advertising in an agency publication does not constitute, directly or indirectly, any endorsement by the agency of any products, services, companies, organizations, or other matters referenced in the advertising.

(g) The agency may sell the right to include advertising in mailings sent by the agency, including, but not limited to, licenses, under terms and conditions set by the agency; provided, that any advertisers must comply with the disclaimer requirements of subsection (f). The revenue generated from such advertising shall be deposited exclusively in the wildlife resources fund provided in § 70-1-401.

(h)

(1) The agency is authorized to enter into agreements with landowners or persons who control hunting access to lands to establish deer management assistance plans. The purpose of a plan is to permit a landowner, adjoining landowners, or persons who control hunting access on contiguous lands to achieve deer management goals on the contiguous land through management for the specific needs of deer that may at any point in time cross over the land. Harvests under a particular deer management plan may exceed the normal season harvest in accordance with the plan.

(2) General guidelines for implementation of a deer management assistance program shall be developed by rule and regulation. In order to qualify under the program, the total combined contiguous acreage must meet or exceed one thousand (1,000) acres. Further, a deer management assistance permit must be purchased. Permit fees shall be established by rule and regulation. It is the intent in creating this program that it shall be revenue neutral to the agency and the state.

(i) The agency is authorized to enter into agreements with the United States coast guard to enforce federal regulations in connection with homeland security related activities on Tennessee waters; however, all enforcement activities are subject to prior approval by the Tennessee office of homeland security.

(j) The agency may enter into cooperative agreements with the United States Tennessee Valley authority, United States fish and wildlife service, national park service, United States forest service, or with any other federal agency, or with any public or private landowners in this state for the purpose of creating partnerships for the purpose of planting cover and food plots along utility easements for the benefit of indigenous wildlife.

(k)

(1) The wildlife resources agency is authorized to enter into partnership agreements with nonprofit organizations for the purpose of promoting and supporting the goals and objectives of the agency including, but not limited to, marketing opportunities.

(2) This subsection (k) shall not be interpreted to abridge any powers or duties delegated to the agency in this part.

(3) The nonprofit partners shall have their boards of directors elected by a process approved by the governor or the governor's designee.

(4) The nonprofit partners shall be properly incorporated under the laws of this state, and approved by the internal revenue service as organizations that are exempt from federal income tax under § 501(a) of the Internal Revenue Code (26 U.S.C. § 501(a)), by virtue of being organizations described in § 501(c)(3) of the Internal Revenue Code (26 U.S.C. § 501(c)(3)).

(5) Costs to underwrite the nonprofit partners' activities related to marketing opportunities shall be borne from revenues of the nonprofit partners and no state employee shall benefit from such proceeds. All proceeds in excess of the cost of operation shall be deposited exclusively into the wildlife resources fund as established in § 70-1-401 and shall not revert to the general fund.

(6) The nonprofit partners shall annually submit to the governor, the speakers of the senate and the house of representatives, and the chair of the Tennessee fish and wildlife commission, within ninety (90) days after the end of their fiscal year, a complete and detailed report setting forth their operation and accomplishments.

(7) The annual reports and all books of accounts and financial records of all funds received by grant, contract or otherwise from state, local or federal sources shall be subject to audit annually by the comptroller of the treasury. With prior approval of the comptroller of the treasury, the audit may be performed by a licensed independent public accountant selected by the nonprofit partner. If an independent public accountant is employed, the audit contract between the nonprofit partner and the independent accountant shall be on contract forms prescribed by the comptroller of the treasury. The cost of any audit shall be paid by the nonprofit partner. The comptroller of the treasury shall ensure that audits are prepared in accordance with generally accepted governmental auditing standards and determine if the audits meet minimum audit standards prescribed by the comptroller of the treasury. No audit may be accepted as meeting the requirements of this section until approved by the comptroller of the treasury.

(8) All full board meetings of a nonprofit organization concerning activities authorized by § 70-1-207 or pursuant to subsection (f) shall be open to the public, except for executive sessions that include, but are not limited to, any of the following matters: litigation; audits or investigations; human resource issues; gift acceptance deliberations; board training; governance; donor strategy sessions; and security measures.

(9) All expenditures of a nonprofit organization relating to activities authorized by § 70-1-207 or pursuant to subsection (f) shall be open for public inspection upon specific request to the nonprofit organization.

(l) The agency shall administer Lake Halford pursuant to § 64-1-810.

History

Acts 1951, ch. 115, § 26 (Williams, § 5178.55); impl. am. Acts 1974, ch. 481, §§ 5-7; Acts 1974, ch. 481, § 21; T.C.A. (orig. ed.), §§ 51-109, 51-124; Acts 1984, ch. 548, § 3; 1985, ch. 350, § 4; 1990, ch. 891, §§ 1-3; 1995, ch. 298, § 1; 1999, ch. 227, § 1; 2000, ch. 837, § 1; 2002, ch. 566, § 1; 2004, ch. 774, § 1; 2008, ch. 859, § 1; 2011, ch. 332, § 1; 2012, ch. 993, § 13; 2022, ch. 962, § 2.

TENNESSEE CODE ANNOTATED

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Tenn. Code Ann. § 70-4-107

Current through the 2022 Regular Session.

70-4-107. Hunting and fishing seasons — Bag and creel limits — Nonprotected wildlife.

(a) There is hereby declared a closed season upon all hunting and fishing in this state upon all wildlife protected by the laws of the state.

(b) Whenever the supply of game or fish, or both, existing in any area, lake or stream shall become adequate to allow the taking or hunting, or both, of the game or fish without material danger of extinction or undue depletion of such game or fish, then it is lawful for any person to hunt or fish, or both, in the area, lake or stream within the creel, size, and bag limits, and in the manner and by the means prescribed by the fish and wildlife commission.

- (c)
- (1) The fact as to whether or not the supply of game or fish, or both, is at any time adequate to allow the taking of game or fish without the danger of extinction or undue depletion shall be determined by the commission, after a complete survey of the area in question.
 - (2) If the commission finds that the supply of game or fish, or both, is sufficient to allow taking without the danger of extinction or undue depletion, it shall announce such fact by proclamation, in which it shall state the species of the game or fish, or both, that may be taken without the danger as mentioned in this section, and shall likewise ascertain and announce the dates and hours of the day between which such game or fish, or both, may be taken without the dangers set forth. Upon such announcement by the commission, it is lawful for any person within the area so designated by the commission to take game or fish, or both, of the species mentioned by the commission.
 - (3) The proclamations shall become effective thirty (30) days after filing with the secretary of state. During emergency conditions, seasons may be closed, reopened or extended summarily. A copy of all proclamations issued by the commission shall be immediately filed with the secretary of state and the county clerks for the counties affected.
 - (4) The commission shall annually publish a list of such wildlife as are deemed destructive or not to be protected by law, or both.
- (d) During any such open season as promulgated by the commission, the provisions of all general game and fish laws shall remain in full force and effect with reference to the method and manner of hunting and fishing and all other restrictions and provisions as to the taking of wild animals and fish as now or hereafter appear in the general game and fish laws.
- (e) The open season on private lakes may be set by the owner and operator thereof, but the creel limits on fish caught from the waters of such lakes shall not exceed that set by law for public waters.

- (f)
- (1) The commission may establish open seasons, bag and creel limits for the taking of game and fish on state lands, including lands leased by the state for wildlife management purposes, and may make any regulations it may deem needful to promote the best interest and enforce these provisions by means of rules and directions.
 - (2) A violation of this subsection (f) is a Class B misdemeanor.

History

Acts 1951, ch. 115, §§ 2-4, 27, 53 (Williams, §§ 5178.31-5178.33, 5178.56, 5178.82, 5178.85); Acts 1953, ch. 255, § 4; 1955, ch. 152, § 1; 1974, ch. 481, § 21; 1978, ch. 587, § 2; 1979, ch. 39, § 1; 1982, ch. 738, §§ 13, 14; T.C.A. (orig. ed.), §§ 51-408 — 51-410, 51-413, 51-414; Acts 1989, ch. 591, § 113; 1990, ch. 981, § 3; 2012, ch. 993, § 13.

TENNESSEE CODE ANNOTATED

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Tenn. Code Ann. § 70-1-206

Current through the 2022 Regular Session.

70-1-206. Duties and functions.

(a) The fish and wildlife commission is directed and authorized to perform the following duties and functions:

- (1) Appoint and dismiss the executive director;
- (2) Approve the budget pursuant to § 70-1-306;
- (3) Promulgate necessary rules, regulations, and proclamations as required under this title and title 69, chapter 9. The commission is also authorized to promulgate rules and regulations to permit a licensed trapper to release small game animals in counties contiguous to the counties where the animals were trapped;
- (4) Establish objectives within the state policy that will enable the wildlife resources agency to develop, manage and maintain sound programs of hunting, fishing, trapping and other wildlife related outdoor recreational activities;
- (5) Establish the salary of the executive director of the wildlife resources agency;
- (6) Promulgate rules and regulations for the administration of the Reelfoot Lake natural area, as provided in title 11, chapter 14, part 1; and
- (7) Promulgate rules and regulations to adjust fees for licenses and permits in this title and to establish new hunting, fishing and trapping licenses and permits as deemed appropriate along with necessary fees. Adjusting or establishing fees shall be in such amounts as may be necessary to administer the wildlife laws; provided, that the percentage increase in total revenue from a license package containing one (1) or more licenses or permits, or both, shall not exceed the percent of increase in the average consumer price index, all items-city average, as published by the United States department of labor, bureau of labor statistics, on the first day of March 1990, or, in the case of any permit, license or permit/license package fee adjustment after the initial adjustment under this subdivision (a)(7), the difference in the average consumer price index, all items-city average between the dates of one (1) adjustment and any subsequent adjustment; provided further, however, that individual fee adjustment amounts may be rounded up to the next dollar amount. All such fees, and any adjustments to the fees, shall be deposited in the wildlife resources fund and shall be expended solely for the administration and operation of the agency's programs and responsibilities authorized pursuant to this chapter. Further, the commission shall report actions taken on permits, licenses, and fees to be assessed following the promulgation of the proposed rules and regulations to the energy, agriculture and natural resources committee of the senate and to the agriculture and natural resources committee of the house of representatives.

(b) The fish and wildlife commission shall become knowledgeable in and familiar with the special needs of handicapped and disabled veterans.

History

Acts 2012, ch. 993, § 1; 2013, ch. 236, § 7.

TENNESSEE CODE ANNOTATED

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**RULES OF
TENNESSEE WILDLIFE RESOURCES AGENCY
CHAPTER 1660-01-11
RULES AND REGULATIONS GOVERNING SHOOTING**

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1660-01-11-.01 COMMERCIAL CONTROLLED SHOOTING GROUNDS, DYER COUNTY.

Authority: T.C.A. § 70-1-206. **Administrative History:** Original rule certified May 8, 1974. Amendment filed August 2, 1982; effective August 31, 1982.

1660-01-11-.02 OPERATION OF PRIVATE WILDLIFE PRESERVE.

(1) Definitions.

(a) "Private Wildlife Preserve" means a privately owned or lease controlled tract of land on which a person may hunt captive wildlife originating from a legal source.

(b) "Wildlife" means all warm-blooded animals classified under Tenn. Code Ann. § 70-4-403 as Class II or Class III Wildlife.

(2) Permits.

(a) Any person desiring to operate a Private Wildlife Preserve as herein defined shall make application to the Tennessee Wildlife Resources Agency (TWRA) for a permit to do so. The TWRA will cause an inspection to be made of the wildlife preserve and if same shall be found to be meeting the qualifications of these rules and regulations, a permit will be issued. The permit will grant the privilege to the owner or operator of said Private Wildlife Preserve to release captive wildlife approved by the TWRA. All Class III species and fowl authorized under this permit must come from sources approved by the Tennessee Department of Agriculture. The species to be released will be indicated on the permit.

(b) As of July 1, 2009, no new facilities will be issued a permit for the purpose of possessing and/or harvesting big game species under the authority of a Private Wildlife Preserve Permit.

(3) Animal Possession and Release.

(a) Wildlife indigenous to the State of Tennessee may not be held, released, or hunted on a wildlife preserve unless specifically authorized by the wildlife preserve permit. All Class I Wildlife species, white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallipavos*), and black bear (*Ursus americanus*) are specifically prohibited from being held, released, and hunted under the authority of a wildlife preserve permit. Any wildlife on the Endangered or Threatened Species list(s) published by the State of Tennessee or the United States federal government are also prohibited from being held, released, or hunted on a wildlife preserve. Game species, excluding black bear, which are naturally occurring within the boundaries of a wildlife preserve may be hunted in accordance with statewide regulations, license, and permit requirements.

(b) Any wildlife authorized for release on the wildlife preserve may be taken with a gun, archery equipment, or a trap. Non-indigenous mammals, and elk, as defined in Tenn. Code Ann. § 70-4-403(3)(P), released on the wildlife preserve and which escape from the wildlife preserve, must be reported to the Tennessee Department of Agriculture within 24 hours of such escape, and may be recaptured by the owner, operator, or regular employees of the preserve by means of tranquilizer gun, trap, or with the aid of dogs. The recapture of escaped animals is permitted only with prior approval from the TWRA; however, the recapture of escaped indigenous wildlife, except elk, as defined in Tenn. Code Ann. § 70-4- 403(3)(P), is not permitted.

(c) The following species of Cervidae may only be held or harvested by wildlife preserves if such animals are obtained from a herd outside of the state that has been certified as Chronic Wasting Disease free for the past five (5) years, and are authorized for import by the Tennessee Department of Agriculture:

1. Elk/red deer (*Cervus elaphus*);
2. Black-tailed deer/mule deer (*Odocoileus hemionus*);
3. Moose (*Alces alces*); and
4. Other class III wildlife species shown to be susceptible to CWD.

(d) Wildlife preserves may also hold and harvest the species listed in subparagraph (c) if these animals are obtained within the State of Tennessee from a herd in a CWD surveillance program, as recognized by the Tennessee Department of Agriculture. Animals so obtained shall not have been exposed to non-surveillance animals during the surveillance period. Also, these animals must retain the identification marker(s) placed on the animals while in the surveillance programs. Animals so obtained must be harvested and tested for CWD within twelve (12) months of acquisition. Also, animals so obtained cannot be transferred to any other facility for any reason.

(e) The Tennessee Department of Agriculture or their designee, must be notified within twenty-four (24) hours of the harvest or death of the species of Cervidae listed in subparagraph (c). The head and neck of these animals must be retained and refrigerated by the preserve operator for at least seventy-two (72) hours in order to allow for any necessary testing by the above agency.

(4) Facilities

(a) The land area for which a permit will be issued must contain a minimum of twenty (20) acres and this land must be in one continuous tract. No artificial structures or devices can be used to create a hunting or training area less than twenty (20) acres. On wildlife preserves that require fencing, the fencing must be done in a continuous manner along the boundaries in such a fashion to prevent the escape of animals being held by the preserve. On wildlife preserves where big game species are hunted, the boundaries must be fenced with woven wire fence of a minimum twelve and one half (12.5) gauge wire and such fence shall be a minimum of ninety- six (96) inches. On wildlife preserves where only swine, goats or sheep are hunted, the boundaries must be fenced with woven wire fence of a minimum twelve and one half (12.5) gauge wire, and such fence shall be a minimum of forty eight (48) inches in height. On wildlife preserves where foxes and raccoons are hunted, the boundaries must be fenced with woven wire fence of a minimum twelve and half (12.5) gauge wire with a maximum of four (4) inch spacing, anchored at the base and such fence shall be a minimum of seventy-two (72) inches in height. On wildlife preserves

where rabbits are hunted, the boundaries must be fenced with wire fence with a maximum of two (2) inch spacing anchored at the base and such fence shall be a minimum of thirty-six (36) inches in height. Wildlife preserve boundaries which are fenced with a minimum of ninety-six (96) inch fencing, must have any entrance to such preserve posted with signs identifying it as a wildlife preserve. Wildlife preserve boundaries that are fenced with less than ninety - six (96) inch fencing or no fencing at all, must have its boundaries posted every fifty (50) yards with signs identifying it as a wildlife preserve. All signs used to identify a wildlife preserve must be at least eight and one half (8.5) inches by eleven (11) inches and have the words "Wildlife Preserve" printed on the sign in letters not less than one (1) inch in height on contrasting background.

(5) Records.

(a) Permittees will maintain records on forms provided by TWRA showing the number and species of wildlife purchased, the name and address of the source of supply, number and species propagated, the number and species released, and the number and species taken. Also, permittees will maintain records on forms provided by TWRA listing the name and address of each hunt participant, the date of the hunt, and their hunt record. These records are to be kept for a minimum of three (3) years and be available for inspection at the address listed on the permit for the Wildlife Preserve by agents of the TWRA upon request.

(b) Operator and/or owners of a Wildlife Preserve must have at the address indicated on their preserve permit receipts for all animals held, released, hunted, and/or harvested on such preserve. These receipts must have the name and address of the supplier and be signed by such supplier. The receipts are to list species, numbers, sex, and all identifiers for animal(s) listed on such receipt. These receipts are to be provided to agents of the TWRA or the Tennessee Department of Agriculture upon request.

(6) Seasons.

(a) Private wildlife preserve seasons open and close as promulgated by the Tennessee Wildlife Resources Commission.

Authority: T.C.A. §§ 70-1-206 and 70-4-413. **Administrative History:** Original rule certified May 8, 1974. Amendment filed July 18, 1974; effective August 18, 1974. Amendment filed November 20, 1975. Amendment filed July 14, 1980; effective August 28, 1980. Amendment filed August 2, 1982; effective August 31, 1982. Amendment filed June 9, 1986; effective July 9, 1986. Amendment filed May 11, 1990; effective June 25, 1990. Amendment filed December 14, 1992; effective January 29, 1993. Amendment filed August 9, 1993; effective October 23, 1993. Amendment filed May 28, 1997; effective August 11, 1997. Amendment filed July 19, 2001; effective October 2, 2001. Amendment filed July 25, 2003; effective October 8, 2003. Amendment filed July 13, 2006; effective September 26, 2006. Amendment filed May 29, 2009; effective August 12, 2009. Amendments filed August 13, 2019; effective November 11, 2019.

**RULES OF
TENNESSEE WILDLIFE RESOURCES AGENCY
WILDLIFE RESOURCES
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1660-01-15-.01 IMPORTATION OF LIVE WILDLIFE.

- (1) Before any person in the State of Tennessee may have in his or her possession any live wild animal species obtained from outside the State of Tennessee, he or she must import such animal in accordance with the following:
- (a) Any permit obtained for importation, other than an annual importation permit, is void when the shipment of animals or any portion thereof is received or when any condition or restriction of the permit is violated.
 - (b) Wildlife, as referred to in these regulations, is either singular or plural, as the case may be; and is defined as all species normally found in the wild, regardless of whether they were captured in the wild or raised in captivity.
 - (c) Wildlife obtained through interstate commerce must be in accordance with federal laws, as well as be obtained from a dealer licensed by the U.S. Department of Agriculture under the Animal Welfare Act of 1970.
 - (d) When any wildlife is being shipped or transported by any carrier, private or public, the carrier shall possess the shipper's copy of the importation permit. The shipper's copy of the importation permit will be left with the consignee upon delivery of the animals. The animals and all pertinent records will be open to inspection by a representative of the Wildlife Resources Agency prior to their release.
 - (e) Any person, group or business entity importing wildlife for the purpose of release must notify the regional office within 24 hours prior to the arrival of the shipment. Wildlife imported for release will be subject to inspection by the Tennessee Wildlife Resources Agency prior to their release.
 - (f) Any wildlife imported for release will be subject to the following restrictions:
 - 1. Annual importation permit holders shall notify the Tennessee Wildlife Resources Agency of the intent to import a shipment of captive wildlife to check to determine if the source of that species is approved.
 - 2. The importation of animals from states having endemic disease problems in wild populations that could present a health hazard to native wildlife or the public is specifically prohibited.
 - 3. The Tennessee Wildlife Resources Agency will annually compile a list of species and the states from which they originate that are prohibited from importation. This list will be provided to the appropriate agency personnel as well as annual importation permit holders.

(Rule 1660-01-15-.01, continued)

- (g) Each request to import will be considered on its own merits, taking into consideration human health and safety, competition with or effect on native species, prolific breeders, and agricultural pests.
- (h) The above mentioned requirements do not apply to Class III Wildlife.

Authority: T.C.A. §§ 70-1-206, 70-4-401, and 70-4-404. **Administrative History:** Original rule filed February 12, 1996; effective April 27, 1996. Amendments filed February 28, 2005; effective May 14, 2005.

1660-01-15-.02 IMPORTATION OF WILDLIFE CARCASSES, PARTS, AND PRODUCTS.

- (1) No person may import, transport, or possess in Tennessee a cervid carcass or carcass part from anywhere outside the state except as provided herein:
 - (a) Meat that has bones removed.
 - (b) Antlers, antlers attached to cleaned skull plates, or cleaned skulls (where no meat or tissues are attached to the skull.)
 - (c) Cleaned teeth.
 - (d) Finished taxidermy and antler products.
 - (e) Hides and tanned products.

Authority: T.C.A. §§ 70-1-206 and 70-4-107. **Administrative History:** Original rule filed July 12, 2005; effective September 25, 2005. Amendment filed January 5, 2009; effective March 21, 2009. Repeal and new rule filed May 3, 2012; effective August 1, 2012. Amendments filed April 20, 2018; effective July 19, 2018.

July, 2018 (Revised)

**RULES OF
THE TENNESSEE WILDLIFE RESOURCES AGENCY
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1660-01-18-.01 GENERAL PROVISIONS GOVERNING POSSESSION OF LIVE WILDLIFE.

- (1) All live wildlife possessed within the State of Tennessee must be held in accordance with T.C.A. §§ 70-4-401 et seq., except in those instances where species are addressed under other existing statutes.
- (2) The possession of state or federally threatened or endangered species is permitted only when the species have been legally obtained in the state or country of origin. All imported live wildlife must be legally obtained in the state of origin.
- (3) No wildlife may be taken from the wild in Tennessee except as provided for by statute, proclamation, and/or rule.
- (4) All individuals possessing live wildlife must be able to produce proof of legal ownership. Proof of legal ownership includes evidence of legal importation (importation permit), purchase receipt from a licensed propagation facility, possession of the parent animals, or evidence of disposition of the parent animals.
- (5) The following species may be legally released if approval is obtained in advance from the TWRA:
 - (a) Bobwhite Quail;
 - (b) Red Fox;
 - (c) Grey Fox;
 - (d) Raccoon;
 - (e) Non-native game birds;
 - (f) Mallard ducks;
 - (g) Native species of fish that are not approved for fish farming intended for release into private lakes and ponds; and
 - (h) Cottontail rabbit.
- (6) Fish that are approved for fish farming may be released into private lakes and ponds without obtaining approval from the Tennessee Wildlife Resources Agency (TWRA).

(Rule 1660-01-18-.01, continued)

Authority: T.C.A. §§ 70-1-206, 70-4-403, 70-4-404, and 70-4-405. **Administrative History:** Original rule filed July 25, 1986; effective September 8, 1986. Amendment filed February 26, 1987; effective April 12, 1987. Amendment filed April 20, 1992; effective June 4, 1992. Amendments filed November 1, 2021; effective January 30, 2022.

1660-01-18-.02 PERMITS.

- (1) A propagation permit is not required for holders of a fish dealer's license issued under Rule 1660-01-26-.03.
- (2) While all other permits do apply, a possession permit is not required for the following species regulated as Class II wildlife:
 - (a) Bobwhite Quail;
 - (b) Non-native game birds that are released in Tennessee or other states for the purpose of hunting (chukar, ringneck pheasant, etc.);
 - (c) Waterfowl defined in Chapter 1, Title 50, of the U. S. Code of Federal Regulations as North American migratory game birds;
 - (d) Legally obtained native aquatic species held in aquaria; and
 - (e) Legally obtained nonpoisonous reptiles and amphibians indigenous to the State of Tennessee.
- (3) All information requested on application for permits must be completed accurately.
- (4) Permits shall expire on the 30th day of June each year.
- (5) An importation permit is required for all fish species except the following:
 - (a) Any species (including their hybrids) native to Tennessee;
 - (b) Triploid grass carp certified by the United States Fish and Wildlife Service;
 - (c) All species that are approved for fish farming; and
 - (d) Golden orfe.
- (6) Class I and Class II species not listed on the permit issued for a facility other than a zoo may not be possessed at the facility until approved and added to the permit by letter from the director of the TWRA.
- (7) Permanent exhibitors cannot engage in the commercial trade of captive wildlife without a valid commercial propagators permit.
- (8) All temporary exhibitors exhibiting Class I wildlife must submit a completed application and an itinerary of intended dates and locations of their exhibition at least twenty-one (21) days prior to first scheduled exhibition.

Authority: T.C.A. §§ 70-1-206, 70-4-401, 70-4-403, 70-4-404, and 70-4-405. **Administrative History:** Original rule filed July 25, 1986; effective September 8, 1986. Amendment filed February 26, 1987; effective April 12, 1987. Amendment filed May 11, 1990; effective June 25, 1990. Amendment filed April 20, 1992; effective June 4, 1992. Amendment filed February 3, 1995; effective April 19, 1995. Amendments filed November 1, 2021; effective January 30, 2022.

January, 2022 (Revised)

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**RULES OF
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1660-01-34-.01 ESTABLISHMENT OF POSITIVE CWD COUNTIES AND HIGH RISK CWD COUNTIES.

- (1) A Tennessee county shall be deemed a positive CWD (Chronic Wasting Disease) county upon confirmation that a cervid has tested positive for CWD within the territorial boundaries of said county.
- (2) A Tennessee county shall be deemed a high risk CWD county when there is a confirmed case of CWD within 10 miles of the territorial boundaries of said county.
- (3) The Agency shall maintain and publish a map and list of positive CWD counties and high risk CWD counties.

Authority: T.C.A. § 70-1-206. **Administrative History:** Emergency rules filed December 21, 2018; effective through June 19, 2019. Emergency rules expired effective June 20, 2019, and the rule reverted back to its previous status. Original rules filed May 15, 2019; effective August 13, 2019.

1660-01-34-.02 EXPORTATION OF WILDLIFE CARCASSES, PARTS, AND PRODUCTS FROM A POSITIVE CWD COUNTY.

- (1) No person may export a cervid carcass or carcass part harvested from a positive CWD county.
- (2) Notwithstanding paragraph (1), cervid carcasses or carcass parts harvested in a positive CWD county may be exported from a positive CWD county if:
 - (a) The carcass parts are meat that has bones removed;
 - (b) The carcass parts are antlers, antlers attached to cleaned skull plates, or cleaned skulls (where no meat or tissues are attached to the skull);
 - (c) The carcass parts are cleaned teeth;
 - (d) The carcass parts are finished taxidermy and antler products;
 - (e) The carcass parts are hides and tanned products; or
 - (f) The carcass or carcass part is exported to another positive CWD county and only transported through other positive CWD counties.

Authority: T.C.A. § 70-1-206. **Administrative History:** Emergency rules filed December 21, 2018; effective through June 19, 2019. Emergency rules expired effective June 20, 2019, and the rule reverted back to its previous status. Original rules filed May 15, 2019; effective August 13, 2019.

1660-01-34-.03 EXPORTATION OF WILDLIFE CARCASSES, PARTS, AND PRODUCTS FROM A HIGH RISK CWD COUNTY.

- (1) No person may export a cervid carcass or carcass part harvested from a high risk CWD county.
- (2) Notwithstanding paragraph (1), cervid carcasses or carcass parts harvested in a high risk CWD county may be exported from a high risk CWD county if:
 - (a) The carcass parts are meat that has bones removed;
 - (b) The carcass parts are antlers, antlers attached to cleaned skull plates, or cleaned skulls (where no meat or tissues are attached to the skull);
 - (c) The carcass parts are cleaned teeth;
 - (d) The carcass parts are finished taxidermy and antler products;
 - (e) The carcass parts are hides and tanned products;
 - (f) The carcass or carcass part is exported to another high risk CWD county and only transported through other high risk CWD counties; or
 - (g) The carcass or carcass part is exported to a positive CWD county and only transported through high risk CWD counties or positive CWD counties, but in no event may a cervid carcass or carcass part be transported to another high risk CWD county through a positive CWD county.

Authority: T.C.A. § 70-1-206. **Administrative History:** Emergency rules filed December 21, 2018; effective through June 19, 2019. Emergency rules expired effective June 20, 2019, and the rule reverted back to its previous status. Original rules filed May 15, 2019; effective August 13, 2019.

1660-01-34-.04 FEEDING OF WILDLIFE WITHIN A POSITIVE CWD COUNTY OR A HIGH RISK CWD COUNTY.

- (1) Within positive CWD counties and high risk CWD counties, the placement of grain, salt products, minerals, and other consumable natural and manufactured products is prohibited.
- (2) The prohibition in subsection (1) does not apply to the following:
 - (a) Feed placed within one hundred (100) feet of any residence or occupied building; or
 - (b) Feed placed in such a manner to reasonably exclude access by deer; or
 - (c) Feed placed as part of a wild hog management effort authorized by the agency; or
 - (d) Feed and minerals present solely as a result of normal agricultural practices, normal forest management practices, or crop and wildlife food production practices.

Authority: T.C.A. § 70-1-206. **Administrative History:** Original rules filed May 15, 2019; effective August 13, 2019.

TWRA Proclamation 21-05 Manner and Means of Hunting, Taking, and Trapping

TENNESSEE FISH AND WILDLIFE COMMISSION PROCLAMATION
21-05

MANNER AND MEANS OF HUNTING, TAKING, AND TRAPPING

Statewide and on Wildlife Management Areas and State Refuges

Pursuant to the authority granted by Tennessee Code Annotated, Sections 70-4-107 and 70-5-108, the Tennessee Fish and Wildlife Commission hereby proclaims the manner and means of hunting, taking, and trapping.

NOTE: All sections contained herein apply to statewide and management area hunting. Special restrictions may apply on some wildlife management areas. Legislative Private Acts also apply in some counties.

SECTION I. LEGAL HUNTING DEVICES - All firearms, hunting devices, and ammunition listed in the below table are legal for hunting purposes according to the individual species listed. If a firearm, hunting device, or ammunition is not listed in the below table it is illegal to hunt with within the State of Tennessee. Wildlife Management Areas (WMAs) may have restrictions on some legal hunting devices.

Firearm, hunting device and ammunition	Big Game				Small Game		
	Deer	Bear	Elk	Turkey	Migratory Birds	Furbearers ⁴ and Crow	All Other Small Game
Shotguns (including muzzleloading shotguns) using ammunition loaded with Number Four (4) or smaller shot	No	No	No	Yes	Yes ³	Yes	Yes
Shotguns (including muzzleloading shotguns) using ammunition loaded with T shot (0.20 inch diameter) or smaller	No	No	No	No	Yes ^{3, 6}	Yes	No
Shotguns (including muzzleloading shotguns) using ammunition loaded with single solid ball or slugs	Yes	Yes	Yes	No	No	Yes ¹	No
Rifles and handguns using rimfire ammunition and air guns (.25 caliber or smaller)	No	No	No	No	No	Yes	Yes
Rifles and handguns using centerfire ammunition (full metal jacketed ammunition prohibited)	Yes	Yes	Yes	No	No	Yes ^{1, 5}	No
Muzzleloading firearms (rifles and handguns) .36 cal. or larger	Yes ⁷	Yes ⁷	Yes ⁷	No	No	Yes ^{1, 7}	Yes ^{1, 7}
Muzzleloading firearms (rifles and handguns) less than .36 cal.	No	No	No	No	No	Yes ⁷	Yes ⁷
Air guns .35 cal. or larger	Yes ⁶	Yes ⁶	Yes ⁶	No	No	Yes ^{1, 6}	No
Pre-charged pneumatic gun which shoots an arrow (special conditions apply)	Yes ⁹	Yes ⁹	Yes ⁹	Yes ⁹	No	Yes ^{1, 9}	No
Archery equipment (longbows, recurves, compounds, and crossbows)	Yes ²	Yes ²	Yes ²	Yes ²	Yes	Yes	Yes
Raptors that are legally possessed under a valid falconry permit	No	No	No	No	Yes	Yes	Yes

(1) If using this equipment while hunting during deer, elk, or bear season you must be a legal big game hunter. (see Section VII, 8)

(2) For big game hunting arrows and bolts must be equipped with sharpened broadheads. For all other game any points are allowed.

(3) Waterfowl and sandhill cranes may only be hunted with non-toxic shot of size 7 or smaller.

- (4) Furbearers are defined as beaver, bobcat, coyote, fox, groundhog, mink, muskrat, opossum, river otter, raccoon, skunk, and weasel.
- (5) It is illegal to use rifles and handguns using centerfire ammunition from 30 minutes after sunset to 30 minutes before sunrise.
- (6) Migratory birds, except waterfowl and sandhill cranes, may only be hunted with ammunition loaded with Number (4) or smaller shot.
- (7) Muzzleloading firearms are defined as those firearms which are incapable of being loaded from the breech.
- (8) Must use a pre-charged pneumatic firing mechanism in addition the air gun must be equipped with a built-in manometer (air pressure gauge).
- (9) (a) Persons possessing a permanent disabled license may use a pre-charged pneumatic gun which shoots an arrow during the archery, deer, bear, and elk season as an accommodation for their **disability**.
- (b) A pre-charged pneumatic gun which shoots an arrow is legal for all hunters use during modern gun season for deer, bear, elk, and turkey .

SECTION II. PROHIBITED ACTS

- (1) Possession of ammunition except that as specifically authorized is prohibited while hunting.
- (2) The use or possession and/or the accompanying of anyone using or possessing raccoon calls, squallers, weapons, ammunition, or climbers while training dogs is prohibited during training season, except raccoon calls may be used during authorized field trials.
- (3) The use of dogs in taking or attempting to take deer or elk is prohibited. Taking or attempting to take deer being pursued by dog, or dogs , is prohibited.
- (4) Juveniles under the age of eighteen (18) are prohibited from using handguns for the purpose of hunting.
- (5) No person shall make use of bait to hunt wildlife unless the bait has been removed and any electronic feeder disabled at least 10 days prior to hunting.
- (6) Possession of firearms prohibited while chasing coyote, fox, and bobcat with dogs from the first Saturday in November through the end of the deer season.
- (7) UAV (unmanned aerial vehicles) cannot be used to hunt any wildlife.
- (8) Use or possession of the following equipment is prohibited:
 - (a) Predator calls while night hunting.
 - (b) Pod arrows (any pod-type device for holding drugs or chemicals on an arrow) or any drugs or chemicals used in pod arrows while archery hunting.
 - (c) Explosive arrowheads and explosive broadheads are strictly prohibited.
 - (d) Firearms capable of fully automatic fire.
 - (e) Firearms or archery equipment with any device utilizing an artificial light capable of locating wildlife.
 - (f) Any electronic light amplifying night vision scope, thermal imaging device, or other

similar devices while in possession of a firearm or archery tackle between sunset and sunrise.

(g) Electronic calls or live decoys while hunting wild turkey, foxes, and waterfowl (except electronic calls are legal during the Conservation Season for Blue, Snow, and Ross' geese).

(h) Rifles or handguns with full metal jacketed ammunition.

(i) Rifles or handguns with centerfire ammunition between 30 minutes after sunset and 30 minutes before sunrise.

U) Any loose shot other than non-toxic (as approved by U.S. Fish and Wildlife Service) or any shotgun shell loaded with shot other than non-toxic while hunting waterfowl, sandhill cranes, coots, gallinules, Virginia rails, and sora rails.

(k) Tracer ammunition

(l) The use or possession of natural cervid urine while hunting is prohibited unless the product is clearly labeled bearing certification from the manufacturer that the urine was produced in a facility that:

- i. Complies with a federal or a federally approved chronic wasting disease herd certification program and any federal chronic wasting disease protocols and record requirements;
- ii. Does not allow importation of live cervids;
- iii. Requires that all cervids exported from the facility be tested for chronic wasting disease upon death and the results are reported to the facility;
- iv. Is inspected annually by an accredited veterinarian, including inspection of the herd and applicable records; and
- v. Maintains a fence at least 8 feet high around the facility and, if the facility is located within 30 miles of a confirmed positive occurrence of chronic wasting disease, is double fenced to prevent direct contact between captive and wild cervids.

SECTION III. LEGAL TRAPPING DEVICES AND DEFINITIONS

(1) Steel foothold traps used for water sets, must have an exterior jaw measurement of nine (9) inches or less measured at the hinge of the trap. Steel foothold traps used for ground sets must have an exterior jaw measurement of seven (7) inches or less measured at the hinge of the trap. Steel square instant-kill traps must have an exterior jaw measurement of sixteen (16) inches or less measured at the widest point, and steel circular instant-kill traps must have an exterior measurement of twelve (12) inches or less measured at the widest point.

(2) Live traps are legal for taking any species of wildlife listed as having a trapping season. Live traps are defined as those traps that act as a cage after capture.

(3) Steel cable snares having a minimum cable diameter of five sixty-fourths (5/64) of an inch and a maximum cable diameter of three thirty-seconds (3/32) of an inch are legal for all legal furbearer species during the legal trapping season. Spring activated snares other than Collarum snares are prohibited.

(4) Commercially available dog-proof traps, also known as species-specific traps, are legal for trapping.

3 of 7 pages displayed. To view all pages of TWRA Proclamation 21-05 visit <https://publications.tnsosfiles.com/pub/proclamations/06-27-21.pdf>

Appendix F. Updated CWD Testing and Reporting Protocol



Updated Chronic Wasting Disease Testing and Reporting Effective August 2022

The Tennessee Wildlife Resources Agency (TWRA) is updating Chronic Wasting Disease (CWD) testing procedures for wild deer and elk in Tennessee to follow the best available science and to ensure the most proactive response for CWD detection. The updated testing procedures will begin with the 2022-23 hunting season.

TWRA has been using both the “ELISA” test and an “IHC” test for CWD sampling. Research now indicates the ELISA will return all the needed results. This test has commonly been used to detect CWD prions, while the IHC was used to confirm a “Suspect” result from ELISA. When results of these tests conflict one another, it can cause difficulty in interpreting sample results. Research now shows that a not detected or “Negative” IHC result does not mean that the initial ELISA result was incorrect. Discrepancy between the two could indicate an animal in the early stages of infection or suggest an early detection in a new area. Such early detections in new areas would be very important to identify for best management of CWD in Tennessee.

Based on this change, TWRA will now be issuing three categories of test results:

Not Detected

Positive

Suspect-Not Confirmed

When an ELISA test does not detect CWD, TWRA will issue a “**Not Detected**” report.

Moving forward, an ELISA “Suspect” test result will be addressed differently than in the past to provide additional information to hunters and better track CWD over the long-term.

If an ELISA “Suspect” test result is received and the sample originated from the CWD-affected area (west of the Tennessee River, or any county already high-risk or positive for CWD), TWRA will issue a “**Positive**” test report. No additional diagnostics will be needed.

However, if an ELISA “Suspect” test result is received and the sample originated from outside the CWD-affected area, the sample will be evaluated for additional evidence of CWD, including, but not limited to, clinical signs of CWD, proximity to CWD-positive locations, multiple sick deer reports, captive cervid facilities, other Suspect-Not Confirmed reports, and additional diagnostic testing. TWRA will evaluate the presence of these additional conditions and will report either a “**Positive**” or “**Suspect-Not Confirmed**” result.

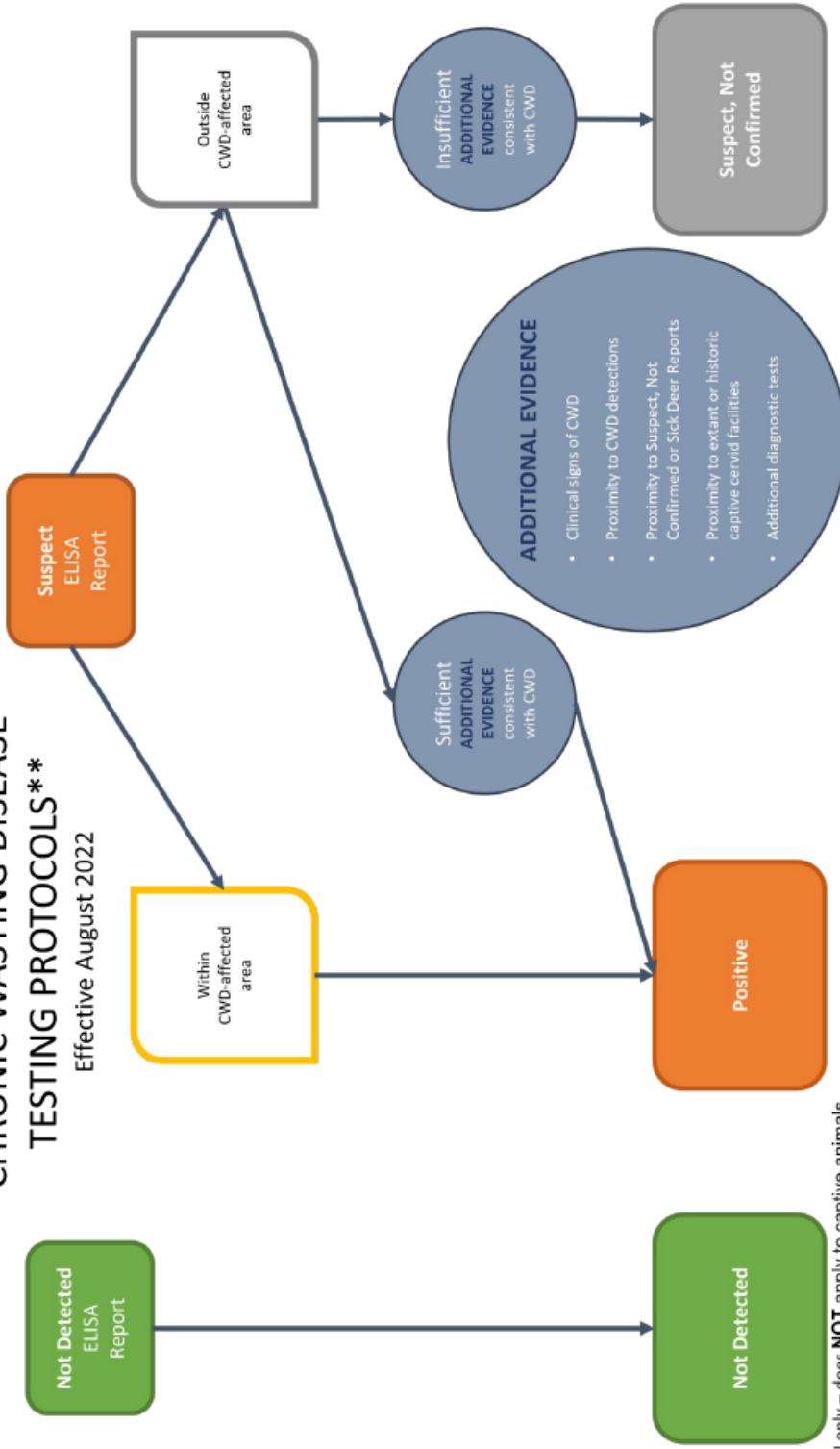
Please note, since **Suspect-Not Confirmed results are not positive**, they will not trigger any automatic regulations (feeding, mineral, or transport 1660-01-23). In these instances, TWRA will again look to hunters, our greatest partners, to provide additional hunter-harvested samples for testing as we work to identify the most effective management response to CWD.

THESE PROTOCOLS ONLY APPLY TO WILD CERVIDS AND **DO NOT APPLY** TO CAPTIVE CERVIDS

Tennessee Wildlife Resources Agency



CHRONIC WASTING DISEASE TESTING PROTOCOLS** Effective August 2022



Wild deer & elk in TN only – does **NOT apply to captive animals

Appendix G. Tennessee Department of Agriculture Regulations on Captive Cervids

Chapter 0080-02-01: Health Requirements for Admission and Transportation of Livestock and Poultry

0080-02-01-.12 BISON AND CERVIDAE.

(1) Bison. Import and movement of bison shall comply with all requirements for cattle under 0080-02-01-.05.

(2) Cervidae.

(a) Definitions.

1. Certified status herd means a cervidae herd enrolled in a CWD surveillance program for a period of five years during which time no evidence of CWD or trace back or trace forward concerns were identified for the herd by a state or federal animal health control official. Certified status is contingent on continued compliance with annual inspections and CWD surveillance program standards;
2. CWD means Chronic Wasting Disease, a transmissible spongiform encephalopathy in cervidae that causes weight loss and death in infected animals;
3. CWD surveillance program means a program approved by a state or federal animal health official for monitoring and control of CWD;
4. CWD susceptible cervidae means any member of a species identified under United States Department of Agriculture (USDA) CWD Program Standards, as they may be amended from time to time and published by USDA, Animal and Plant Health Inspection Service, Veterinary Services; and
5. Move, ship, transport, or similar words mean to relocate in any manner an item from one real property to another.

(b) Import.

1. A person shall not import cervidae from an origin within 50 miles of a location where CWD has been detected by a state or federal animal health control official.
2. A person shall not import cervidae unless the animals are identified by two forms of identification, one of which must be USDA official identification.
3. Any person who imports cervidae shall have in his possession:
 - (i) Proof showing each cervid is negative for tuberculosis, by either:
 - (I) One USDA-approved tuberculosis test within 90 days prior to import, and proof the cervid originated from a herd that tested negative on a whole herd test for tuberculosis within 12 months prior to import; or
 - (II) Two USDA-approved tuberculosis tests conducted at least 90 days apart and the second of which was conducted within 90 days prior to import.
 - (ii) A completed certificate of veterinary inspection (CVI);
 - (iii) An entry permit obtained by the veterinarian who issued the CVI for the cervidae; and
- (iv) Proof that any CWD susceptible cervid originated from a certified status herd.

(c) In-state movement.

1. For movement of any CWD susceptible cervidae from a county where any portion of the county lies within ten miles of a location where CWD has been detected by a state or federal animal health control official, a person must prior to the movement receive written authorization from the state veterinarian's office. The state veterinarian's office may authorize or deny movement of cervidae based on their likelihood to spread CWD

within the state, as assessed on various factors, e.g. seclusion from CWD detected areas by barrier or distance, herd testing, or the existence of CWD in the region, etc.

2. A person shall not move CWD susceptible cervidae unless the animals are identified by two forms of identification, one of which must be USDA official identification.

3. A person shall not move non-CWD susceptible cervidae to a livestock market unless the animals are identified by two forms of identification, one of which must be USDA official identification.

(d) CWD susceptible herd maintenance.

1. Any person who holds CWD susceptible cervidae within the state must:

(i) Annually report to the department on or before July 1 of each year the herd inventory, including location, number, and species of cervidae;

(ii) Immediately report to the department any cervid illness or death within 24 hours of discovery; and

(iii) Make the carcass of any dead cervid available to the department for testing ordered by the state veterinarian.

Authority: T.C.A. §§ 4-3-203 and 44-2-102. **Administrative History:** Original rule certified June 5, 1974. Amendment filed April 18, 1979; effective June 4, 1979. Repeal by Public Chapter 261. New rule filed June 20, 1983; effective July 20, 1983. Amendment filed April 30, 1993; effective July 28, 1993. Amendment filed September 14, 1999; effective January 28, 2000. Amendment filed June 28, 2002; effective October 28, 2002. Amendment filed June 3, 2010; effective November 28, 2010. Amendments filed March 30, 2017; effective June 28, 2017. Emergency rule filed December 21, 2018; effective through June 15, 2019. Emergency rule expired effective June 16, 2019, and the rule reverted back to its previous status. Amendments filed January 2, 2020; effective April 1, 2020.

CWD Herd Certification Program (HCP)

9 CFR parts 55 and 81

eCFR :: 9 CFR Part 55 -- Control of Chronic Wasting Disease (<https://www.ecfr.gov/current/title-9/chapter-I/subchapter-B/part-55>)

eCFR :: 9 CFR Part 81 -- Chronic Wasting Disease in Deer, Elk, and Moose (<https://www.ecfr.gov/current/title-9/chapter-I/subchapter-C/part-81>)

The CWD Herd Certification Program is a cooperative effort between APHIS, State animal health and wildlife agencies, and deer, elk, and moose owners. APHIS coordinates with these State agencies to encourage deer, elk, and moose owners to certify their herds as low risk for CWD by being in continuous compliance with the CWD Herd Certification Program standards. Enrollment in the Tennessee CWD HCP is completely voluntary but required for some species for interstate movement. In cooperation with the national CWD HCP, the Tennessee CWD HCP follows the APHIS Program standards and can be found on the USDA APHIS CWD website: Chronic Wasting Disease (https://www.aphis.usda.gov/animal_health/animal_diseases/cwd/downloads/cwd-program-standards.pdf).

General state and federal CWD HCP requirements for enrolled herd owners include fencing, individual animal identification, and testing of all animals over 12 months of age that die for any reason. Certified status is achieved after 5 consecutive years of enrollment in the program with no CWD detection and compliance with all program requirements. Interstate movement of CWD susceptible cervids is contingent on enrollment in a CWD certified herd. The full details on the CWD Herd Certification Program Standards can be found on the USDA APHIS website.

Proposed Amendments

Current regulations on captive cervids in Tennessee are under review and the following are tentative proposed amendments to Chapter 0080-02-01. Proposed amendments are estimated to be in effect by the end of 2023.

008-02-17 DEER AND OTHER CERVIDAE.

0080-02-17-.01 Scope.

(1) These rules apply to all Cervidae held in captivity.

(2) In addition to these rules, cervids on hunting preserves are regulated by Tennessee Wildlife Resources Agency under T.C.A. § 70-4-413.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0080-02-17-.02 Definitions.

(1) Cervid means all members of the *Cervidae* family and hybrids including deer, elk, moose, caribou, reindeer, and related species.

(2) Certified herd means a Cervidae herd enrolled in a USDA approved herd certification program (HCP) for a period of five years during which time no evidence of CWD or traceback or trace forward concerns were identified in the herd by a state or federal animal health control official.

(3) CWD means Chronic Wasting Disease, a transmissible spongiform encephalopathy in Cervidae that causes weight loss and death in infected animals;

(4) CWD surveillance program means a program approved by a state or federal animal health official for monitoring and control of CWD;

(5) Move, ship, transport, or similar words mean to relocate in any manner an item or animal from one real property to another.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0800-02-17-.03 Import.

(1) A person shall not import Cervidae from an origin within 50 miles of a location where CWD has been detected by a state or federal animal health control official.

(2) A person shall not import Cervidae unless the animals are identified by two forms of identification, one of which must be USDA official identification.

(3) Any person who imports Cervidae shall have in his possession:

(a) Proof showing each cervid is negative for tuberculosis and brucellosis, by either:

1. One USDA-approved tuberculosis and brucellosis test within 90 days prior to import, and proof the cervid originated from a herd that tested negative on a whole herd test for tuberculosis within 12 months prior to import; or
2. Two USDA-approved tuberculosis and brucellosis tests conducted at least 90 days apart and the second conducted within 90 days prior to import.

(b) A completed certificate of veterinary inspection (CVI);

(c) An entry permit obtained by the veterinarian who issued the CVI for the Cervidae;
and

(d) Proof that any cervid originated from a CWD certified status herd.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0800-02-17-.04 In-state movement.

(1) For movement of any Cervidae from a county where any portion of the county lies within ten miles of a location where CWD has been detected by a state or federal animal health control official, a person must prior to the movement receive written authorization from the state

veterinarian's office. The state veterinarian's office may authorize or deny movement of Cervidae based on their likelihood to spread CWD within the state, as assessed on various factors, such as seclusion from CWD detected areas by barrier or distance, herd testing, or the existence of CWD in the region.

(2) A person shall not move Cervidae unless the animals are identified by two forms of identification, one of which must be USDA official identification.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0080-02-17-.05 Herd maintenance.

Any person who holds Cervidae within the state must:

(1) Annually report to the Tennessee Department of Agriculture on or before July 1 of each year the herd inventory, including location, number, and species of Cervidae:

(2) Immediately report to the Tennessee Department of Agriculture any cervid illness or death within 24 hours of discovery;

(3) Make the carcass of any dead cervid available to the Tennessee Department of Agriculture for testing ordered by the state veterinarian;

(4) Ensure that all captive Cervidae premises are enclosed by perimeter fences at least 8 feet in height and must be structurally sound, maintained in good repair, and of sufficient construction to prevent ingress and egress of farmed and free ranging wild cervids or animals; and

(5) Report captive Cervidae escaping their premises to the state veterinarian's office within 72 hours of escape. The owner is responsible for the recapture or harvest of the animal.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0080-02-17-.06 Reporting and Testing Requirements.

(1) Immediate reporting of all deaths 12 months of age or older and subsequent CWD testing of those mortalities at the owner's expense shall be required and documented by an accredited veterinarian or state or federal personnel. The National Veterinary Services Laboratory in Ames, Iowa shall perform testing, and all lab results must be received by the state veterinarian. Exemptions may be approved only by the state veterinarian after consultation with the herd owner and herd veterinarian.

(2) Tissues from all CWD-exposed or CWD-suspect animals that die or are depopulated must be submitted for testing regardless of the age of the animal.

(3) Carcasses and tissues from sampled animals must be disposed of following State regulation. Remains of CWD-positive or CWD-exposed animals shall be disposed of in compliance with all Federal, State, and local regulations as approved by the State Veterinarian.

(4) All deaths of Cervidae and any animal exhibiting signs of CWD shall be immediately reported to the Tennessee State Veterinarian.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0080-02-17-.07 Epidemiologic Investigations.

(1) All animals reported as CWD-suspects will be investigated promptly.

(2) An epidemiologic investigation will be conducted of CWD-positive, CWD-exposed, and CWD-suspect herds that will include the designation of suspect and exposed animals, identifying animals to be traced. States that are found to have received any animals involved in a trace will be notified immediately.

(3) Trace-backs of CWD-positive animals and trace-outs of CWD exposed animals will be conducted. Appropriate states will be notified promptly after notification of a CWD-positive animal has been received.

(4) Trace-backs based on harvest or other sampling will be conducted promptly after receipt of notification of a CWD-positive animal at harvest.

(5) If herds are found to have CWD-positive, CWD-exposed, or CWD-suspect animals, the herd will be designated as such and the herd will be promptly quarantined until it has been determined if the herd contains or has contained a CWD-positive animal.

(6) Herds with a positive CWD animal will be subjected to a herd plan as developed by the Tennessee State Veterinarian with completion of herd plan requirements before quarantines are removed. Certified status also would be suspended.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0080-02-17-.08 Escaped Cervids.

All Cervidae escaping their premises shall be immediately reported to the Tennessee State Veterinarian's office and recaptured by the owner within 72 hours of escape. If an escaped farm raised cervid is returned to the herd more than 72 hours after it escapes, it loses any status that it may have had in a herd certification or herd status program and is treated as a new addition to the herd.

Authority: T.C.A. §§ 4-3-203 and 44-2-102.

0080-02-17-.09 Voluntary herd certification program.

(1) Premises Requirements

(a) All owners of captive Cervidae in Tennessee shall obtain a premise identification number from the Tennessee Department of Agriculture.

(b) All Cervidae premises that participate in the Tennessee CWD HCP shall have suitable handling facilities to allow inspection, identification, or testing of animals in a safe and humane manner.

(2) Identification Requirements

(a) Each animal 12 months of age or older and animals under 12 months of age leaving the premises shall have a minimum of two forms of animal identification.

1. One is a nationally unique official animal identification approved by USDA Animal and Plant Health Inspection Service (APHIS) and must be an 840-visual tag, 840 radio frequency identification device (RFID), electronic implant, 840 RFID injectable transponder or microchip, steel USDA tag, or another approved device.

2. The second form of identification must be a unique form of identification to that animal in the herd and can be any animal identification such as a farm bangle tag or ear or flank tattoo.

(b) Animals that lose their identification should be retagged as soon as possible. All animals 12 months of age or older must have individual identification and be reconciled in herd records before the herd status can be advanced.

(3) Enrollment, inspections, and recordkeeping requirements

(a) After receipt of an enrollment application for the program, an initial complete physical herd inventory is required as well as a recording of all individual identification. Records shall be reconciled during inspections and inventories. These inspections and inventories shall be submitted on an inspection form supplied by the state veterinarian's office and signed by an accredited veterinarian or by state or federal personnel. Owners are responsible for assembling, handling, and restraining animals for physical inventories or other inspections under conditions that will allow the accredited veterinarian, APHIS employee, or State Official to safely read all identification on the animals. The owners are responsible for the costs that may be incurred to present the animals for inspection and must agree that any liability or injury to the animals during handling rests with the owner.

(b) Inspections shall be conducted annually. Physical inventories shall be conducted every three years by state or federal animal health officials or Tennessee accredited veterinarians. Annual inspections consist of an inspection of the facility, a visual inspection of the herd including a count of the cervids and verification that each cervid twelve months of age or older has at least one official visible individual identification. Physical inventories shall be conducted in such a manner that the two forms of identification on each animal twelve months of age or older can be read and recorded. Both annual and physical inventories should correspond with herd records.

(c) Participants in the herd certification program shall submit their herd inventories in a format prescribed by the state veterinarian's office. Herds may not advance in status until the annual inspections have been completed, submitted, reconciled, and approved.

(d) Herd records must be maintained that include a complete inventory of animals that states the species, age, and sex of each animal; the date of acquisition and source of animals not born into the herd; the date of disposal or destination of animals removed from the herd; and all individual identification numbers associated with each animal.

(e) Animals can only be introduced into an enrolled herd from herds that are the same or higher status in the national herd certification program in order to maintain their existing status. Should animals with a lesser program status be introduced into the herd, the herd will revert to the status of the newly introduced animals.

(f) Documentation of any deaths, interstate movements, or any other disposition of animals since the last inventory shall be included in the records. Annual herd inventories shall be completed between 10 to 14 months of the enrollment date and within 10 to 14 months of the anniversary date thereafter.

(4) Enforcement.

(a) Certified status is granted after program enrollment and compliance for 5 years with no evidence of disease. Renewal of certified status is contingent upon annual inspection, sampling, and continued compliance with program standards.

(b) Certified status may be revoked for failure to comply with this chapter.

Authority: *T.C.A. §§ 4-3-203 and 44-2-102.*

Appendix H. CWD Strategic Planning Process

Initial stages and logistics

- Preliminary/pre-planning meetings began June 1, 2021.
- Developed full committee to include TWRA and representatives from TDEC and TDA (June 15, 2021).
- Bi-monthly meetings occurred during 2021 and weekly meetings occurred beginning in January 2022 as a combination of virtual and in-person.

Comprehensive literature review

- Review of other agency CWD strategic plans and deer management plans.
- Review of CWD Best Management Practices (BMPs).
- Review of current research in CWD.

Facilitator

- Approval obtained for sole source request to contract with a proven conservation engagement consultant for facilitation of internal meetings and external stakeholder engagement for entire planning process.
- Proposal details (scope of work and budget) reviewed from DJ Case & Associates for Conservation Engagement services.
- Contract approved to begin work December 1, 2021 (some work completed prior to December 1, 2021, with limit of \$5,000 in expenditures).

Stakeholder engagement

- Staff phone interviews
 - Phone interviews planned to establish the full scope of CWD in Tennessee and allow the facilitator to understand the nuances and undercurrents of the topic that may not come to light during regular meetings. Interviews meant to provide the facilitator with a foundation for higher efficiency during future meetings.
 - SWOT analysis listening sessions with internal stakeholders (planning team, deer team, and other affected staff) to identify strengths, weaknesses, opportunities, and threats of CWD program.
 - Drafted list of interviewees (August 2021).
 - Phone interviews conducted (September – October 2021).
- Stakeholder focus groups
 - Preliminary list of stakeholders to include in focus group meetings developed (July 2021).
 - Revisited, finalized, and submitted list for approval prior to focus group meetings (February - March 2022).
 - Two focus group meetings held in April (Nashville April 12, Jackson April 13)
 - Report of feedback provided by DJ Case & Associates.
 - Feedback considered and incorporated into the Plan.
- Public input meeting
 - Opportunity for public to provide in-person input on the draft CWD Response and Management Plan (January 2023).

Writing

- Drafted list of the segments of the plan to be included in the document (June 2021).
- Goal statements and many objectives written as a large group beginning October 2021.
- Glossary of terms adopted from outside sources and made applicable to CWD in TN.
- Writing assignments on segments of the document made for individuals/small groups (March 2022).

Writing (continued)

- Designated CWD Team member to work with DJ Case & Associates to create a cohesive voice between each of the sections as sections are completed.
- Produced draft plan to be concurrent to input from stakeholder engagement.
- Internal reviews conducted and comments incorporated throughout Fall 2022.
- Executive Director's approval obtained for Commission preview and public comment.
- Peer review from representatives of agencies in other states conducted (December 2022).
- Public review and comment period conducted (December 2022 – January 2023).
- All comments considered and incorporated when applicable (January 2023).
- Final approval and adoption of plan requested from Executive Director (February 2023).
- Presented final plan to Commission and share final plan with stakeholders (February 2023).