Indiana CWD Surveillance, Response, and Management Plan: Learning to Live with CWD

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Chapter 1: Introduction and Executive Summary

The Indiana Department of Natural Resources (Indiana DNR) is charged with the "protection and management of all legally or publicly owned wild animals in Indiana" under state law (IC 14-22-1-1). The DNR and the Natural Resources Commission (NRC) manage white-tailed deer under this authority, setting seasons, regulations, bag limits, and management responses to various management challenges presented to the species and state wildlife. Chronic Wasting Disease (CWD) presents a unique challenge to wildlife agencies because of its epidemiology, challenges in detection, social effects, and potential impacts to deer populations. But to date, there have been no cost-effective methods found that will stop the spread of CWD or limit the growth of CWD indefinitely. Therefore, Indiana DNR's overall response method will be to work with hunters and other citizens to facilitate living with CWD on the landscape and determining what it means for future deer health and management in Indiana. If new methods come to light that are cost-effective that significantly limit the spread of the disease, stop the growth of the disease in the population, or can protect additional deer from being infected, then Indiana DNR will revisit its stance of learning to live with CWD.

Specifically, Indiana DNR will conduct routine surveillance with a goal of detecting the disease when it is in 3-5% of each of Indiana's county deer herds. Management of CWD is conducted on the basis of three designations: CWD Positive Areas, CWD Enhanced Surveillance Zones, and CWD Management Zones.

When a CWD Positive is detected in or near where CWD is already established, Indiana DNR will reassess the size of the CWD Positive Area to account for the additional detections. Additionally, the CWD Positive Area will continue to expand over time based on both routine surveillance and computer modeling based on the known rate of spread of CWD. These areas are permanently established and will never be removed unless significant advances are made in the management of CWD. Additional regulations in these permanent CWD Positive Areas include: 1) citizens will not be able to take a fawn from the CWD Positive Area to a rehabilitator located outside of the CWD Positive Area, and 2) cervid farmers who are in areas where CWD is $\geq$ 5% or greater in the wild population can request a deer damage permit to remove wild cervids from their farm.

When CWD is found away from where CWD is established, the initial actions taken depends upon if the deer is a female or male deer and the time of year. Because male deer can move

extensively during the breeding season, the location where the positive deer is found, may not be the location of the hotspot. Therefore, if the deer is a male and the location where the deer was shot is not thought to be the deer's home range (i.e., where the deer normally lives throughout the year), then DNR will establish a CWD Enhanced Surveillance Zone in the county (and neighboring counties as appropriate) the following year where the positive CWD was found. The goal of enhanced surveillance is to identify additional CWD positive deer and develop a better estimate of apparent prevalence.

Other states have found intensive management to be effective at significantly reducing the prevalence of CWD when it is initially identified in a captive cervids. Therefore, if a captive cervid within Indiana tests positive for CWD, Indiana DNR will work cooperatively with Indiana BOAH in a coordinated response. The overall response and surveillance will be affected by location of the affected premise and whether it is within a CWD Positive Area or elsewhere in the state. If a positive captive deer is found within or near a CWD Positive Area, no further actions will be taken. If a positive captive deer is found away from a CWD Positive Area, a CWD Management Zone may be established to control CWD around the affected premise if conditions in the plan are met (i.e., apparent prevalence is $\leq$ 1% and cooperation for management around the premise is greater than 40%, or other conditions determined based on the specifics of the case), then additional harvest will be incentivized, feeding of deer will be restricted for 180 days, and sharpshooting will be utilized to reduce the population and number of affected deer within an approximate 1-mile radius of the affected premise.

Because there is no effective method to remove CWD from the landscape once it becomes established, it should be considered a permanent condition and treated like other endemic deer diseases, such as epizootic hemorrhagic disease (EHD). However, there are steps that individual landowners can take to reduce the likelihood that CWD will become established on their private property. As such, Indiana DNR will provide guidance for hunters and landowners about these methods, which include 1) prohibiting the disposal of deer carcasses on their land (other than their own deer), 2) prohibiting the use of natural urine-based lures for deer hunting, 3) eliminating deer feeding and attractants on their property, 4) sampling all harvested deer for CWD, 5) reducing deer densities, and 6) reducing the age structure of deer. These recommendations will require no additional regulations from Indiana DNR.

The Response Plan will be reviewed annually by the Wildlife Health and Deer teams and revised as necessary as new information is published or developed.

Chapter 2. Statewide Surveillance Plan

Surveillance and Monitoring Goals

Surveillance for any wildlife disease is important so that Indiana DNR can understand where that disease is present on the landscape and the potential effects it may have on humans and domestic animals, as well as on the ecology of the species affected. In general, Indiana DNR's goal is 1) to be able to detect CWD throughout the state if it is in 3-5% of the deer herd and 2) to provide the opportunity for hunters to have their deer tested for CWD if they are concerned about the safety of consuming their deer or to understand the presence of CWD where they hunt. To accomplish this Indiana DNR uses a combination of samples supplied by hunters who desire to have their own deer tested, processors, taxidermists, nonprofit organizations, and DNR staff who seek out samples from hunters, roadkill, and reported sick/dead deer for testing.

Surveillance Methods

Surveillance objectives are established at the county level and are expressed in the number of points needed to achieve the desired CWD detectability (Jennelle et al. 2018) in a county, which is currently a minimum of 5%. Surveillance will consist of a four-pronged approach designed to monitor for CWD across the state. These four prongs are 1) samples collected through a statewide partner incentive program, 2) statewide targeted collection of samples from deer reported as sick or dead (i.e., not roadkill), 3) voluntary testing of hunter harvested deer at head drop coolers (i.e., Hunter Service Testing), and 4) samples collected by DNR staff from hunters at check stations and road killed deer. Additionally, hunters can submit their deer to have it tested directly at the Purdue Animal Disease Diagnostic Laboratory (ADDL) for a fee.

Surveillance for CWD will be conducted on a statewide level and areas of concern will be targeted for heightened surveillance. Areas of concern will be identified prior to each sampling season based on past surveillance results. Surveillance objectives will be set to reach a level of detectability such that CWD would be detected if it were present in 3-5% of the county population with 95% confidence (Jennelle et al. 2018). All samples collected within a county between Feb. 1 and Jan. 31 of the respective sampling year will be used to assess surveillance using a Bayesian weighted surveillance approach (Jennelle et al. 2018).

Statewide Partner Incentive Program

Detection of CWD in deer is typically highest in adult bucks in the Midwest, making them a high-quality sample for detecting the disease on the landscape (Samuel and Storm 2016, Jennelle et al. 2018). A surveillance program that tests a greater percentage of adult bucks can test fewer deer to reach the desired detectability level in the population (Jennelle et al. 2018). But collecting samples from adult bucks is often difficult because hunters harvest a range of age/sex classes and sometimes hunters will not allow their deer to be tested before giving them to a taxidermist for mounting. Therefore, we will work with taxidermists to collect samples from deer that are brought to them to be mounted. Additional samples may also be collected through additional

partnerships such as processors, university wildlife and biology programs, and other innovative opportunities that are developed over time.

Taxidermist incentive programs have been successful in other states, including Tennessee, North Carolina, New York, and Ohio (Ableman et al. 2019) and have shown to be cost-effective (Caudell and Buchanan-Schwanke 2022).

Sick and Dead Deer Sampling

Samples gathered from sick deer reports where the observer has reported clinical signs consistent with a CWD positive deer can provide a high-quality sample for surveillance (Jennelle et al. 2018) because deer with advanced clinical signs of CWD may be detected by the public. Reports of sick deer are typically received via an online form (on.IN.gov/sickwildlife) that provides the public with a quick and convenient way to report sick deer and other wildlife to agency biologists.

Agency biologists will continue to investigate suspected sick deer throughout the state. Upon report of a suspected sick or dead deer, biologists will assess the reported signs and decide whether a deer meets criteria necessary to warrant CWD testing. Potential advanced clinical signs of CWD infection include excessive salivation, thirst, or urination; emaciation; lack of coordination; drooping posture; and lack of fear of humans. If a reported sick or dead deer exhibits all or some of these signs, a field visit may be scheduled and a CWD sample collected for diagnostic testing.

Statewide Head Drop Coolers for Hunter Service Testing

Head-drop coolers provide a 24/7 sample submission method for hunters to submit their deer for testing. Coolers are chest freezers with regulators placed on them to keep contents cool or frozen. During hunting season, coolers are available statewide at select Fish & Wildlife areas (FWAs), State Fish Hatcheries, State Parks, and National Wildlife Refuges. Each cooler provides hunters with simple instructions to ensure adequate data are collected for each deer. Hunters can use an online tool for locating and determining the availability of a head-drop cooler. At some properties, hunters can also set up an appoint to have a biologist assist with sample collection.

DNR-staffed Check Stations

Staffed check stations can be an effective method for collecting a lot of samples in a short period of time, but it is one of the least cost-efficient methods that can be used for collecting large numbers of samples from hunter-harvested deer (Buchanan-Schwanke and Caudell 2022). Therefore, it should be used sparingly and in places where no other options exist.

In this method, wildlife biologists and technicians are present at processors or other places where hunters gather on opening weekend of firearms season. The high volume of hunters allows for many samples to be collected and provides an opportunity for wildlife biologists to interact with the public. Because of the time commitment and travel cost compared with the number of deer sampled, this method is relatively expensive when compared with the number of sample points

collected. But it can still be useful to complete the sampling requirements for a county where samples have already been collected by partners or where no other options exist.

Hunter Submissions to a Diagnostic Laboratory

Hunters have the option to submit their CWD samples directly to the Purdue ADDL for testing. This method requires the hunter to pay a small fee to the ADDL. Test results are automatically provided to Indiana DNR for surveillance purposes.

Sample Processing and Laboratory Testing

All samples and data are shipped or transported to a central location. Data are then entered into the Indiana DNR Wildlife Health Application. Samples with reliable data are then collated and shipped to Purdue ADDL for enzyme-linked immunoassay (ELISA) analysis and immunohistochemistry (IHC), if necessary.

An ELISA is a laboratory technique used to detect and quantify substances such as the misfolded prion proteins found in CWD infected animals.

IHC is a laboratory technique using a small number of slices of lymph node that are stained which allows pathologists to visually identify the presence and location of the misfolded prions in CWD infected animals.

Results of Laboratory Testing

The initial test used is ELISA on a section of one lymph node that is homogenized. If the initial sample tests positive on ELISA, the same sample is tested 3 more times to recheck the initial results and a section of the second lymph node is prepared and tested as well. If a sample is positive on ELISA at any point, it is then tested using IHC.

The second test used is IHC, which is performed on a small number of slices of both of the remaining lymph nodes. IHC is used as the confirmatory test by Untied States Department of Agriculture (USDA) for the captive cervid industry.

Studies have shown that ELISA and IHC test results can disagree. Animals in early stages of infection may not have enough visibly detectable prions in the sample tissue to be seen by the pathologist on IHC. Due to homogenization and variation in and between lymph nodes, ELISA may be able to detect the presence of the prion proteins before IHC can visibly detect them (Bloodgood et al. 2021, Kobashigawa et al. 2024). DNR will consider this to be an "Inconclusive" test result.

ELISA and IHC results are reported as "Not Detected" rather than "Negative" as an indication that the test was performed correctly, but CWD prions were not found. However, this is not a guarantee that the animal is disease-free.

Evaluating Results of Laboratory Testing

- If CWD is not detected using ELISA, that deer is designated as Not Detected for CWD.
- If CWD is detected using both ELISA and IHC, that deer is Positive for CWD.

- If CWD is detected using ELISA and is confirmed on subsequent ELISA tests, and is Not Detected on IHC, that deer is designated as Inconclusive for CWD.
- If CWD is detected using ELISA on the initial test, and then is not detected on subsequent ELISA and IHC tests then the deer is designated as Not Detected for CWD.

Reporting Results

Results are reported out using two different methods: a test result look up tool for individual deer results and a statewide sampling dashboard that is available to the public.

- *Hunters Viewing Individual Results* - Hunters can view their individual tests results online at on.IN.gov/CWD where they can enter their confirmation number to view their test results. After ELISA testing is completed, hunters will see either a result of Not Detected or Inconclusive on the look up tool. After IHC testing is completed, hunters will see either a result of Inconclusive or Positive on the look up tool. Hunters with a Positive or Inconclusive result will additionally receive a notification from DNR staff.
- *Public Viewing Statewide Results* - The public can view results of statewide testing via a dashboard at the same web location. After ELISA testing is completed, the public will see either a result of Not Detected or Inconclusive on the dashboard. After IHC testing is completed, the public will see either a result of Inconclusive or Positive on the dashboard.

Lab Confirmation and Sample Investigation

For Positive and Inconclusive results, an investigation will be conducted by Indiana DNR to identify the exact location where the deer was harvested and work with the hunter and/or landowners to determine if the deer was local to the harvest location (i.e., was this buck shot in its primary home range).

Chapter 3. Identification of CWD Positive Areas and CWD Enhanced Surveillance Zones

When a wild deer tests is designated as Positive or Inconclusive (i.e., suspect or other similar designation) for CWD within the state of Indiana or in an adjacent state within 10 miles of the Indiana border, Indiana DNR will implement a series of actions in response to the detection. The order and implementation of these actions may vary based on sex and age of the positive deer, prevalence of the disease when detected, and landscape characteristics.

Positive CWD Detection Near CWD Positive Areas

Any CWD detection near existing CWD Positive Areas, or near the state border in close proximity to CWD Positive herds, is likely an expansion of the distribution of CWD Positive deer to new areas. Therefore, a single CWD Positive or Inconclusive deer will trigger the creation or expansion of a CWD Positive Area.

CWD Detection in a Transient Male Away from CWD Positive Areas

A single CWD Positive or Inconclusive detection in a transient male (i.e., a male whose central core of their home range cannot be estimated) will trigger an Enhanced Surveillance Zone.

CWD Detection in local male or female Away from CWD Positive Areas

A single CWD Positive or Inconclusive detection in a local male (i.e., a male whose central core of their home range can be determined to be in the area in which the deer was harvested or found) or female deer will trigger the establishment of a CWD Positive Area in the county where detected and within any county within a 10-mile radius of that positive animal.

CWD Detection in an Adjacent State in a Transient Male Away from CWD Positive Areas

A single CWD Positive or Inconclusive detection in a transient male (assuming this information is available) within 10 miles of the Indiana border will trigger an Enhanced Surveillance Zone. If the status of the deer's transient status is not known, it will automatically trigger a CWD Positive Area.

CWD Detection an Adjacent State in local male or female Away from CWD Positive Areas

A single CWD Positive or Inconclusive detection in an adjacent state in a local male (or males whose transient status is unknown) or female deer will trigger the establishment of a CWD Positive Area within any county within a 10-mile radius of that positive animal.Any CWD situation not outlined in this response plan (i.e carcass dumping or other unforeseen scenario) will be evaluated by DNR biologists and the best course of action will be decided upon using the most up-to-date science and resources on the topic.

Chapter 4. Management Plan for CWD Positive Areas

The CWD Positive Areas will be spatially applied at the **county level**. Regulatory efforts will include:

- Modeling of CWD confirmed detections and expansion of CWD Positive Areas
- Restrictions on the movement of fawns to rehabilitation facilities outside of CWD Positive Areas
- Provision of deer disease permits for cervid farms within CWD Positive Areas

Modeling the Spread of CWD

A limitation on CWD management efforts creates difficulty in detecting the disease in a wild population. Given the current capacity to test hunter harvested deer, it will be nearly impossible to detect CWD until it is established in the population and at an elevated prevalence (i.e., greater than 1%; Belsare et al. 2021). Therefore, the first detection of CWD inside Indiana will likely NOT be the first CWD positive deer in the state and at that point it is likely the disease will have been in the infected area for at least 10 years (Belsare et al. 2021).

When CWD is found, it will likely be detected close to the epicenter of the disease, where it has been the present the longest period and is at the highest prevalence. We also know that disease dynamics and detectability rates can be used to estimate the distance the CWD infection extends from this core area based on the prevalence and size of the core disease hotspot. Understanding the extent of a CWD infection is important for expanding CWD Positive Area regulations (i.e., restrictions on fawn movement to rehabilitators and disease permits for cervid farms). Therefore, Indiana DNR will use modeling (e.g., agent-based model or linear-growth model) designed for the midwestern landscape to estimate the extend of CWD infections affecting Indiana (see research from Federal Grant # F20AF10944-00 W-48-R-04 Mitigating Spread of Chronic Wasting Disease through an Ecological Trap; Jennelle et al. 2014; Belsare and Stewart 2020). After CWD is detected inside or within 10 miles of Indiana's borders, all available information will be incorporated into the appropriate model to estimate the likely expanse and prevalence of the infected area. Model inputs will include land cover data for the infected county(s), deer density estimates, hunter harvest rates, CWD detection locations, and the apparent prevalence of the core hotspot.

The output from the model will be used to establish and expand CWD Positive Areas. CWD Positive Areas will be expanded to include the entire county. This will allow Indiana DNR to establish regulations to limit the potential human-assisted movement of a CWD infected fawn or hunter-harvested deer carcass to a different region of the state and thus reduce chances of creating new hotspots. The logic is to be proactive with the establishment and expansion of these CWD Positive Areas using the model instead of taking a reactive approach in which the preventive measures are not implemented until a CWD positive deer is found.

Restrictions on the Movement of Fawns to Rehabilitation Facilities

Currently, Indiana Administrative Code prohibits the possession of fawns without a wildlife rehabilitation permit. Regulations on the movement of fawns to rehabilitation facilities will be implemented for counties contained within the CWD Positive Areas. The intention of these regulations will be to reduce human assisted movement of CWD prions out of the infected area in potentially infected deer. Moving a fawn from an infected area to a rehabilitation facility outside of the CWD Positive Area could lead to the introduction of CWD to a new area of the state and must be avoided. But at the same time, the public desires these services to avoid the suffering of injured or abandoned fawns. Therefore, no fawn will be permitted to be transported from within a CWD Positive Area to a county not contained in the CWD Positive Area. Specifically, Administrative Rule 312 IAC 9-10-9 restricts the movement of deer from counties located within a Chronic Wasting Disease (CWD) Positive Area. Deer rehabilitated in the CWD positive area must be released in the positive area. Rehabilitators located outside the positive area may not rehabilitate deer from the positive area.

Permits for Deer Damage for Disease Management Purposes

To afford cervid farm managers a tool to prevent CWD from spreading from wild cervids to captive cervids within CWD Positive Areas, deer disease permits will be available for cervid farmers who farm CWD-susceptible species. Deer disease permits will only be valid outside the hunting season. Permit holders will be required to submit a CWD sample from all deer taken on a deer disease permit to Indiana DNR. Permits will be issued only in specific locations within the CWD Positive Areas where the apparent prevalence is estimated or modelled to be $\geq$ 5%.

Chapter 5. Establishing a CWD Enhanced Surveillance Zone

The purpose of the Enhanced Surveillance Zone is to assess the prevalence of CWD in the affected area and learn about the distribution of the disease in the landscape when it is first discovered in a new area.

Enhanced Surveillance

Enhanced surveillance will be conducted for three consecutive years during the deer hunting season immediately after the detection of CWD. The surveillance goal will be to test a sample of hunter harvested deer so that CWD will be detected if prevalence is at or above 0.5% within the county.

Enhanced surveillance will be accomplished through a targeted messaging campaign to reach local hunters thereby increasing participation in free CWD testing. Head drop-off cooler(s) may be placed in the enhanced surveillance area at DNR-owned properties, other state properties, at partnering locations, a mobile check station, and/or community buildings. Deer processors and taxidermists in and around the CWD Management Zone will be contracted to collect samples from the public.

Indiana DNR messaging will encourage hunter participation in voluntary sampling using news releases, media interviews, social media posts, local advertising, and/or direct emails as indicated in the CWD Communication Plan.

Assessment and Consequences of CWD Prevalence

- If additional deer are detected to be either CWD Positive or Inconclusive, the appropriate portion of the Enhanced Surveillance Zone will be converted to a CWD Positive Area.
    - The county where the positive deer was detected and any county within a 10-mile radius.
- If no additional CWD Positive or Inconclusive deer are detected after three years, the Zone will revert to a normal portion of the state regarding CWD.
- If after three years another CWD Positive or Inconclusive deer is detected, the Enhanced Surveillance Zone will be reestablished for an additional three years.

Chapter 6. Management Plan for Wild Deer Outside of CWD Positive Captive Cervid Facilities

If a captive cervid within Indiana tests positive for CWD, Indiana DNR will work cooperatively with Indiana BOAH in a coordinated response.

Detections on Captive Cervid Farms in Positive Areas

The detection of a CWD positive farm that is already within a CWD Positive Area will not trigger any additional management actions. Enhanced surveillance may be applied in the general areas around the farm to assess prevalence.

Detections on Captive Cervid Farms Outside Positive Areas

Indiana DNR will establish a CWD Management Zone when CWD is found in a captive deer farm outside of CWD Positive Areas. The primary purpose of the CWD Management Zone is to remove CWD infected animals and lower deer densities in the affected areas.

These actions will be implemented once around each farm and will not be repeated as more CWD positive deer are detected later in that same area. The CWD Management Zone area will be a 1-mile radius (approximately) and will be delineated by county borders and roads. All actions will occur in that area unless otherwise specified. These actions for the management zone (and timeframe) are:

- A survey of landowners within the CWD Management Zone to determine the level of cooperation with the planned activities.
- Assessment of deer density
- Enhanced surveillance of deer with a goal of estimating the apparent prevalence between 0.5 and 1%.
- A 180-day ban on feeding deer during deer season and culling operations
- Incentive-based deer hunting
    - Velvet hunt
    - Increase antlerless bag limit to 6
    - Extra buck privilege for hunters for every 3 antlerless deer tested
    - A special late firearms hunting season
- Issuance of permits to remove deer after the hunting season
- Culling in a 1-mile radius of the affected farm after the hunting season
- End CWD Management Zone no longer than 18-months after the identification of the positive farm

The radii, both 1 mile for sharpshooting and for other response measures, are based on average deer home range sizes in similar landscapes (Walter et al. 2009, DeYoung et al. 2011, Walter et al. 2018). The intense removal response within 1 mile is intended to target deer that live within the home range of the infected deer and were likely exposed to CWD by this deer. A 1-mile radius will be drawn around each initial detection to delineate the CWD Management Zones.

The maximum 18-month period is to allow hunters the opportunity to harvest bucks and other deer from the targeted area before removal by sharpshooters during the winter after the deer season. This focused and broad hybrid approach is imperative to respond to the CWD hotspot.

Assessment of Public Cooperation with CWD Management Zone Activities

Upon detection of CWD, DNR should implement an immediate multimodal survey of landowners who own deer cover within a 1-mile radius of the affected farm to determine their willingness to allow culling on their properties. Experience from Minnesota CWD management states that at least 40% of landowners who own deer cover must participate, or the likelihood of success is greatly diminished. If 30% or less of landowners who own deer cover decline to participate, no further actions should be taken.

Assessment of Population Density in the CWD Management Zone

During the first winter after the detection of a CWD positive deer, the population density in the CWD Management Zone will be measured through aerial flights and/or remote cameras.

Deer Feeding Ban

A 180-day feeding ban will be imposed within the CWD Management Zone starting on October 1 and ending on April 1. This ban will be temporary and will apply to foods, salt, minerals, grains, or any other subsidy distributed for consumption by white-tailed deer. The intent of this ban will be to temporarily halt artificial congregations of deer to slow transmission rates until sharpshooting and increased hunter harvest can be applied to manage the prevalence of CWD.

Increases in the Localized Bag Limit

Additional antlerless deer will be made available by increasing the local bag limit within the CWD Management Zone to 6 antlerless deer.

Early Season Velvet Hunt

A velvet hunt is a special antlered-only hunt that occurs during late summer when deer are in velvet. The purpose of this season will be to test resident adult antlered deer within the CWD Management Zone prior to dispersal. The velvet hunt will include all legal archery and firearms equipment; will occur for nine days; and will be the last full week of August and the weekend prior to the last full week. All deer harvested during this period must be presented to the DNR or a partnering taxidermist for CWD testing. Firearms, archery equipment, muzzleloaders, and other equipment may be used for this hunt. The velvet hunt will not count against the one-buck bag limit.

Special Late Deer Firearm Season

The special late deer firearms season will be in effect from December 26 through the first weekend in January (i.e., ending concurrently with archery season).

Incentives

A free license or privilege to harvest an additional antlered deer that is 2.5 years or older will be given to hunters within the CWD Management Zone if the following conditions are met:

- A total of three antlerless deer or fawns that are presented to the Indiana DNR or participating processor for CWD testing.
- A maximum of two incentive licenses can be earned.
- The extra antlered license(s) can be used any portion of the state and is valid in the year it was earned as well as the entirety of the next deer hunting season.

Enhanced Surveillance

Enhanced surveillance will be conducted during the deer hunting season immediately after the detection of CWD. The surveillance goal will be to test a random sample of hunter harvested deer in the surrounding counties to determine if CWD has spread beyond the 1-mile radius created around the positive farm.

Enhanced surveillance will be accomplished through a targeted messaging campaign to reach local hunters thereby increasing participation in free CWD testing. Head drop-off cooler(s) will be placed in the enhanced surveillance area at DNR-owned properties, other state properties, partnering locations, a mobile check station, and/or community buildings as determined necessary. At least one staffed disease monitoring station may operate each day during deer hunting seasons within or near the CWD Management Zone. Deer processors and taxidermists in and around the CWD Management Zone will be contracted to collect samples. Indiana DNR messaging will encourage hunter participation in voluntary sampling using news releases, media interviews, social media posts, local advertising, and/or direct emails as indicated in the CWD Communication Plan. Additionally, when a hunter checks in a deer within the county that

contains the CWD Management Zone, they will be prompted by the electronic game check system to provide the exact location where they harvested their deer.

If the prevalence is ≥1% in the Enhance Surveillance Area outside of the 1-mile radius surrounding the infected farm, no further management actions will be taken and the county(s) will be designated as CWD Positive Areas.

Sharpshooting

Sharpshooting will be conducted during the second winter after the detection of CWD (assuming the detection is from a sample collected during the prior deer hunting season) and within a 1-mile radius of where the first CWD Positive or Inconclusive deer is detected.

Sharpshooting activities will be conducted by USDA APHIS Wildlife Services on properties where access is granted by private landowners (i.e., by landowner permission only). This sharpshooting activity is intended to be additive to the deer harvest. At the end of the management period, the total reduction in deer herd should result in a ≤ 70% reduction in the population (total harvest + sharpshooting).

Exit Strategy for CWD Management Zone

At the conclusion of the CWD Management Zone activities, the area will either:

- Return to normal deer management for that given county if no additional CWD Positive or Inconclusive deer were detected during the deer hunting season or culling activities.
- Be designated as a permanent CWD Positive Area if CWD was detected at levels ≥ 1% in the Enhanced Surveillance Zone.

Post CWD Management Zone

If the zone returns to normal deer management, a 3-year Enhanced Surveillance Zone will be continued in the counties identified in the management zone activities to assess the effectiveness of the CWD Management Zone.

Chapter 7. Living With CWD: Best Management Practices for Land Managers and Property Owners

Statewide management of wildlife resources is difficult because there is a wide range of hunting culture tendencies, permanent forest cover, row crops, and deer population dynamics. Indiana DNR manages deer at the county scale using numerous metrics generated through data collection by staff, hunters, and cooperating agencies, and sets regulations to achieve management objectives in each county. However, landowners are encouraged to set additional property-specific rules that build upon regulations set by Indiana DNR. For instance, landowners may wish to limit doe harvest if the deer population is low, or limit harvest of young bucks if more adult bucks are desired on their property. Property rules cannot supersede state regulations but can be additional to state regulations. For instance, it is only legal to deer hunt with a rifle during an open firearms season established by Indiana DNR. That season cannot be lengthened by landowner property-use rules, but a landowner could prohibit use of rifles on their property if desired.

Indiana DNR encourages landowners concerned about CWD to set property-specific rules to reduce the chance of CWD introduction to their property. Below is a suite of Best Management Practices (BMP) recommendations that Indiana DNR has developed to assist landowners in reducing CWD introduction risk on their property. These rules, if implemented by a landowner, build upon current state regulations using AFWA recommendations for managing risk with CWD.

Prohibit Surface Disposal of Deer Carcasses

Prions accumulate in infected deer but are concentrated in nervous system tissue such as the brain and spinal cord. Movement of deer carcasses can also lead to prion movement and pose a risk of introducing the disease to a new area.

Prohibiting the disposal of deer or other cervid (elk, mule deer, moose, etc.) parts on your property may reduce the risk of CWD introduction to the deer herd on your property. If you live in an area known to have CWD in the deer population, carcass disposal is also important for reducing prion contamination of the environment. In either case, the best disposal method for all discarded deer carcass parts is at a landfill, after double bagging the carcass parts in a durable trash bag. Disposing of carcass parts underground is also a viable disposal method that reduces risk of prion contamination of topsoil.

Prohibit Use of Natural Urine Based Lures

Deer infected with CWD shed infectious prions through bodily fluids, like urine. The deer urine industry has developed some safeguards to reduce the risk of distributing deer urine contaminated with CWD prions, such as herd certification programs and deer urine tests. While these may be helpful in reducing the risk of prion contamination, none of this can eliminate this risk. Therefore, prohibiting the use of natural urine-based lures is recommended to reduce the risk of CWD prion introduction to the population. Synthetic-based lures can be used in place of natural urine-based lures if hunting lure use is necessary.

Eliminate Deer Feeding

Artificially concentrating animals, such as white-tailed deer, creates a higher likelihood that infectious pathogens can be passed from one animal to another. Practices such as supplemental feeding or mineral licks placed for deer concentrate deer feeding, urination, and defecation into a focused area where saliva, urine, and feces have a high likelihood of passing CWD prions from one deer to another.

It is recommended that all supplemental feeding programs or mineral licks be eliminated, to reduce the risk of deer spreading CWD through these communal feeding locations. If mineral licks are already established on your property, dig up contaminated soil and dispose of it in a landfill.

Sample and Test all Harvested Deer

Surveillance for CWD infected deer allows DNR and land managers to monitor the distribution and prevalence of the disease and make appropriate management decisions based on this information. It is recommended that land managers have all adult deer harvested on their property tested for CWD. Information on CWD testing can be found at on.IN.gov/cwd.

Reduce Deer Density

In areas that are affected by CWD, reducing deer density and age structure are practices that may decrease CWD transmission rates or otherwise make herds more resilient to CWD infection (Belsare et al. 2021, Mysterud et al. 2021, Storm et al 2013). Initially, harvest pressure should be very high (i.e., 60-70% of the localized population) to reduce populations to the targeted goal. Once the desired population goal is achieved, an annual harvest of 35-40% will be required to maintain the population level at the desired level (Blossey et al. 2024).

To achieve the initial goal and maintenance goal will require a large amount of hunting effort that will mostly likely require additional late-winter removals to supplement hunter harvest by using all deer bag limits afforded to the hunters who access the property. To reduce deer densities, the majority of harvest should be focused on does. For the first few years, this will likely require doubling or even tripling your annual doe harvest, depending on current harvest

strategies. To have the most significant impact on CWD infection rates, the density of deer should be dropped to the lowest socially acceptable level. This will vary by property as different hunter groups will have varying expectations for deer populations.

Once deer densities are at their lowest tolerable level, annual harvest of the doe population will be required to maintain a low density. The goal should be to annually harvest approximately 35% of the doe population that use the property. Localized populations can be estimated through a technique called conventional distance sampling. This technique uses game cameras placed randomly around a property, uses standardized techniques to count and measure the distance of the deer from the camera, and then uses statistical methods to create an estimate from those sightings. If populations begin to increase, then increase annual doe harvest. If population densities continue to decrease, then decrease annual doe harvest. The Indiana DNR Deer Program can assist with information on how to create a population estimate for a property.

Alternatively, the Indiana DNR Deer Program is currently working on developing population estimates for the entire state. These population estimates will be available publicly once they are created and these estimates can be used to create population targets and serve as a guide for the number of deer that can be removed.

Reduce the Age Structure of the Deer Population

Adult deer and even more specifically, bucks, are the most likely group to be infected in a population (Jennelle et al. 2014). It is advised that these older individuals be targeted for removal in an effort to slow down transmission rates.

This may be accomplished by removing all bucks that are $\geq$ 2.5 years old. This strategy will leave yearling bucks to breed does, reducing the transmission rate of CWD during breeding. The objective should be to decrease the age of the buck population as much as possible and target the oldest does in the population when possible.

These harvest strategies may be accomplished through hunter harvest. Additionally, the use of deer disease permits in late winter will help facilitate the targeted removal of adult bucks from bachelor groups when they are on a feeding pattern and susceptible to removal.

Chapter 8. Fiscal Considerations and Review

Expenditures on CWD surveillance and related management activities will vary by year but should be considered as layers of expenses upon a base annual budget. Routine annual surveillance as described in Chapter 2 will be considered a permanent annual expense. This expense is not expected to fluctuate greatly. This baseline budget is described below, with additional communications expenses incorporated to account for routine public engagement work.

Historical Surveillance Costs

Budgeting costs of surveillance expenditures is based expenditures from 2018-2020 using an Indiana DNR-staffed check station. Approximate annual total expenses (both collection and laboratory testing) for CWD ranged from $167,000 to $195,000 for an average expenditure of $181,600 per year, with the approximate cost per sample ranging from $178 (for 939 samples) to $215 (for 912 samples) for an approximate average expenditure of $198 per sample. The approximate average cost of collecting the sample was approximately $181. This three-year price per sample will be used to extrapolate all sampling costs below for both routine and enhanced surveillance.

Buchanan-Schwanke and Caudell (2022) estimated costs based on using the point system to determine the number of deer needed for testing. They found that during the two-year taxidermy pilot program from 2021-2023, samples cost an average of approximately $16 per point from a taxidermist, compared to approximately $58 per point for Indiana DNR staff to work check stations (Caudell and Buchanan-Schwanke 2022). Therefore, using a taxidermy/processor collection system as the primary method of collection will be far more cost effective for routine and enhanced surveillance purposes, and overall surveillance cost will be lower and greater testing can occur throughout the entire state on a regular basis using the approach outlined in Chapter

Enhanced Surveillance Expenses

Each year that the Partner Incentive Program has been active, a cost comparison between years was performed to evaluate the effectiveness and cost savings of this program. This cost analysis has included shipping costs, supplies, lab costs, and the taxidermist payments. The average cost for a taxidermist to collect a sample in 2023-2024 was $47.63. With changes made to the partner program, including shipping of samples, the 2024-2025 average cost per sample via the partner program was $43.75. Approximately, $4 per sample less than the 2023-2024 season. DNR staffed check stations cost approximately $116 per sample (2022 Indiana Deer Report).

To put cost per sample into perspective by point, this would equal approximately $13.5/point for taxidermist and $60/point for DNR staffed check stations. In 2024-2025, partners collected, approximately, 5,713 points toward CWD surveillance. To collect 5,713 points using a DNR staffed check station, it would have costed $342,780. Using the Partner Sampling Program, the cost was approximately $77,125.50 for an estimated savings of $265,654.50 per year. Ultimately, the partner incentive program is 77.5% cheaper yearly than DNR staffed check stations.

Annual Review

Each year, the plan will be reassessed to take into account new knowledge, experience, costs, policies, laws, and changes in science. As needed, recommended changes to the plan will be presented to administrators.

After Action Review

After each major action (i.e., implementation of enhanced surveillance zones, unexpected test results, CWD management zone, etc.) a review of the process will occur to determine effectiveness, cost, and major issues. From this process, recommendations to improve or change upon the plan may be implemented.

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