

**Wisconsin Department of Natural Resources
Natural Resources Board Agenda Item**

SUBJECT: Update on Chronic Wasting Disease (CWD): Response Plan Implementation, 2021 CWD surveillance plan, and the 2nd five-year review of the CWD Response Plan.

FOR: April 2022 Board meeting

TO BE PRESENTED BY: Amanda Kamps, Wildlife Health Conservation Specialist
Tami Ryan, FWP Deputy Division Administrator

SUMMARY:

This presentation will provide a summary of CWD accomplishments during the 2021 deer hunting season, as well as the fifth and final annual update on the implementation of action items in the current CWD Response Plan Implementation Plan informed by the first, 5-year review.

This presentation will also provide an update on the 2nd, five-year CWD Response Plan Review. To meet the obligations of the current response plan, a CWD Response Plan Review Committee conducted a robust and transparent five-year review that used both structured decision-making and a systems approach. Working with the National Wildlife Health Center, the committee, representing a diverse set of stakeholders and tribal interests, assessed progress towards meeting the goal, objectives and actions of the plan, and provided input on the CWD Response Plan review.

This second review of the CWD Response Plan began in Summer 2021 and carried over into early 2022 which is year five of the implementation of recommendations from the 2016/17 CWD Response Plan Review Committee. The first review was finalized in March 2017.

RECOMMENDATION: Information only.

LIST OF ATTACHED MATERIALS (check all that are applicable):

- Background memo
- 2021 CWD RP Implementation Progress Summary
- CWD Response Plan Review Committee Input
- Type name of attachment if applicable

Approved by	Signature	Date
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WR

by Sarah Barry

Sarah Barry

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CWD Response Plan Review Committee: Input Document

February 14, 2022

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Executive Summary

In 2010, the Natural Resources Board (NRB) approved the Chronic Wasting Disease (CWD) Response Plan of the Wisconsin Department of Natural Resources (DNR), which guides the DNR's approach to addressing CWD in Wisconsin. This 15-year plan is to be used from 2010-2025 wherein the Department is tasked with completing 5-year reviews of the Plan. The first review was finalized in March 2017. This 2nd review is being initiated during year 5 of the 2nd, 5-year timeframe following implementation of recommendations from the 2017 CWD Response Plan Review Committee.

The DNR established a new Response Plan Review Committee comprised of representatives from the agency, conservation and hunting organizations, tribes, and industries impacted by CWD and CWD response. In developing the 2nd, 5-year review of the Wisconsin CWD Response Plan, the DNR is using a Structured Decision Making (SDM) framework and systems approach modeling to 1) determine whether the plan is achieving its goal, and 2) revise the plan as needed.

The Committee met virtually seven times between September 2021 and February 2022 to discuss and develop input on the plan's goal statement, objectives, and actions, as outlined in this document, to inform the department's final decision-making process. The meetings dates and brief agendas are provided in Table 1. Additionally, there was one public comment meeting and one "under the hood" meeting where the modeling consultant provided an in-depth description of the model and question and answer session.

Meeting	Date	Abbreviated Agenda
Meeting 1	October 1	<ul style="list-style-type: none"> • CWD RP Review intro • Brief intro to SDM process
Meeting 2: Objectives pt1	October 11	<ul style="list-style-type: none"> • Review and revise objectives
Meeting 3: Objectives pt2, Intro Ventana	October 27	<ul style="list-style-type: none"> • Revisit objectives • Develop performance metrics • Intro Ventana and simple model
Meeting 4: Alternatives, Model Discussion	November 18	<ul style="list-style-type: none"> • Revisit objectives and metrics • Brainstorm actions • Ventana to present prototype model w/ previous review alternatives

Meeting 5: Consequences, Discuss input document	December 14	<ul style="list-style-type: none"> • Revisit previous steps • Ventana to present revised model • Review model and consequences table
Meeting 6: Consequences and input document	January 12, 2022	<ul style="list-style-type: none"> • Discuss new alternative plans for revised consequences table • Review and discuss input document
Meeting 7: Wrap up	February 3, 2022	<ul style="list-style-type: none"> • Discuss consequences table • Conclusions and key findings

Table 1. CWD Response Plan Review Committee meeting dates and brief agendas

Introduction

Response to chronic wasting disease (CWD) in free-ranging cervid populations is difficult, expensive, and controversial, particularly if significant deer population reduction may be needed. Response activities aimed at influencing disease dynamics often result in complex tradeoffs among stakeholder interests, such as negative impacts of regulations on deer hunters. The role of science is to inform management decisions, including predicting consequences of alternative actions for biological populations and identifying key uncertainties. Structured decision making (SDM) provides an approach for a careful, organized, and transparent analysis of natural resource management decisions, including disease response, by breaking decisions into component parts and separating the values of stakeholders from the scientific evaluation of management actions and uncertainty (Ralls and Starfield 1995, Gregory and Keeney 2002, Martin et al. 2009). SDM explicitly acknowledges that science informs decision, but values ultimately determine which alternatives strikes the best balance among multiple, often competing objectives. The SDM process includes five steps (**PrOACT**): 1) define the **P**roblem, 2) identify **O**bjectives, 3) develop **A**lternatives, 4) predict **C**onsequences, and 5) evaluate **T**rades-offs (Hammond et al. 1999, Gregory and Long 2009). In contrast to traditional methods of decision making, SDM promotes development of clearly defined objectives, based on values of those affected by the decision, and metrics that can be used to predict how well management alternatives will meet the objectives. The goals of the SDM process are to improve the quality of decisions and ensure that those decisions are transparent and replicable. Management actions to control wildlife disease may be challenging and controversial. A defensible and transparent decision-making process is crucial for the long-term success and support of CWD response programs.

The SDM process is being paired with a systems approach led by the National Wildlife Health Center and modeling consultants, Ventana Systems, Inc to dynamically map the complex relationships between biological, social, and political processes for CWD. Through participatory modeling involving stakeholder groups and experts in CWD, social science, and deer and forest health to integrate the wealth of existing knowledge of the system into causal maps and models that describe CWD's links to ecological and social processes. The outcome is a decision tool that

the Committee and DNR can use for examining CWD and its impact on deer and stakeholder objectives. The tool provides a powerful framework to compare the effectiveness of CWD response alternatives, to discover potential novel management approaches, or identifying new means of implementing existing tools to improve deer health while explicitly involving stakeholders and accounting for socio-political challenges.

Review Committee Membership and Roles

DNR Staff

- Eric Canania – CWD Operations Committee representative
- Mandy Kamps – CWD Implementation Committee Representative
- Tami Ryan – CWD Policy Committee Representative
- Dan Storm – Ungulate Researcher
- Jeff Pritzl – Deer Specialist

Stakeholders and Tribes

State and National Deer Hunting Interests

National Deer Association

- Kip Adams, Primary Representative
- Matt Ross, Secondary Representative

Wisconsin Wildlife Federation

- Ralph Fritsch, Primary Representative
- Justin Loehrke, Secondary Representative

Wisconsin Bowhunters Association

- Bill McCrary, Primary Representative
- Rich Mechelke, Secondary Representative

Statewide Science and Policy Interests

Sporting Heritage Council

- Elizabeth Baker, Primary Representative

Wisconsin Greenfire

- Mike Samuel, Primary Representative
- Mike Foy, Secondary Representative

Wisconsin Conservation Congress

- Mike Riggle, Primary Representative
- Joel Taylor, Secondary Representative

Statewide CWD Cooperator

Back Country Hunters and Anglers

- Noah Wishau, Primary Representative
- Jeffrey Guerard, Secondary Representative

Business Interests

Wisconsin Counties Solid Waste Management Association

- Dave Hagenbucher, Primary Representative
- Amanda Haffele, Secondary Representative

Whitetails of Wisconsin

- Ryan Rodenkirch, Primary Representative
- Laurie Seale, Secondary Representative

Wisconsin Commercial Deer and Elk Farmers Association

- Jerome Donohoe, Primary Representative
- Roxanne Lotts, Secondary Representative

Tribal Interests

Great Lakes Indian Fish and Wildlife Commission

- Travis Bartnick, Primary Representative
- Miles Falck, Secondary Representative

Oneida Nation

- Shad Weber, Primary Representative
- Brittney Nicholas, Secondary Representative

Red Cliff Band of Lake Superior Chippewa

- Andrew Edwards, Primary Representative
- Chase Meierotto, Secondary Representative

Agency Technical Support Staff

Wisconsin Department of Natural Resources

- Lindsey Long – Wildlife Veterinarian
- Dave MacFarland – Science Committee Leader
- Bob Holsman - Sociologist
- Ben Beardmore - Sociologist
- Kofi Nkansah – Economist
- Kris Goodwill – Tribal Liaison
- Pete Dunn - Law Enforcement
- Natasha Gwidt – Waste and Materials Management
- Dan Kroll – Waste and Materials Management

Wisconsin Department of Agriculture, Trade and Consumer Protection

- Darlene Konkle – State Veterinarian
- Amy Horn-Delzer – proxy for Dr. Konkle

United States Department of Agriculture, Wildlife Services

- Dan Hirchert – State Director

Wisconsin Veterinary Diagnostics Laboratory

- Dan Barr – Pathology Section Supervisor

Wisconsin Department of Health Services

- Lorna Will – CJD Coordinator

Committee Leadership

- Committee Lead: Curt Rollman, WDNR, Wildlife Management
- Decision Analysts: Jennifer Price Tack and Christine Anhalt-Depies, WDNR, Office of Applied Science
- Modeling consultant: Tom Fiddaman, Ventana Systems, Inc

Goal statement

Committee process for developing the revised goal statement

The revised goal statement below was developed by the decision analysts based on Committee pre-work and discussions. The goal statement includes the objectives of the DNR's CWD Response Plan, broad description of actions, constraints, and information about its scope. The revised goal statement was developed based on the scope of the DNR's review process, thus focused on actions that are currently within the agency's authority to implement. However, the Committee was also able to consider how actions outside DNR authority, i.e., a statewide baiting and feeding ban, would affect the Committee's objectives. For comparison, the current Response Plan's Goal Statement is provided below.

Current Response Plan goal statement

Minimize the area of Wisconsin where CWD occurs and the number of infected deer in the state.

Committee's revised goal statement

The Wisconsin DNR will respond to CWD through direct agency actions and indirectly through the participation of stakeholders and tribes to

- minimize the impact of CWD on wild deer and elk,
- maximize public support for the DNR's response to CWD,
- minimize negative impacts of CWD on industry, and
- minimize potential risks to human health.

Further, the agency's CWD Response will

- effectively allocate CWD response resources to achieve Plan objectives,
- support effective communication and collaboration with tribes and partner agencies, and
- use the best available science to inform agency actions.

Scope: For the purposes of the review process, scope was defined as items explicitly stated within state legislature (statute) when discussing CWD response actions. If the action was allowed or otherwise not prohibited via statute, then the action was considered within scope. Details on the scope of the DNR's legal authority are included in the Appendix 1.

Objectives and metrics

Committee Process

While science can be leveraged to identify the best method for achieving any goal, it is values that ultimately drive any decision. Values represent “what matters”. The ‘best’ alternative will be the one the best achieves the objectives of the decision maker and Committee members, necessitating that objectives are clearly defined. The Committee defined core objectives related to CWD response that represent their values. Each objective is phrased as a short statement that describes what matters and the preferred direction of change, i.e., “minimize CWD in deer and elk”. The Committee further defined sub-objectives when there were multiple means to achieve the core objective, i.e., minimizing both the prevalence and spatial distribution of CWD are means to minimizing impacts of CWD on wild deer and elk. For each objective, the Committee identified relevant metrics for each objective that clarify its meaning and provide a measure to predict and compare expected outcomes of various response alternatives, i.e., CWD response actions best meet the objective of minimizing the spatial distribution of CWD if they minimize the percent of Wisconsin townships with CWD.

The objectives and metrics were developed through a combination of individual pre-work, small groups discussions, and full group discussions. The objectives and metrics were reviewed and revised multiple times throughout the Committee process to ensure that the list was comprehensive of all Committee members’ interests.

For comparison, the current Response Plan’s Objectives are listed below.

Current Response Plan objectives

- Prevent new introductions of CWD in areas where disease is not currently believed to be present.
- Monitor for and respond to new areas of CWD infection (new foci).
- Minimize geographic distribution and intensity of CWD.
- Increase public recognition and understanding of CWD risks and participation in disease control efforts.
- Address the needs of our customers.
- Enhance the scientific information about CWD.

Committee objectives

The CWD Response Plan Review Committee developed the following set of objectives and metrics for the DNR to consider when evaluating the CWD Response Plan. Core, values-based objectives are numbered and bold (i.e., **1, 2, 3**), sub-objectives are indicated by letters (i.e., a, b, c), and performance metrics relevant for each objective are listed as roman numerals (i.e., i, ii, iii).

1. Minimize impacts of CWD on wild deer and elk

- a. Minimize CWD prevalence in deer within CWD+ DMUs
 - i. Percent of CWD+ harvested deer in known CWD+ DMUs
- b. Minimize spatial distribution of CWD in wild deer

- i. Percent of CWD+ townships in WI
 - c. Minimize risk of spread to wild elk
 - i. Probability of transmission of CWD to wild elk
 - d. Minimize prions in the environment
 - i. Number of carcasses collected in carcass dumpster programs in CWD+ townships
- 2. Maximize public and Tribal participation in CWD response efforts**
 - a. Participation of hunters
 - i. Testing participation: % of hunters who have their deer tested
 - ii. Harvest effort: number of deer per hunter
 - b. Participation of the non-hunting public
 - i. Number of non-hunting businesses assisting with CWD response
 - c. Participation of tribes
 - i. % participation in testing deer
- 3. Maximize public support for the DNR's response to CWD**
 - i. Maximize the % of WI residents who agree with the DNR's response to CWD
- 4. Minimize negative impacts of CWD on industry**
 - a. Minimize negative impacts to the solid waste and wastewater management industries
 - i. Costs incurred by the industries
 - b. Minimize negative impacts to meat processors
 - i. Costs incurred by the industry
 - c. Minimize risk of spread from wild deer to farm-raised cervid facilities
 - i. Probability of spread from CWD+ wild deer to farm-raised cervid facilities
 - d. Minimize risk of spread from carcasses to farm-raised cervid facilities
 - i. Probability of spread from CWD+ carcasses to farm-raised cervid facilities
- 5. Minimize potential risk to human health**
 - i. Minimize the number of people who consume CWD+ venison
- 6. Effectively allocate DNR CWD response resources**
 - a. Effective allocation of DNR staff time/workload:
 - i. % of staff time spent on CWD per year relative to status quo budget
 - b. Effective allocation of the CWD operations budget
 - i. Cost of CWD operations per year relative to the status quo budget
- 7. Ensure effective communication/collaboration with Tribes and partner agencies**
- 8. Use the best available science to inform decision making**

Additional notes on the objectives

- For the Committee's process, DMU was used as the spatial unit to compare predicted prevalence rates. However, the Committee determined that the spatial unit used to inform management should be flexible to account for available data and the management need.
- Maximizing the support of decision makers (i.e., NRB and legislators) was identified as critical for effectively responding to CWD but removed because Committee members felt that this objective would be achieved if Objective 3 (maximize DNR support) is met. DNR cannot influence support of decision makers directly, only indirectly through gaining support of WI residents.
- Several objectives first identified by the Committee were removed due to redundancy with Objective 1. In other words, some initial objectives were going to be met if CWD prevalence and distribution are met. For example, minimizing negative impacts of CWD on subsistence hunting of tribes is met by minimizing spatial distribution of CWD.
- Similarly, some initial objectives were removed due to their relationship with objective 3. For example, if CWD's impact on hunting is minimized than public support for CWD should increase.
- While the metric for minimizing prions in the environment specifies deer carcasses collected in dumpsters, the Committee discussed other sources of environmental prions, including from live deer and deer carcasses on the landscape. The Committee also acknowledges the uncertainty about whether environmental prions cause infection in deer.
- Maintaining a sustainable deer herd was removed because it is already a strategic objective of the DNR's deer program. Any CWD response by the DNR must meet this strategic objective.
- The Committee discussed an objective of minimizing risk of spread of CWD from farm-raised deer/elk facilities to wild deer and elk. Since the DNR lacks any legal authority to affect these facilities, reducing the risk of spread of CWD from CWD+ facilities to wild ungulates is limited to surveillance and deer removals outside the fence.

Committee preferences

Each member was provided an opportunity to specify the relative importance of each objective and subobjective to their stakeholder group. Committee members ranked each objective and subobjective on a 5-point Likert scale from "not important" to "very important". Committee members were asked to provide rankings that represented their overall stakeholder group's perspective and not their personal perspective.

On average the objectives receiving the highest ranking were: 1) Use the best available science to inform decision making (\bar{x} = 4.83, n = 18), 2) Ensure effective communication/collaboration with Tribes and partner agencies (\bar{x} = 4.39, n = 18), and 3) Minimize impacts of CWD on wild deer and elk (\bar{x} = 4.39, n = 18). Raw data can be found in Appendix 2.

Alternatives

Process for developing alternatives

Below are example actions proposed by Committee members. A full list of actions provided by the Committee can be found in the supplemental excel sheet “CWDRPCommitteeActionList.xlsx”, which includes information on each action’s scope designation, current status, and chance of implementation success. A summary of the table is provided in Appendix 3.

- Direct actions for reducing the deer population, removing infected deer, and containing infected deer
 - Harvest regulations to reduce deer (i.e., quotas, season structure)
 - Targeted removals
 - Out-of-season shooting permits
 - Regulations for managing CWD+ farm-raised cervid facilities
- Indirect actions reducing the deer population, removing infected deer, and containing infected deer
 - Subsidized fencing
 - Monetary incentives
 - Disposal waste options
 - Baiting restrictions
 - Reduce escapes from farm-raised cervid facilities
- Policies to protect elk (i.e., protocols for responding to elk that move through CWD+ areas)
- Different strategies for endemic area spread vs. spread from new foci
- Differing sampling strategies for endemic vs. new foci
- Considerations that prevent spread to tribal lands and the ceded territory
- Research and development
 - Develop rapid testing technology
 - Reduce uncertainties – i.e. disease dynamics
- Monitoring for early detection
- Public education for prevention
- Increase funding for management and research

Alternative Response Plans

Actions provided by the Committee were used by the Decision Analysts to develop a set of alternative response “plans”, in addition to scenarios representing ‘do nothing’ and status quo. These hypothetical response plans were used to evaluate how suites of actions impact the objectives and subobjectives developed by the Committee.

The first set of hypothetical response plans varied across 2 dimensions:

- 1) How resources are allocated across three geographic areas—endemic region, leading edge of the endemic region, and new CWD + foci

- 2) How the work of the plan is completed— actions that rely on unincentivized, voluntary hunter effort or department-led actions that do not rely on voluntary hunter effort (i.e. incentive programs and targeted removals)

Each unique combination across the two dimensions was developed by applying increased resources within each geographic area, while keeping resources at status quo for the other two geographies. For example, endemic area response using hunter-driven actions represents an increase in resources in the endemic area for increasing voluntary hunter effort (i.e. liberalizing deer bag limits), while keeping actions in the leading edge and new foci the same as the status quo scenario. Importantly, these scenarios represent an increase in CWD response resources relative to status quo, but the additional resources are only allocated to one geographic area. The resulting plans are:

- **Do nothing:** DNR stops all CWD response activities, including testing harvested deer and carcass disposal options.
- **Status quo:** See full description below.
- **Endemic area, hunter-driven:** Increase in response resources allocated to the endemic area using unincentivized hunter driven CWD response.
- **Endemic area, department-driven:** Increase in response resources allocated to the endemic area using targeted removals or incentive programs.
- **Leading edge, hunter-driven:** Increase in response resources allocated to the leading edge using unincentivized hunter driven CWD response.
- **Leading edge, dept-driven:** Increase in response resources allocated to the leading edge using targeted removals or incentive programs.
- **New foci, hunter-driven:** Increase in response resources allocated to the new foci using unincentivized hunter driven CWD response.
- **New foci, dept-driven:** Increase in response resources allocated to the new foci using targeted removals or incentive programs.

The Committee used the results of the above plans to develop additional alternative response Plans 1 - 8. These plans allow for resources to be allocated across multiple geographic areas. In addition, the new plans included a third dimension:

- 3) Which deer sex and age classes are targeted for removal—all bucks, young bucks, mature bucks, does, or all deer

The status quo and Plans 1 – 8 are:

Status quo: Split resource allocation equally among geographic areas using unincentivized hunter-driven response. Response targets all deer regardless of sex and age class.

- Endemic area: 33% of resources, unincentivized hunter-driven response, all deer targeted
 - Surveillance—voluntary testing of harvested deer, mandatory testing for surveillance permits

- Response—removal of deer through hunters (e.g. harvest tags and surveillance permits)
 - Prevention— appropriate disposal of removed deer, status quo baiting ban
- Leading edge: 33% of resources, unincentivized hunter-driven response, all deer targeted
 - Surveillance— voluntary testing of harvested deer, mandatory testing for surveillance permits
 - Response—removal of deer through hunters (e.g. harvest tags and surveillance permits)
 - Prevention— appropriate disposal of removed deer, status quo baiting ban
- New foci: 33% of resources, unincentivized hunter-driven response, all deer targeted
 - Surveillance – voluntary testing of harvested deer, mandatory testing for surveillance permits
 - Response— removal of deer through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—appropriate disposal of removed deer, status quo baiting ban

Plan 1: Allocate most effort between response to new foci and the leading edge using department-led strategies that do not rely on unincentivized, voluntary hunter effort. Rely on a unincentivized, voluntary hunter-driven response in endemic area with liberal harvest of all bucks.

- Endemic area: 10% of resources, unincentivized hunter-driven response, all bucks targeted
 - Surveillance— reduced surveillance from status quo
 - Response—increased removal of all bucks through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—reduced disposal options relative to status quo
- Leading edge: 45% of resources, department-driven response, young bucks targeted
 - Surveillance – mandatory testing
 - Response—targeted removal of young bucks in leading edge through targeted removals and surveillance permits
 - Prevention— increase appropriate disposal of removed deer relative to status quo, increased baiting enforcement
- New foci: 45% of resources, department-driven response, all deer targeted
 - Surveillance – mandatory testing
 - Response—targeted removal of deer around new foci (e.g. targeted removals, incentives, surveillance permits)
 - Prevention—increase appropriate disposal of removed deer relative to status quo, increased baiting enforcement

Plan 2: Aggressive hunter-led response to new foci targeting deer regardless of sex or age class. Hunter-driven response in endemic area and leading edge with more liberal harvest deer.

- Endemic area: 10% of resources, hunter-drive response, all deer targeted

- Surveillance—reduced surveillance from status quo
- Response—increased removal of deer through hunters (e.g. harvest tags and surveillance permits)
- Prevention—reduced carcass disposal options from status quo
- Leading edge: 10% of resources, hunter-driven response, all deer targeted
 - Surveillance— reduced surveillance from status quo
 - Response—increased removal of deer through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—reduced carcass disposal options, reduced baiting enforcement
- New foci: 80% of resources, hunter-driven response, all deer targeted
 - Surveillance – increased hunter testing (e.g. increased number of sampling locations, incentives for testing)
 - Response—targeted removal of deer around new foci by hunters (e.g. significant incentives, surveillance permits and harvest tags)
 - Prevention—increased disposal of carcasses by hunters (e.g. increased carcass disposal options)

Plan 3: Split resource allocation equally among geographic areas. Response targets all deer regardless of sex and age class. In new-foci response is department-driven while response in endemic area and leading edge is hunter-driven.

- Endemic area: 33% of resources, hunter-driven response, all deer targeted
 - Surveillance—no change in status quo
 - Response— increased removal of deer through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—no change from status quo
- Leading edge: 33% of resources, hunter-driven response, all deer targeted
 - Surveillance—no change in status quo
 - Response— increased removal of deer through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—no change from status quo
- New foci: 33% of resources, department-driven response, all deer targeted
 - Surveillance – mandatory testing
 - Response— targeted removal of deer around new foci (e.g. targeted removals, incentives, surveillance permits)
 - Prevention— no change from status quo

Plan 4: Most resources allocated to department-led response in the leading edge and new foci, targeting does and all deer respectively. Hunter-driven response in endemic area with liberal harvest all bucks.

- Endemic area: 10% of resources, hunter-driven response, all bucks targeted
 - Surveillance—reduced surveillance from status quo

- Response—increased removal of bucks through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—decrease in disposal options, reduced baiting enforcement
- Leading edge: 60% of resources, department-driven response, does targeted
 - Surveillance – mandatory testing
 - Response—targeted removal of does in leading edge through targeted removals and surveillance permits
 - Prevention—increase in appropriate disposal of removed deer, increased baiting enforcement
- New foci: 30% of resources, department-driven response, all deer targeted
 - Surveillance – mandatory testing
 - Response— targeted removal of deer around new foci (e.g. targeted removals, incentives, surveillance permits)
 - Prevention—increase in appropriate disposal of removed deer, increased baiting enforcement

Plan 5: Split resource allocation equally among geographic areas. Department-led response to new foci targeting deer regardless of sex or age class. Hunter-driven response in endemic area and leading edge with liberal harvest of adult bucks.

- Endemic area: 33% of resources, hunter-drive response, adult bucks targeted
 - Surveillance—no change in status quo
 - Response— increased removal of adult bucks through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—no change in status quo
- Leading edge: 33% of resources, hunter-driven response, adult bucks targeted
 - Surveillance—no change in status quo
 - Response— increased removal of adult bucks through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—no change in status quo
- New foci: 33% of resources, department-driven response, all deer targeted
 - Surveillance – mandatory testing
 - Response— targeted removal of deer around new foci (e.g. targeted removals, incentives, surveillance permits)
 - Prevention—increase in appropriate disposal of removed deer, increased baiting enforcement

Plan 6: Split resource allocation equally among geographic areas. Department-led response to new foci targeting deer regardless of sex or age class. Hunter-driven response in endemic area targeting does and in leading edge targeting young bucks.

- Endemic area: 33% of resources, hunter-driven response, does targeted
 - Surveillance—no change in status quo

- Response— increased removal of does through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—no change in status quo
- Leading edge: 33% of resources, hunter-driven response, young bucks targeted
 - Surveillance—no change in status quo
 - Response— increased removal of young bucks through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—no change in status quo
- New foci: 33% of resources, department-driven response, all deer targeted
 - Surveillance – mandatory testing
 - Response— targeted removal of deer around new foci (e.g. targeted removals, incentives, surveillance permits)
 - Prevention— increase in appropriate disposal of removed deer, increased baiting enforcement

Plan 7: Aggressive department- and hunter-led response to new foci targeting deer regardless of sex and age class. Hunter-driven response in endemic area and leading edge targeting all deer regardless of sex and age class. Education and outreach to increase proper disposal, especially in endemic areas, and decrease consumption of CWD+ deer.

- Endemic area: 10% of resources, hunter-drive response, all deer targeted
 - Surveillance—reduced surveillance from status quo
 - Response—increased removal of does through hunters (e.g. harvest tags and surveillance permits)
 - Prevention— reduced carcass disposal options
- Leading edge: 10% of resources, hunter-driven response, all deer targeted
 - Surveillance— reduced surveillance from status quo
 - Response—increased removal of young bucks through hunters (e.g. harvest tags and surveillance permits)
 - Prevention—reduced carcass disposal options
- New foci: 80% of resources, department- AND hunter-driven response, all deer targeted
 - Surveillance – mandatory testing
 - Response—targeted removal of deer around new foci (e.g. targeted removals, incentives, surveillance permits and harvest tags)
 - Prevention—increase in appropriate disposal of removed deer, increased baiting enforcement

Plan 8: Most resources allocated to hunter-led response in the leading edge and new foci, targeting yearling bucks and increased mature buck harvest, and all deer, respectively. Also, include harvest incentives in new foci. Hunter-driven response in endemic area with liberal harvest all bucks.

- Endemic area: 10% of resources, hunter-drive response, all bucks targeted

- Surveillance—status quo with enhanced WDNR presentation of spatial and temporal prevalence to help direct hunter efforts
- Response—increased removal of bucks through hunters (e.g. harvest tags and surveillance permits, etc.), increased food pantry donation program to help encourage higher deer harvest
- Prevention—status quo
- Leading edge: 60% of resources, hunter-driven response, yearling bucks targeted with increased removal of mature bucks
 - Surveillance – mandatory testing
 - Response—targeted yearling bucks and increased removal of adult bucks at leading edge by hunters (e.g. harvest tags and surveillance permits, etc.).
 - Prevention—increase in disposal of removed deer at CWD hotspot areas, increased baiting enforcement
- New foci: 30% of resources, mix of hunter-driven response and DNR-led response using harvest incentives, all deer targeted
 - Surveillance – mandatory testing
 - Response— targeted removal of deer around new foci using surveillance permits, increased harvest tags, and incentive programs for CWD+ deer
 - Prevention—increased disposal of removed deer in proximity to CWD+ deer locations, increased baiting enforcement

Actions applicable to all Plans

The Committee felt that some of the actions were applicable across Plans, including actions to ensure effective communication and collaboration with tribes and partner agencies, ensure science is used to inform CWD, increase education and outreach, and to improve the CWD Response Plan’s ability to prevent the spread of CWD to specific areas of the state, i.e. near elk ranges, tribal lands, and farm-raised cervid facilities. Specific actions are described below:

Ensure effective communication and collaboration with tribes and partner agencies:

- Work with tribes and partner agencies to develop a communication plan
- Discuss opportunities with the tribes to identify the capacity and resources for tribes to collaborate on CWD response
- Develop collaboration plans with tribes and partner agencies

Ensure science is used to inform CWD response:

- Develop a science advisory board to interpret science, advice response efforts, and design research projects to inform response decisions
- Use the best available science to inform response activities
- Other actions as noted in the CWD Response Plan
- Ensure transparency concerning limitations and uncertainties

Actions to provide additional protections to specific areas of the state:

- Response efforts and policies near elk ranges to reduce risk of CWD transmission to wild elk herd, both from wild deer and farm-raised cervids
- Response efforts to reduce the risk of CWD spread to tribal lands and the ceded territory

Education and outreach on the following:

- Potential risks of CWD for human health, including through consumption and handling
- Best practices for hunters to minimize environmental prions
- Information about CWD for the general public

Additional actions and scenarios

In addition to the alternative response Plans, the Committee discussed various actions that outside of the DNR's authority to implement:

- A statewide baiting and feeding ban
- Regulation of the farm-raised cervid industry
- Changes to deer harvest requiring changes to legislation
 - Extending the deer gun season earlier to match with the rut
 - Any special seasons prior to the Sunday before Thanksgiving
 - Earn-a-buck incentives
- Removal of deer carcasses from roadways

The Committee worked with the modeling consultant to explore hypothetical scenarios that were outside of the DNR's legal authority, and to conduct sensitivity analyses to identify leverage points in the system that would increase the performance of CWD response relative to the Alternative Plans. The scenarios adjusted model parameters to values that are not currently feasible to attain with available response options. For example, the Committee was able to see how increasing the number of deer harvested per hunter above the threshold of 1.8 (identified by human dimensions research) affects prevalence of distribution of CWD. The leverage points provide potential avenues for research to develop novel methods to influence those parameters, thus improving effectiveness of CWD response.

Scenarios that the Committee either discussed or explored during meetings with the modeling consultant included:

- Increases in the number of deer harvested per hunter above 1.8 deer per hunter (identified by human dimensions research as the maximum number of deer desired per hunters)
- Uncertainty in prion half-life
- Influence direct contact vs exposure to environmental prions as drivers of CWD transmission in deer
- Southern vs. northern deer population dynamics
- Wolf predation

Consequences

Committee process

The Committee lead, decision analysts, and modeling consultants predicted the outcomes (consequences) of each Alternative Plan on each of the Committee's objectives. The team largely used model results from the systems approach model, which was developed by Ventana Systems, Inc based on literature and input from workshops with experts. Expert workshops were centered around four themes:

1. Epidemiology
2. Forest and deer health
3. Human dimensions and economics
4. Regulatory structure and Response Plan needs

The Committee learned about and provided input on the systems modeling during Committee meetings 3 – 6 and a standalone model “under the hood” meeting. For objectives that were not included in the systems models, the decision analysts and Committee lead used available literature and expert judgement to inform the predictions. Additional description on the approach for predicting the consequences for each of the eight fundamental objectives are provided in Table 2.

Core objective	Sub-objective	Metric	Method for predicting values
Minimize impacts of CWD on wild deer and elk	Prevalence/infection rates in CWD+ DMUs (-)	% of CWD+ harvested deer in known CWD+ DMUs	Model-derived: Average of year 2040 prevalence rates in endemic and leading edge
	Spatial distribution of CWD in wild deer (-)	% of CWD+ townships	Model-derived: Average of year 2040 prevalence rates in the leading edge and new foci
	Risk of spread to wild elk (-)	Probability of transmission of CWD to wild elk	Assume spatial distribution correlates to minimizing risk to elk
	Prions in the environment from infected deer carcasses (-)	Number of carcasses collected in the dumpster program in CWD+ townships	Model-derived value
Maximize non-DNR participation in CWD response efforts	Participation of hunters in testing (+)	% of hunters who have their deer tested	Model-derived value
	Maximize hunter effort to meet deer reduction goals (+)	# of deer per hunter	WI human dimensions hunter survey results
	Participation of the non-hunting public (+)	Number of non-hunting businesses assisting with CWD response	Expert judgement
	Participation of tribes in testing (+)	% of tribal hunters who have their deer tested	Assume similar to non-tribal participation
Maximize public support for the DNR's CWD response program (+)	-	% of WI residents who agree with the DNR's response to CWD	Expert judgement using level of resistance action classification
Minimize negative impacts of CWD and CWD response on industry	Negative impacts of solid waste and wastewater management industries (-)	Costs incurred by industries	0 for all Plans. No evidence of costs under proposed alternative
	Negative impacts to meat processors (-)	Costs incurred by industry	0 for all Plans. No evidence of costs under proposed alternative
	Risk of spread from wild deer to farmed deer (-)	Probability of spread from CWD+ wild deer to farm-raised deer/elk facilities	Assume spatial distribution correlates to minimizing risk to facilities
	Risk of spread from carcasses to CWD- farms (-)	Probability of spread from CWD+ deer carcasses to farm-raised deer/elk facilities	0 for all Plans, but depends on locations of dumpsters
Minimize risk to human health	-	# of people consuming CWD+ venison	Model-derived value
Ensure effective allocation of DNR resources	Effectively allocate DNR staff time/workload	% of staff time spent on CWD per year relative to status quo	Expert judgement
	Effective use of the CWD operations budget	Cost of CWD operations per year relative to the status quo budget	Expert judgement
Ensure effective communication/collaboration with tribes and partner agencies	-	DNR effectively communicates, Yes or No	Committee developed actions to meet this objective that do not differ across Plans.
Ensure science is used to inform CWD response	-	Science is used to inform CWD Response Actions, Yes or No	Committee developed actions to meet this objective that do not differ across Plans.

Table 2. Description of methods for filling out the consequences table

Model structure, assumptions, and limitations

The model is a simple representation of the state of the deer population, its CWD health, and a few related features like vegetation health and carrying capacity, hunter effort, and testing.

The deer population has some demographic detail, with four age classes (fawns, yearlings, young adults, older adults) and two sexes. Disease progression is an SEIC model (Susceptible-Exposed-Infected-Clinical). The Exposed and Infected phases are represented by 6 states with increasing levels of test sensitivity, followed by a final phase with visible Clinical sickness (Figure 1).

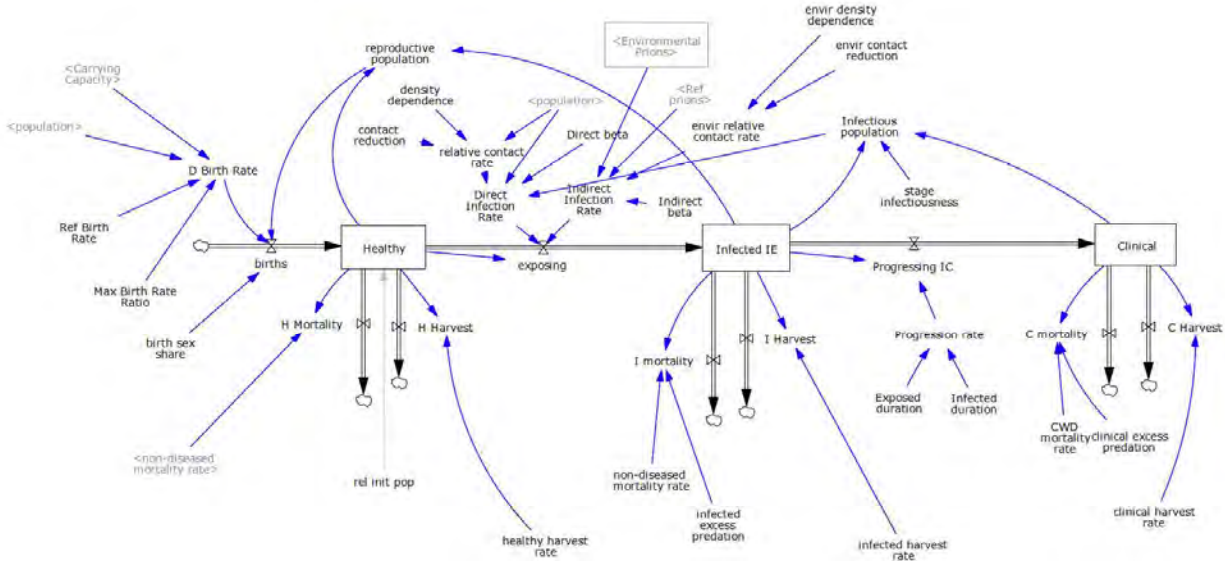


Figure 1. Conceptual model of CWD disease progression in deer

Deer recruitment is influenced primarily by the doe population and a reference birth rate, but with some variability in the birth rate due to carrying capacity from natural vegetation and other food sources. Vegetation is represented very simply as a stock that is consumed by deer browsing and regenerates at a fixed rate.

Infection is driven by a direct pathway (prion exposure through deer social contact) and indirect contact with environmental prions. The direct pathway may include different rates of transmission to bucks and does, but for simplicity does not consider a complete matrix differentiating all possible interactions among ages and sexes. The indirect pathway considers environmental prion deposition from live deer and from carcasses. Environmental prions degrade or become unavailable to deer with some half life.

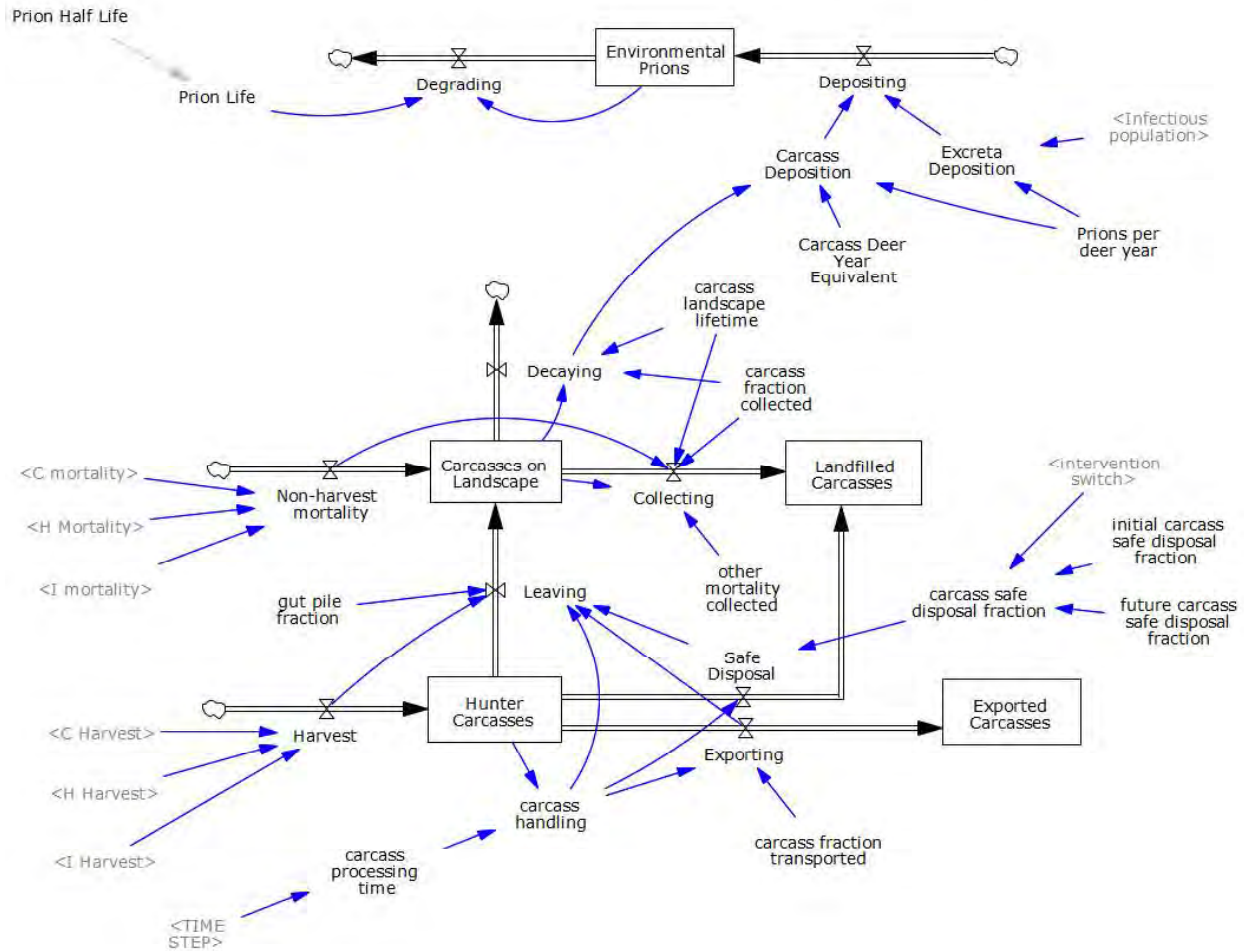


Figure 2. Conceptual model showing indirect pathways of CWD transmission

Technically, the model is essentially a system of continuous time ordinary differential equations, with a few discrete features, but it can also operate be simulated with discrete deer where the randomness in small population behavior is of interest. The model is implemented in the Vensim® modeling software. Reproduction of many scenarios is automated in Python using venpy and the Vensim DLL.

The model is normally simulated over a historic period (2000-present) and the future to 2050. Over the historic period, prevalence and other metrics can be compared to surveillance data for parameter estimation and validation, though currently the model relies primarily on estimates from the literature for calibration.

The model can be parameterized to represent different geographies. The base cases for each area can be regarded as a representative township within the Endemic, Leading Edge, or New Foci areas. These are distinguished primarily by initial deer density and test sampling, though other parameters like the historic buck/antlerless harvest composition may also be explored.

In all areas, the uncontrolled CWD growth rate is 25-35%/year, slowing as it approaches apparent prevalence of ~35%, at which point dilution from recruitment of healthy deer roughly offsets infections and CWD mortality. Early in the disease lifecycle in an area, the direct infection pathway contributes most infections, with the environmental contribution increasing over a few decades following introduction. The carcass path represents about half the environmental prion deposition.

Despite high CWD mortality, population decline is generally slow and limited. There are two reasons for this. First, most scenarios assume that the declining harvest trend typically observed, 2%/year, will continue, so increasing CWD mortality is offset by declining harvest. Second, when deer density declines, a modest increase in recruitment from improved food availability further offsets mortality, making the age structure a little younger.

The model reports true prevalence, which includes recently exposed deer that likely would not test positive if harvested. Importantly, modeled prevalence is distinct from apparent prevalence rates estimated from empirical data that is subject to testing sensitivity and bias. While the model is capable of reporting both true and apparent prevalence, the results within this document present only the true prevalence rates.

There is considerable uncertainty about the structure and parameters describing the system. Some of the key uncertainties in the model are:

- Importance of direct vs. indirect infection pathways
- Transmission dependence on deer density
- Environmental prion deposition from excreta vs. carcasses
- Lifetime of prions in the environment
- Effect of baiting and feeding on congregation and transmission
- Size of birth rebound effect from carrying capacity release
- Drivers of attractiveness of hunt participation

Perhaps the most significant limitation of the model is that it considers each geographic area type independently. This means that spillovers from one area to another are omitted. In reality, geographic spillovers are important. Areas of high prevalence are sources of infection for other areas, via mechanisms like buck dispersal and the transport of deer carcasses and products. In addition to the movement of prions, geographies are connected by the expenditure of agency resources and movement of hunter efforts. This may also prove important, as reallocation of resources from one geography type to another may have implications for the productivity of resource use.

Another important uncertainty is the level of harvest effort that can be achieved by various actions. Based on human dimensions research, all the alternative Plans are likely overly optimistic about how much harvest rates will increase when relying on voluntary hunter effort or implementing incentives.

In spite of the uncertainties, a number of features of the disease and response have proved robust to experimentation with variations in assumptions. These include:

- Status quo is characterized by substantial growth, above 25%/year.
- Arresting growth requires large reductions in the disease's reproductive ratio, on the order of 50-80%.
- The reduction can be achieved through a combination of pathways, including reducing deer exposure to one another and the environment through congregation, shortening the residence time of infectious deer in the population through harvest, and reducing the deposition and transport of prions through management of carcasses and transport.
- The large magnitude of reduction needed makes it unsurprising that there is no single policy that can achieve stabilization or eradication, and that modest reallocation of current resources does not have a large effect.
- Eradication is difficult in areas of high prevalence due to the entrenchment of environmental prions, but improvement is still possible, and reduces export of the problem to other areas.
- In low prevalence areas, early intervention is important, because it is easier to intervene while the absolute number of infected deer is smaller and environmental prion accumulation is modest.
- Adequate surveillance enables early intervention, but is only effective if detection is followed by action.
- Strategies generally involve tradeoffs over time and across metrics of interest to different stakeholders. That is, policies that improve CWD prevalence and geographic extent in the long run may worsen other features like deer abundance or trophy harvest in the short term.

Consequences table

The consequences table comparing the predicted outcomes in year 2040 of do nothing, status quo, and Plans 1 – 8 are included in Table 3. The consequence table including the plans developed during the first step of the alternative development section are included in Appendix 4. Given the importance of prevalence rates in evaluating the effectiveness of the various alternative plans, we also provide the predicted prevalence rates by geographic area under each plan in Table 4. Model-derived predictions for all plans are in Appendix 5.

Core objective	Sub-objective	Do nothing	Status quo	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8
Minimize impacts of CWD on wild deer and elk	Prevalence/infection rates in CWD+ DMUs (-)	-	0	0	0	0	+	0	0	0	0
	Spatial distribution of CWD in wild deer (-)	-	0	++	+	0	++	0	0	++	+
	Risk of spread to wild elk (-)	-	0	++	+	0	++	0	0	++	+
	Prions in the environment from infected deer carcasses (-)	-	0	+	+	0	+	0	0	0	+
Maximize non-DNR participation in CWD response efforts	Participation of hunters in testing (+)	-	0	+	+	0	+	0	0	+	+
	Maximize hunter effort to meet deer reduction goals (+)	0	0	+	0	0	+	0	0	+	0
	Participation of the non-hunting public (+)	--	0	0	0	0	0	0	0	+	0
	Participation of tribes in testing (+)	0	0	+	0	0	0	0	0	+	0
Maximize public support for the DNR's CWD response program (+)	-	-- or -	0	-	-	-	--	-	-	-- or -	-
Minimize negative impacts of CWD and CWD response on industry	Negative impacts of solid waste and wastewater management industries (-)	+	0	0	0	0	0	0	0	0	0
	Negative impacts to meat processors (-)	+	0	0	0	0	0	0	0	0	0
	Risk of spread from wild deer to farmed deer (-)	-	0	++	+	0	++	0	0	++	+
	Risk of spread from carcasses to CWD- farms (-)	-	0	0	0	0	0	0	0	0	0
Minimize risk to human health	-	0	0	+	0	0	+	0	+	+	0
Ensure effective allocation of DNR resources	Effectively allocate DNR staff time/workload	++	0	--	--	--	--	--	--	--	--
	Effective use of the CWD operations budget	++	0	--	--	--	--	--	--	--	--
Ensure effective communication/collaboration with tribes and partner agencies	-	No	0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ensure science is used to inform CWD response	-	No	0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3. Consequence table in year 2040 comparing the alternatives: do nothing, status quo, and Plans 1 – 8. The scale of the outcomes are:

“—” Outcome is predicted to be much worse than status quo outcome in year 2040

“-” Outcome is somewhat worse than status quo outcome in year 2040

“0” Outcome predicted to be similar to the status quo outcome in year 2040

“+” Outcome predicted to be better than the status quo outcome in year 2040

“++” Outcome predicted to be much better than the status quo outcome in year 2040

Alternative Response Plan	Prevalence rates in 2040			Objectives		Resources Relative to Status Quo
	Endemic area	Leading edge	New foci	Min prevalence ¹	Min spatial distribution ²	
Do nothing	0.52	0.52	0.53	0.52	0.53	-
Status quo	0.45	0.45	0.44	0.45	0.44	-
Endemic area, hunter-driven	0.37	0.45	0.44	0.41	0.44	\$
Endemic area, dept-driven	0.33	0.45	0.44	0.39	0.44	\$
Leading edge, hunter-driven	0.45	0.36	0.44	0.41	0.40	\$
Leading edge, dept-driven	0.45	0.24	0.44	0.34	0.34	\$
New foci, hunter-driven	0.45	0.45	0.35	0.45	0.40	\$
New foci, dept-driven	0.45	0.45	0.13	0.45	0.29	\$
Plan 1	0.45	0.30	0.23	0.37	0.27	\$\$
Plan 2	0.43	0.43	0.17	0.43	0.30	\$\$
Plan 3	0.42	0.42	0.36	0.42	0.39	\$\$
Plan 4	0.42	0.20	0.31	0.31	0.26	\$\$
Plan 5	0.41	0.41	0.29	0.41	0.35	\$\$
Plan 6	0.39	0.41	0.29	0.40	0.35	\$\$
Plan 7	0.43	0.43	0.09	0.43	0.26	\$\$
Plan 8	0.45	0.31	0.31	0.38	0.31	\$\$

¹Average prevalence rate across the endemic area and leading edge. Prevalence rates reported here are likely greater than apparent prevalence rates derived from surveyed deer due to testing insensitivity. CWD+ positive deer may test negative if their prion load is insufficient to be detected.

²Average prevalence rate across the leading edge and new foci as a proxy for spatial distribution

Table 4. Predicted prevalence rates in year 2040 in each geographic area (endemic area, leading edge, new foci) for each alternative Plan. The table also includes the predicted resources required relative to the status quo to implement each Plan, where \$ = 1 – 2x status quo and \$\$ = 2 – 3x status quo. The green shading represents the relative performance of each alternative response plan on each objective, where darker green indicates better performance.

Model results

- None of the plans have much impact on prevalence rates in the endemic area relative to the status quo.
- The best Plan for minimizing prevalence rates in the leading edge is Plan 4. However, Plan 4 is also expected to have the greatest resistance to implementation. Plans 1 and 8 are the next best scenarios for reducing prevalence.
- The top Plans for minimizing prevalence in new foci are Plans 7, 2, and 1. All of these plans improve upon the predicted prevalence rates under Status Quo.

Additional actions and scenarios

The model provided additional insights on actions and scenarios that were outside the DNR scope. Below are summaries of additional scenarios and sensitivity analyses that were considered using existing model runs or through separate model runs:

1. **Increases in CWD response resources relative to status quo**

All alternative Plans, excluding do nothing, represented scenarios in which response resources were increased relative to status quo.

2. **A statewide baiting and feeding ban**

The Committee discussed the potential impact of a statewide ban, but the model is not capable of predicting how such a ban would reduce the probability of a new area becoming infected with CWD, because it does not include spatial connections at present. Modeling efforts did explore how baiting and feeding bans within known CWD+ areas may translate reduce prevalence by reducing deer contact rates. In the model, reductions in deer contact with one another and the environment is effective at reducing transmission, but the real-world effect of reduced baiting and feeding on deer contact rates is highly uncertain, so the appropriate range of model inputs is unknown.

3. **Regulation of the farm-raised cervid industry**

While the regulation of farm-raised cervid facilities was discussed during Committee meetings, the alternative Plans did not contain such actions because the DNR lacks legal authority to implement them. However, modeling how policies that affect farm-raised cervid facilities may lead to fewer new foci has been identified as a potential next step for the systems approach.

4. **Changes to deer harvest requiring changes to legislation, i.e. extending the deer gun season earlier to match with the rut, any special seasons prior to the Sunday before Thanksgiving**

While these policies may increase hunting opportunity, recent human dimensions research in Wisconsin found that hunters are already need the threshold of the number of deer they are willing to harvest per year. Hunters reported an annual harvest of 1.6 deer and a desired number of 1.8 deer. Largely, the research suggests that hunters do not want to harvest more than they can consume.

5. **Earn-a-buck incentives**

Earn-a-buck incentives have been shown to increase antlerless harvest rates in Wisconsin. Model simulations suggest that increasing antlerless harvest can contribute to an effective strategy to reduce prevalence and spread. However, the strategy would likely need to be combined with multiple policies to achieve appreciable results.

6. **Payments for positives of other actions to Increase in the number of deer harvested per hunter above 1.8 deer per hunter**

Model scenarios suggest that increasing harvest rates of deer, particularly when combined with increases in the proportion of CWD+ deer harvested (i.e. through

targeted removals of sick deer), have the greatest potential at influencing CWD prevalence and spread. Notably, the harvest rates required to affect change were much higher than current levels and had to be sustained over many years. It is unknown what the payment would need to be to incentive this level of harvest. Budgets are not in the model, but payment amounts that would incentive hunters in areas with low prevalence (i.e. <5%) would likely be cost prohibitive.

7. Uncertainty in prion half-life and the influence of direct contact vs exposure to environmental prions as drivers of CWD transmission in deer

A number of features of prion transmission and environmental fate are very uncertain, including the relative contributions of direct social vs. indirect environmental contact, the lifetime of prions in the environment, and the relative exposure to prions from live deposition vs. carcasses. The uncertainty affects the relative importance of hunting, baiting and feeding, and carcass management policies. However, there are some constraints on these processes. For example, to be consistent with observed infection rates, if direct transmission is found to be less important, then indirect transmission must be correspondingly stronger. The “fingerprint” of indirect transmission in the data over time should differ from that of direct transmission, suggesting that environmental prions cannot be the dominant source of infection in the early epidemic. Experimentation could yield valuable information for refinement of strategies in the future, but given present uncertainties, it makes sense to balance efforts across areas.

8. Removal of deer carcasses from roadways

The impact of CWD+ deer carcasses as a source of disease transmission is subject to the uncertainties in 7. The model does not explicitly consider road mortality, but if it represents about 5% per year, collecting all road-killed carcasses would reduce total carcass deposition by roughly 20%, and total prion deposition by less than 10% in a highly infected area. In new foci, most carcasses collected would be uninfected. The infected share of collection could be higher if infected deer are more likely to be killed, though behavioral features like this are speculative. While there are big questions about the relative importance of this deposition path, the mass balance does seem to make it hard for roadway carcasses to be a dominant source of infection. On the other hand, ease of access and surveillance data yielded may make this a useful policy in some cases.

9. Differences in response effectiveness and disease dynamics in southern farmland vs. northern forests, i.e. via differences in deer population dynamics, wolf predation, and hunter dynamics

We experimented with a scenario that included some features that could characterize north/south differences: lower recruitment, a smaller share of antlerless mortality, greater non-harvest mortality from predation in general, with some augmentation of mortality for infected deer from enhanced predation of sick or unwary animals. This has

several competing effects: transmission may be lowered by shorter lifespans of infected deer, lower density and less environmental prion deposition, but there is also less dilution from recruitment of healthy deer, for example. While the size of these effects is uncertain, it does seem plausible that prevalence and growth rates would be lower under these conditions, and that control would be easier.

Key findings and conclusions

Given current resources, legal authority, and limitations, DNR activities will have limited capacity to affect CWD prevalence and spread

While the Plans developed by the Committee generally resulted in increased effectiveness at meeting the objectives relative to the status quo, they had limited impact on reducing CWD prevalence and spread. These new Plans also rely on actions that would face increased political or social resistance to implementation and require increased resources relative to the status quo. Thus, while the Plans provide insights into relative effectiveness of various response strategies, significant increases in resource, implementation of controversial policies, and/or the development of improved response methods for reducing transmission rates are needed for long-term success.

Effectively responding to CWD will require a broad portfolio of actions

To arrest growth, the model suggests that it is necessary to reduce transmission 50-80%. Sufficient reductions in transmission are unlikely to be achieved by one approach alone, but may be possible using multiple approaches aimed at reducing

- Contact leading to transmission (baiting & feeding, density reduction, land management)
- The residence time of infectious deer in the system (hunting or targeted removals)
- Environmental prion deposition or exposure (carcass management)
- Susceptibility (vaccines, genetics)
- Dispersion of infected deer

Effectively responding to CWD in the leading edge and new foci requires prompt action

Delaying action makes control more challenging because growth is difficult to stop after environmental prion accumulation augments disease transmission via direct contact rates of deer. Surveillance efforts thus facilitates early detection and increases the ability to effectively act.

When resources are limited, the most effective response strategy will allocate more resources to the leading edge and new foci than to the endemic area

The Committee largely felt that the difficulties of reducing prevalence in the endemic area should lead the DNR to allocate more resources to the leading edge and new foci, rather than the endemic area. CWD response is more likely to be effective in areas of the state where prevalence rates are still low and environmental prions have not accumulated.

Committee input concerning next steps

During the final meeting, the Committee members discussed potential next steps for the DNR to consider for action and for continued collaboration as a part of the systems approach project. Some Committee members who were unavailable for the final meeting contributed comments by email. The Committee members did not attempt to come to a consensus on next steps. Below is a list of potential next steps suggested by at least one member:

- Refinement of the model, i.e. revisiting parameter values, functional relationships, validation of the results, and updating the model with research results, as they become available.
- Refinement of the non-modeled values in the consequences table
- Improve predictions on how impacts of alternative Plans affect costs to the waste and wastewater management industries
- Incorporating farm-raised cervid facilities explicitly into the model to better understand how they affect CWD disease dynamics and to explore how actions aimed at influencing the industry affect CWD prevalence and spread
- Develop and run additional model scenarios that are context-specific for different areas of the state
- Differentiate between baiting and feeding in the model and consider policies that affect each. Also consider how bear baiting may serve as deer congregation sites, in addition to baiting for deer.
- Consider additional actions aimed at spreading deer across the landscape to reduce contact rates
- Develop an adaptive management framework for CWD that includes pilot studies to test various CWD response actions
- Continue research efforts and develop new projects relevant to better inform CWD response, i.e. disease resistance research, pilot projects to test methods

Appendix 1. Description of the DNR's scope of legal authority

The actions discussed during the Committee meetings focused around CWD response and deer hunting regulations. The department has broad authority to promulgate rules regarding deer hunting regulations and CWD management, subject to certain limitations that are expressed in statute. Many components of the deer season structure are established in rule and set by the Natural Resources Board in accordance with rules. Relevant statutes that provide limitations to scope are found in chapter 29 and 169 of Wisconsin State Statutes. To help clarify the action discussions, the below list identifies key statutes that limit CWD management actions for the DNR –

- DNR does not have authority for a statewide Ban on Baiting and Feeding (Limited by Statute 29.336 (3) (4))
 - DNR does have authority to ban baiting and feeding based on CWD +s in a county or adjacent county (Allowed by Statute 29.336 (2)).
- DNR does not have authority to regulate Captive Cervid Farms (Limited by Statute 169.01)
 - DNR does have the authority to issue license certifications for white-tailed deer farm fencing (Allowed by Statute 90.21)
- DNR does not have authority for holding a firearm deer season prior the Saturday before Thanksgiving (Limited by Statute 29.016(b))
 - This means the traditional firearm season cannot start earlier than the Saturday before Thanksgiving.
 - However, firearm seasons can be held earlier if meet certain requirements (Allowed by Statute 29.016 subs. (2) and (3))
 - Persons who are under 16 years of age.
 - Persons who hold a Class A, Class B, or Class C permit
 - Persons who are learning to hunt.
 - A season is necessary to control spread of Chronic Wasting Disease, if antlerless only and closes on or before October 15th.
- DNR does not have authority to require an antlerless harvest prior to receiving a buck harvest authorization (Limited by Statute 29.016 (a))
 - This prohibits the commonly referenced Earn-A-Buck system.

During the review process the Committee discussed items both within and outside the scope. Even though actions outside scope cannot be implemented in the response plan, the Committee discussed them to bring awareness to actions that could help meet their stated objectives. The consequence table and model portions of the review allowed the Committee to see potential impacts of actions, both within and outside the scope. The Committee noted that even actions within scope have other implementation challenges such as social and political factors.

Appendix 2. Committee preferences

Number of Committee members indicating importance of each objective from Not Important to Very Important and mean Committee response a 5-point scale.

	Not important	Slightly important	Important	Fairly important	Very important	Mean	n
Minimize impacts of CWD on wild deer and elk	0	2	2	1	13	4.39	18
Minimize CWD prevalence in deer within CWD+ DMUs	0	2	2	3	11	4.23	18
Minimize spatial distribution of CWD in wild deer	0	2	0	2	13	4.53	17
Minimize risk of spread to wild elk	0	2	1	4	11	4.17	18
Minimize prions in the environment	0	2	1	4	11	4.33	18
Maximize public and Tribal participation in CWD response efforts	0	1	4	5	8	4.11	18
Participation of hunters	0	1	0	3	14	4.67	18
Participation of the non-hunting public	0	4	3	6	5	3.67	18
Participation of tribes	0	2	5	4	7	3.89	18
Maximize public support for the DNR's response to CWD	0	2	6	2	7	3.82	17
Minimize negative impacts of CWD on industry	2	5	3	1	7	3.33	18
Minimize negative impacts to the solid waste and wastewater management industries	1	5	3	3	6	3.44	18
Minimize negative impacts to meat processors	1	4	5	2	6	3.44	18
Minimize risk of spread from wild deer to farm-raised cervid facilities	0	7	1	1	9	3.67	18
Minimize risk of spread from carcasses to farm-raised cervid facilities	1	3	1	3	10	4.00	18
Minimize potential risk to human health	1	2	1	2	12	4.22	18
Effectively allocate DNR CWD response resources	1	1	7	1	8	3.78	18
Effective allocation of DNR staff time/workload	1	2	7	2	6	3.56	18
Effective allocation of the CWD operations budget	1	1	7	2	6	3.65	17
Ensure effective communication/collaboration with Tribes and partner agencies	0	3	0	2	13	4.39	18
Use the best available science to inform decision making	0	0	1	1	16	4.83	18

Appendix 3: List of proposed actions

The excel document “CWDRPCommitteeActionList” contains a comprehensive list of proposed actions from the Committee as well as scope designation, current status, and chance of implementation success. This list was compiled to the best of the ability of the response review team but there could be areas of misunderstanding of a written action or application of statute language. Thus, the list serves to provide background for the Committee and the review process but should be interpreted with some caution.

DRAFT






Appendix 5: Model-derived values predicted in 2040 for each alternative Plan.

Scenario	Min prevalence ¹	Min spatial distribution ²	Max testing	Min consumption	Max disposal
Do nothing	0.52	0.53	0.00	103	4902
Status quo	0.45	0.44	0.09	117	7230
Endemic area response, hunter-driven	0.41	0.44	0.12	91	8370
Endemic area response, dept-driven	0.39	0.44	0.15	110	8793
Leading edge response, hunter-driven	0.41	0.40	0.11	98	8183
Leading edge response, dept-driven	0.34	0.34	0.13	106	8630
New foci response, hunter-driven	0.45	0.40	0.11	100	7885
New foci response, dept-driven	0.45	0.29	0.13	99	8184
Plan 1	0.37	0.27	0.19	92	8398
Plan 2	0.43	0.30	0.20	98	8089
Plan 3	0.42	0.39	0.13	106	7617
Plan 4	0.31	0.26	0.19	89	8552
Plan 5	0.41	0.35	0.13	95	7884
Plan 6	0.40	0.35	0.13	93	7896
Plan 7	0.43	0.26	0.20	90	7315
Plan 8	0.38	0.31	0.18	100	8401






¹Average prevalence rate across the endemic area and leading edge.

²Average prevalence rate across the leading edge and new foci as a proxy for spatial distribution




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
<i>I. Prevent New Introductions of CWD</i>			
A	<i>Through outreach and enforcement of carcass transportation restrictions, the DNR will seek to prevent the movement of whole wild cervid carcasses and potentially infectious tissues from counties with CWD in wild cervids into the rest of the state.</i>		
2017 DEADLINE			
	Include a message that appears in GoWild when hunters register a deer. The message would talk about current carcass movement restrictions. (CWD Sponsor Team)	All counties identified will receive a message on CWD sampling and carcass movement. Columbia & Dane will have a TB specific message.	
	Develop and disseminate a brochure that outlines ways hunters can reduce the spread of CWD, including carcass movement restrictions. (CWD Sponsor Team)	Due to the COVID-19 pandemic, staff had reduced opportunity to distribute brochures in 2020 & 2021.	
	Explore the cost and effectiveness of billboards and paid media (radio, web, print ad buys, etc.) for increased outreach.	Compared to digital, print, & radio, billboards are not a cost-effective messaging tool at this time. Ran saturated digital ad campaign across NOD, NED, & statewide.	
	Use statewide DNR communication formats to deliver messaging on carcass transportation restrictions.	News releases, email marketing, social media, and paid media will be used in CWD communication plan.	
	Add CWD info and carcass movement regs to interactive hunting season DMU map.	CWD and carcass movement regs included on the interactive hunting season DMU map.	
2018 DEADLINE			





CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Include messaging on carcass movement restrictions to the hunting license permit and carcass tag (which per new legislation is not required to be attached).	GoWild system currently not set up to provide a message. This would be a larger change for the system. Not enough space available for a good message.	
	The DNR will develop a rule proposal to clarify and establish restrictions with carcass movement consistent with the Recommendations for Reducing the Spread of CWD document.	No active rule changes proposed at this time.	
<i>B</i>	<i>The DNR will seek to educate hunters on the risks of carcass movement between Wisconsin and other states.</i>		
2017 DEADLINE			
	Develop implementation step on making hunters who live in parts of WI that are currently unaffected by CWD aware of the risk of transporting CWD infected carcasses from western states	Incorporated into communications methods.	
	Create links on our DNR CWD webpage to maps of each state that has CWD in its wild deer/elk populations for WI hunters that hunt in other states	DNR webpage links to the map on the CWD Alliance site. From this page individual state maps/info can be accessed.	
	In consultation with adjacent state agencies, mail a letter or brochure to all non-resident deer hunters who hunt in WI with messaging addressing CWD info and deer carcass movement regulations and recommendations into and within WI.	Multiple emails sent to resident and nonresident license holders throughout the season which included key CWD messaging.	
BEYOND DEADLINE			




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Utilize compact licensing systems to provide information to hunters about the risks of carcass movement. (CWD Sponsor Team)	Investigated and not currently feasible. Added adjacent Midwest states (MN, IA, IL, MI) deer carcass import & movement restrictions on DNR webpage.	
<i>C</i>	<i>The DNR and DATCP will continue a cooperative working relationship. This may include efforts to work jointly for federal and/or state funding as available. [Beyond]</i>		
BEYOND DEADLINE			
	As opportunities arise more funding should be made available for DATCP to be able to regulate the captive cervid farm industry and DNR to respond to new detections of the disease in the wild deer herd.	DNR received a USDA grant to fund some actions in response to new wild detections. Carcass disposal and public outreach. DATCP continued to work with University of Minnesota researcher on a 2020-21 USDA funded CWD grant to examine factors associated with CWD in farm-raised deer. Study includes input and data provided by WDNR. A 2021-22 USDA grant to examine biosecurity is a continuum of the project.	
	The DNR will support Wildlife Health representation on USAHA committees to offer WI wildlife perspective in recommendations that are made to federal regulatory animal health agencies.	DNR Wildlife veterinarian is on several USAHA committees and attends their annual conference.	
<i>D</i>	<i>Enhanced fencing (e.g. double or electric fencing) for facilities with CWD positive cervids is needed to minimize the risk of disease transmission. [Beyond]</i>		
BEYOND DEADLINE			




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	DNR and DATCP will work cooperatively in reviewing rules and applying similar language for any revisions. (CWD Sponsor Team)	No active rule changes proposed at this time.	
E	<i>The DNR & CDACs will continue to recommend annual statewide deer quotas and seasons designed to keep deer populations at the established population objectives for deer management units. When deer population objectives are reevaluated as part of the statewide unit review process (currently every three years), disease control must be a primary consideration. [2018]</i>		
2018 DEADLINE			
	Expand and enhance statewide and county-specific Deer Health Data information available to CDACs.	Deer health info, including CWD, is updated in the deer metric app annually.	
	DNR will supply additional herd health information to CDACs when developing population objectives in CWD affected areas.	This is an annual occurrence.	
F	<i>DATCP will continue to work with the farmed cervid industry to maintain compliance with monitoring, testing, record keeping and cervid movement regulations.</i>		
2017 DEADLINE			
	Ongoing DATCP regulation and management of farm-raised deer industry.	Federal reports developed annually to document CWD Herd Certification program regulation. Compliance of farm-raised deer regulations are continually monitored.	
G	<i>The DNR will develop regulations to restrict the use of cervid urine-based products to those produced by CWD free facilities that use best management practices.</i>		
2017 DEADLINE			




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Ongoing DATCP regulation and management of farm-raised deer industry.		
2018 DEADLINE			
	Prominently display messaging on reducing risk of spreading disease in the deer regulations and on the DNR website.	DNR voluntary approach with deer hunters. Information included on recommendations to reduce disease spread on CWD webpage and deer hunting regulations.	
BEYOND DEADLINE			
	Prominently display messaging on reducing risk of spreading disease in the deer regulations and on the DNR website.	This information is included on the CWD webpage and in deer hunting regulations. CWD brochure updated and distributed to staff statewide prior to 9-day gun season. The CWD brochure was updated for the 2019 deer season and is still utilized, and we have videos on our web page.	
<i>H</i>	<i>Legislation is needed for a statewide ban on the baiting and feeding of wild cervids to reduce the risk of disease transmission and establishment of CWD and other serious cervid diseases in new areas.[Beyond]</i>		
BEYOND DEADLINE			





CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Action items requiring statutory change will be determined by the legislature.	Action items requiring statutory change will be determined by the legislature.	
I	<i>DATCP, DNR, & partners will encourage development of biosecurity and management strategies for the captive cervid industry to minimize the risk from CWD positive facilities to wild and farmed cervids.</i>		
2017 DEADLINE			
	Timely depopulation of CWD positive facilities when they are condemned.	Statutory authority in place. Condemned facilities require DATCP Secretary order. One CWD infected herd was depopulated in 2020.	
BEYOND DEADLINE			
	Management of enhanced fencing of positive facilities upon DATCP rule implementation.	DATCP herd plan/quarantine includes biosecurity stipulations for all CWD positive herds which includes fencing requirements. Inspection occurs at least biannually to ensure compliance. Fencing is a factor being evaluated by DATCP in the 2020-21 USDA funded CWD grant project. No pending fencing rules at this time.	





CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Encourage captive cervid industry to develop BMPs.	DATCP applied and was awarded 2020-21 USDA grant to study factors which contribute to CWD transmission into a captive facility. A 2021-22 USDA grant to examine biosecurity is a continuum of the project which will provide tools for farmed cervid owners to develop a biosecurity plan for their herd.	
J	<i>Have a proper disposal site for cervid carcasses available in each county, and have these sites posted in the big game rules and regulations.</i>		
BEYOND DEADLINE			
	Pursue multi-partner county pilot project on siting an incinerator as a model for expanded use for target areas with deer carcass disposal challenges.	Since 2017, focus shifted on landfills/dumpsters. In 2021, there were 64 AAD and 43 DNR hosted dumpsters. Composting research is occurring.	
K	<i>The DNR will continue to allow rehabilitation of cervids in CWD affected counties, and release those rehabilitated cervids back only into a CWD affected areas.</i>		
2017 DEADLINE			
	Continue to reviewed annually with the Wildlife Rehabilitation Advisory Council and an annual report on deer rehabilitation to inform this review.	Annual review of deer rehabilitation completed.	
L	<i>The DNR & DATCP will update a Memorandum of Understanding (MOU) that clearly identifies each agency's responsibilities and roles for wild and captive cervids.</i>		




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
<i>2017 DEADLINE</i>			
	A meeting will be held between the two agencies to update the MOU.	Meetings occur to review and update the MOU as needed.	
<i>M</i>	<i>The authority is needed to develop incentives and penalties for cervid farmers to minimize risk of escapes.</i>		
<i>2017 DEADLINE</i>			
	Information on farms with CWD detections will be made available for public awareness of these locations should they observe free-ranging tagged cervids, downed fences, etc.	DATCP map and numbers of CWD positives available on agency website (link on DNR website).	
<i>BEYOND DEADLINE</i>			
	Pursue potential rule changes to decrease the number of farms that have multiple escapes. Currently farms need to report escapes but the escape itself isn't a violation. (CWD Sponsor Team)	As of June 2020, it is a violation of DATCP rule to intentionally release farm-raised deer or take no action to prevent escapes.	
<i>N</i>	<i>When CWD positive facilities are condemned, DATCP may expedite the depopulation of facilities with CWD-positive animals.</i>		
<i>2017 DEADLINE</i>			
	Timely depopulation of CWD positive facilities when they are condemned.	Statutory authority in place. Condemned facilities require DATCP Secretary order. One CWD infected herd was depopulated in 2020.	



CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
O	<i>To reduce the number of animals escaping from cervid farms, authority to regulate fencing for all species of farmed cervids should be consolidated. (Currently DNR only has authority on white-tailed deer) [Beyond]</i>		
BEYOND DEADLINE			
	Action items requiring statutory change will be determined by the legislature.	Action item requires statutory change will be determined by the legislature.	
P	<i>In order to minimize the future risk of disease transmission to wild cervids, the authority to regulate fences of depopulated CWD positive facilities is needed.</i>		
BEYOND DEADLINE			
	Action items requiring statutory change will be determined by the legislature.	Action item requires statutory change will be determined by the legislature.	
Q	<i>Increase penalties for illegal baiting violations.</i>		
BEYOND DEADLINE			
	Action items requiring statutory change will be determined by the legislature.	Action item requires statutory change will be determined by the legislature.	
R	<i>Captive cervid operations should be insured to cover all costs related to the recovery of escaped cervids from that facility.</i>		
BEYOND DEADLINE			
	Action items requiring statutory change will be determined by the legislature.	Action item requires statutory change will be determined by the legislature.	
S	<i>All deer 12 months or older in a deer farm that is on the CWD herd status program that die or are killed should be tested.</i>		
2017 DEADLINE			





CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Continue to require as per DATCP rule.	Ongoing per DATCP rules for CWD herd status program (HSP) enrolled herds.	
<i>II. Monitor for and Respond to New CWD Disease Foci</i>			
A	<i>Surveillance strategies will be implemented to detect new areas of CWD outside of the current counties with CWD in wild cervids. These strategies will include encouraging people to report cervids that exhibit signs consistent with CWD.</i>		
2017 DEADLINE			
	Continue and increase reporting of sick deer.	Reporting of sick deer is currently being done and ongoing with outreach occurring through our Reporting a Sick or Dead Deer page on the Dept. website. Sick deer are tested statewide.	
	Add new areas of surveillance or improve detection levels in current surveillance areas in response to budget increases from sale of antlerless tags.	In response to budget adjustments from the sale of antlerless deer tags in CWD affected counties, surveillance efforts were increased. Additional counties were added to the surveillance plan to expand and improve detection.	
2018 DEADLINE			




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Identify sampling goals and areas to initiate statewide rotational sampling based on modeled differences in CWD prevalence in time, across space, and for different sex and age classes of deer (update of Osnas et al. 2009 analysis)	Sampling goals and a rotational sample model initiated in 2018 with WCD collecting samples from all counties. Assessment continued in 2019 in NOD. In 2020 sampling continued in select counties in NOD where additional samples were needed and occurred in NED. In 2021 sampling continued in NED where additional samples were needed.	
BEYOND DEADLINE			
	Work with CDACs to explore the option of required hunter-harvest sampling in select surveillance areas to help detect new areas of CWD outside of known areas of disease presence and increase sample volume.	Continue to work with CDACs to explore surveillance options in areas with a new detection. Finalized Responding to New Detections document in Dec. 2019 and currently being utilized.	
B	<i>In a collaborative process, the DNR and partners will develop a statewide disease response and management action plan template to respond to wild cervid CWD detections in new areas. The action plan should include timeframes for implementation of surveillance and management actions by DNR and partners.</i>		
2017 DEADLINE			






CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Revise the existing action plan to reflect the availability of current tools and citizen outreach strategies. New detections resulting from wild or captive positives may trigger differing responses. Plan will outline notification responsibilities, surveillance methods, and available response tools.	Utilized CWD-Responding to New Wild Deer Detections in New Areas staff guidance/action plan template.	
	Utilize the current CDAC structure in CWD affected county surveillance areas to develop citizen support for and information exchange about CWD management and surveillance within the county.	Utilized CWD-Responding to New Wild Deer Detections in New Areas staff guidance/action plan template.	
2018 DEADLINE			
	Utilize CDAC members and other citizens whenever a new detection is discovered in the wild deer herd in a county where CWD is newly detected. The citizens group would work with DNR to foster citizen engagement with management and standardize the way DNR handles new detections. (CWD Sponsor Team)	Utilized CWD-Responding to New Wild Deer Detections in New Areas staff guidance/action plan template.	
C	<i>Surveillance will include statewide hunter-harvested wild cervid testing using bona-fide science and a weighted approach that balances efficiency and effectiveness.</i>		
2017 DEADLINE			
	Conduct weighted surveillance for areas outside of core monitoring area on a rotation, focus on fringe of endemic region.	Rotational surveillance for areas outside of the core monitoring area have been expanded based on sampling need and available funding. Counties included are: Dodge, Washington, Ozaukee, Fond du Lac, & Sheboygan.	
2018 DEADLINE			




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Assess past ability to detect CWD with a set confidence level at some assumed prevalence and use this information to develop a plan to expand surveillance efforts (either through weighted detection or traditional detection sampling) to include a more statewide approach.	Sampling goals and a rotational sample model initiated in 2018 with WCD collecting samples from all counties. Assessment continued in 2019 in NOD. In 2020 sampling continued in select counties in NOD where additional samples were needed and occurred in NED. In 2021 sampling continued in NED where additional samples were needed.	
<i>D</i>	<i>Testing may be required for all, or a subset of, wild cervids harvested in surveillance areas to achieve monitoring goals.</i>		
2017 DEADLINE			
	Enact testing requirements to promote targeted testing goals.	Monitoring goals are being met in some areas. Where goals are not being met, staff are working on ways to improve submission including the communication plan, outreach, and additional ways to submit samples/heads.	
	Issue CWD surveillance permits to hunters in select areas for access to additional samples.	A standard template has been created to allow hunters in select areas, following a new detection, additional harvest options with the requirement that the deer be tested.	




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Utilize persuasive messaging on electronic registration to let hunters know when their deer is requested for testing to achieve monitoring goals.	Hunters who register their deer in areas with sampling goals, are notified of the Department's desire to sample their deer through an automated message. Call center on-hold messaging as well.	
2018 DEADLINE			
	Identify desired detection prevalence in areas where CWD has not been previously detected.	Desired detection prevalence in areas where CWD has not been previously detected was reviewed and a rotational statewide surveillance effort was initiated. This process will continue.	
	Explore options for a pilot program of required testing in selected counties with CDAC support.	Explored options in response to recommendations received, but they did not align with the NRB CWD-subcommittee recommendations, so a pilot was not implemented.	
	Explore targeted surveillance or additional focused harvesting outside regular hunting seasons.	Implemented with use of surveillance permits.	
	The DNR may explore providing hunter incentives to harvest additional deer in areas of high population and/or disease prevalence.		





CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Assess sampling effort achievement (e.g. ability for detection at what level of prevalence with what confidence interval).	Assessments for sampling efforts (providing information on detection levels in areas where CWD has not been found) are going to be considered for the 2018 sampling season planning. Were considered for 2018 and will be incorporated annually.	
<i>E</i>	<i>After the detection of a wild or escaped captive CWD positive cervids in new areas, there will be intensive sampling and testing of cervids in at least a ten-mile radius surrounding the new positive in order to assess the spatial extent and intensity of the outbreak timeline and intensity will be based on surveillance goals, established in consultation with local partners.</i>		
2017 DEADLINE			
	Identify samples necessary to detect low prevalence in a 2 and 10 mi radius surrounding a new detection of a positive and conduct surveillance, as well as identify the time frame during which collected samples are still statistically relevant in detecting a given prevalence rate.	Following a new detection, sample calculations are used to assess the samples needed to detect low prevalence (~1%) in a 2 & 10 mi radius.	
BEYOND DEADLINE			
	Work with local partners on how to reach sampling goals including consideration of a list of potential surveillance tools to reach sampling goals and include in Action Template.	CWD Responding to New Wild Deer Detections in New Locations is the staff guidance/action plan template. It went through 21-day public review and is final.	
<i>F</i>	<i>If DNR and partners decide that an aggressive course of action is warranted for disease management in new areas of detection, then localized herd reduction tools may be considered in an effort to seek to manage the disease.</i>		




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
BEYOND DEADLINE			
	Utilize action plan template to facilitate this, as well as, 21-day review to identify tools provided to CDACs for local use to manage the disease (dept, CDAC, public). (CWD Sponsor Team)	Finalized Responding to New Detections document in Dec. 2019 and currently being utilized.	
G	<i>If any county has a new CWD detection, all captive cervid farms in that county should be tested. [2017]</i>		
2017 DEADLINE			
	Captive cervid farms that had exchanged deer and/or genetics samples with that farm should continue to be quarantined and tested.	DATCP is enforcing quarantine and testing requirements.	
III. Control Distribution and Intensity of CWD			
A	<i>The DNR and CDACs will continue to use both traditional and optional season structures, along with antlerless permit issuance to achieve population objectives for wild deer and disease management goals.</i>		
2017 DEADLINE			
	DNR will provide information on the potential results of CDAC management recommendations on CWD management.	This is part of the annual conversation at CDAC meetings, with continual suggestions on what new CWD information can be shared at these meetings.	
2018 DEADLINE			




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	All tools and health metrics available to CDACs will be considered in the development of recommendations and objectives that address herd health in population management.	CDACs are currently informed of available options and the Department Deer Committee considers Herd Health issues when developing and reviewing management recommendations.	
B	<i>The DNR and partners will review the management plan after receiving new significant scientific information that would impact the plan, in addition to periodic reviews after the 2020 and 2025 deer seasons. Based on these reviews, they will make recommendations on any needed modifications.</i>		
BEYOND DEADLINE			
	Conduct periodic reviews of the CWD Response Plan.	The second 5-year review of the CWD Response Plan is underway.	
C	<i>The DNR will monitor peer-reviewed research findings and continue to apply management options that may effectively control CWD and can be implemented into the traditional or optional deer season frameworks.</i>		
2017 DEADLINE			
	Monitor Peer reviewed research and provide an annual update to the annotated bibliography.	Ongoing review.	
BEYOND DEADLINE			
	Provide updates when new methods of CWD management are elucidated.	Ongoing review.	






CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
	The DNR will implement recommendations on control strategies as supported by peer-reviewed research that fit with traditional or optional deer season frameworks.	As new information about CWD is discovered DNR will seek to adopt new management options.	
<i>D</i>	<i>The DNR and DATCP may work cooperatively with adjacent states on CWD management by updating and/or establishing a Memorandum of Understanding with corresponding agencies in these states.</i>		
2017 DEADLINE			
	Review WDNR Memorandum of Understanding with Illinois and establish new MOUs with interested states. DATCP will continue to engage in this capacity as facilitated by USDA (CWD Sponsor Team)	No progress to report. Not a topic that gains momentum at MAFWA.	
2018 DEADLINE			
	DNR will work collaboratively with adjacent states on CWD management and surveillance.	Midwest CWD Collaborative workshop in July 2019. Monthly midwestern state agencies CWD conference calls ongoing since 2018. Sharing of info and COVID-19 protocols on surveillance. DNR staff attended a CWD research meeting in Michigan.	




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
E	<i>The DNR will conduct sampling and CWD testing that is sufficient to monitor trends in prevalence and disease pattern within historical monitoring areas. The DNR will monitor spatial and prevalence patterns at selected higher prevalence areas and counties with CWD detection in wild cervids.</i>		
2017 DEADLINE			
	Increase sampling in outstate areas with CWD detections to meet surveillance goals. Sampling in outstate areas will incorporate numeric goals sufficient to detect disease prevalence levels as advised by the Office of Applied Science.	The DNR sets annual surveillance goals for sampling in historic monitoring areas and in outstate areas. In depth evaluation underway from 2019 surveillance.	
2018 DEADLINE			
	Assess methods to determine sampling power and identify what is a sufficient sample size to detect specific prevalence levels.	Assessments for sampling efforts (providing information on detection levels in areas where CWD has not been found) are ongoing and will inform 2018 sampling planning efforts. Were considered for 2018 and will be incorporated annually.	
F	<i>The DNR will explore the use of landowner incentives to meet CWD response plan goals.</i>		
2018 DEADLINE			
	Consult with sociologists, landowners, and local communities to determine the effectiveness of this and identify techniques.	Utilized CWD Responding to New Wild Deer Detections in New Locations staff guidance/action plan template.	
G	<i>Trends in the size of the deer population in counties with CWD positive wild cervids will be monitored using field and aerial survey techniques.</i>		




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
<i>α</i>	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
<i>ONGOING</i>			
	Evaluate use of aerial surveys for monitoring trends in deer populations in CWD affected areas.	We are not currently doing this. With consultation with OAS, we are utilizing other metrics for deer population estimates that are less costly and more efficient.	
	Identify the best practice for monitoring deer population numbers.	This is current practice.	
	Estimate deer population sizes based on SAK formula.	This is current practice.	
	Integrate new data sources such as snapshot WI and the road side fawn doe ratio surveys into deer herd monitoring.	This is current practice.	
<i>H</i>	<i>The DNR and CDACs may consider offering localized hunting opportunities outside the traditional season framework in order to achieve CWD response plan goals.</i>		
<i>2018 DEADLINE</i>			
	Working with CDACs explore the use of CWD surveillance permits and when "break outs" are found localize harvest outside of normal hunting season and herd reduction in consultation with CDAC's per DTR recommendations.	Utilized CWD Responding to New Wild Deer Detections in New Locations staff guidance/action plan template.	
<i>I</i>	<i>In consultation with local partners, the DNR may consider targeted culling of wild cervids on public lands and on private lands where permission can be obtained, in order to achieve CWD response plan goals. [2018]</i>		
<i>2018 DEADLINE</i>			




CWD Response Plan Implementation and Progress Summary: 2021

RP Implementation Plan 2017-2021			
α	<i>CWD RP Review Committee Action Item Recommendation</i>		
Deadline			
	WDNR Implementation Step(s)	Progress	Status
		The department is not pursuing sharpshooting.	
J	<i>Every year the DNR and DATCP will report and make available to the public all related costs associated with CWD management including surveillance, monitoring, research, implementation, & enforcement costs as well as sources of funds used and partner inputs.</i>		
2017 DEADLINE			
		Not planning to do this.	
K	<i>The DNR will define the CWD endemic zone in Southern Wisconsin to differentiate where CWD is well established in the wild cervid population versus areas affected by isolated detections in wild or farmed cervids.</i>		
2018 DEADLINE			
	Define and utilize parameters to clearly delineate the endemic area & utilize data collected to determine management unit specific prevalence rates.	A definition of endemic area has been proposed.	
IV. Increase Public Recognition and Understanding of CWD Risks and Public Participation in Disease Control Efforts			
A	<i>Working with a professional communications firm and partners, the DNR will develop communication strategies that improve public understanding of CWD and engage the public, hunting and non-hunting alike, in managing the disease.</i>		
2018 DEADLINE			




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	Need to have a long-term communication plan with funding. Would need to meet with administration and work with OC to talk about options for developing a communications plan.	DNR has a current outreach and marketing plan that we update annually. Marketing funds provided in 2020 & 2021 with grants from USDA.	
B	<i>The DNR & DATCP will provide up to date information to the public about CWD status in wild and captive cervids in Wisconsin and ongoing research into the disease.</i>		
2017 DEADLINE			
	Continue to provide annual updates on CWD status in wild deer on our web site & enhance efforts on public awareness of our website contents.	DNR CWD webpages updated.	
C	<i>The DNR will leverage the messaging capabilities of electronic registration to inform hunters on managing risks associated with CWD and encourage testing of harvested cervids.</i>		
2017 DEADLINE			
	Include a message on carcass movement restrictions that appears in GoWild when hunters register a deer. (CWD Sponsor Team)	Completed in 2017. Reviewed and continued annually.	
D	<i>Working with a professional communications firm and partners, the DNR will develop communication based on the best and the most recent science available at the time of production, and continue to update communications as new or better information becomes available.</i>		
2018 DEADLINE			




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	WDNR Implementation Step(s)	Progress	Status
	In place of a professional firm, DNR will work with the DNR Office of Communications to develop a long-term communication plan with consistent funding.	DNR has a current outreach and marketing plan that we update annually. Marketing funds provided in 2020 & 2021 with grants from USDA.	
<i>E</i>	<i>The DNR, DATCP, & DHS will monitor public opinions about CWD management in order to develop messages and delivery mechanisms that enhance public understanding of the risks associated with CWD, and foster public engagement in managing CWD.</i>		
2018 DEADLINE			
	Monitor public opinions about CWD management and develop messages and delivery mechanisms that enhance public understanding of the risks associated with CWD, and to foster public engagement in managing CWD.	Survey and analysisi have been completed for "Hunter perceptions of Chronic Wasting Disease (CWD) and behaviors associated with deer carcass transport and disposal." Drafting of the final report is in progress to be available in spring 2021.	
<i>F</i>	<i>To assess the impacts of outreach and education efforts, the DNR, DATCP, DHS, & other agencies, as appropriate, will support and/or conduct social scientific and economic studies to monitor behaviors and attitudes of the public in general on a regular basis, especially in response to a change in CWD management strategy.</i>		
2018 DEADLINE			
	Support and/or conduct social scientific and economic studies to monitor behaviors and attitudes of the public in general on a regular basis, especially in response to a change in CWD management strategy.	DNR made public the results a study of deer hunter attitudes and behaviors related to CWD. More information can be found on the DNR website. Visit dnr.wi.gov and search "wildlife research."	




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	WDNR Implementation Step(s)	Progress	Status
<i>V. Address the Needs of Our Customers</i>			
<i>A</i>	<i>The DNR, DHS, & DATCP will continue to provide meat processors and taxidermists with information on ways to reduce risks when disposing of cervid carcass waste.</i>		
2018 DEADLINE			
	This is currently being done and could be further expanded in a communication plan. (CWD Sponsor Team)	FAQ developed and available on DNR website.	
<i>B</i>	<i>The DNR and WVDL (Wisconsin Veterinary Diagnostic Laboratory) will support efforts to seek to develop quicker and less expensive sampling and testing procedures.</i>		
2017 DEADLINE			
	Continue annual meetings between DNR and WVDL to review previous year's progress. Identify any process improvements that can be implemented for the current season.	A meeting occurred between DNR and WVDL staff in August, 2017 to review testing protocols and submission guidelines for the 2017 season. This meeting occurs annually.	
	Collaborate on research involving testing procedures when possible.	We are currently working with UW-Madison and USGS-NWHC researchers on evaluation of different methods of detecting prions in a variety of tissues and substrates. Other research requests are reviewed as they are received.	
2018 DEADLINE			




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	WDNR Implementation Step(s)	Progress	Status
	DNR Lean Six process to review all steps in sample submission from hunter to results return.	The Lean Six process was completed and resulting recommendations on field operations efficiencies are being incorporated for the 2017 deer season. Testing turnaround time survey to hunters implemented for the 2017 deer season.	
C	<i>The DNR will ensure that hunters have continued access to CWD testing in areas with the highest prevalence of CWD.</i>		
2017 DEADLINE			
	Maintain sampling stations in the high prevalence area.	Sampling stations have been maintained in high prevalence areas. In addition, more self-serve kiosks have been added.	
D	<i>The DNR, DHS, & DATCP will continue to provide hunters with information on ways to reduce risks when field dressing, butchering, consuming, & disposing of cervids.</i>		
2018 DEADLINE			
	Expand upon these efforts in a communication plan and include deer regulations, web content, and license sales locations. (CWD Sponsor Team)	Covered in a Wild Wisconsin CWD video. This info is in the regs, on webpages, & a brochure.	
E	<i>The DNR & DHS will monitor and support research to better assess the risks that CWD may or may not pose to humans.</i>		
2017 DEADLINE			





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Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Continue to monitor new research and to support CWD research.	Ongoing.	
F	<i>The DNR, through the Wildlife Damage Abatement and Claims Program, and in conjunction with local and community organizations, will cooperate with food pantries and meat processors in CWD affected counties to provide hunters an avenue for donation of harvested deer in excess of their personal needs. [2017]</i>		
2017 DEADLINE			
	Advertise the pantry program through DNR communication channels.	Email marketing, paid advertising, signage, outreach from staff to processors, increase hunter awareness. Second year for Deer Donation Partnership Program.	
G	<i>The DNR, DHS, & DATCP will continue to work with local governments, landfill operators, & municipal wastewater treatment facilities to increase their understanding of the safety and cost-effectiveness of landfilling cervids in order to increase the availability of landfills for carcass disposal.</i>		
2018 DEADLINE			
	Meet with Landfills and wastewater treatment facilities on identifying solutions to deer waste challenges.	Ongoing discussions. List of disposal options included in the DNR online database, map, & HuntWild mobile app.	
H	<i>The DNR will explore alternative strategies for reducing or recovering costs and/or privatizing hunter service testing such as developing opportunities that would allow hunters to collect their own samples or charging testing fees to partially cover costs of sample collection and testing.</i>		


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Deadline			
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2017 DEADLINE			
	Pilot a self service testing kit sampling strategy.	Second year of self service testing kits pilot in 2017, with continued discussions on program feasibility.	
I	<i>The DNR and DATCP will continue to support and cooperate with research to better assess the risks that CWD may pose over time to livestock, including farmed cervids.</i>		
2017 DEADLINE			
	Review tissue requests through the Research Collaboration and Review Committee for projects that provide enhanced information of CWD, especially in relation to free-ranging WTD (can include new testing strategies).	We welcome such requests and will review them accordingly. Continue to review requests, if any.	
J	<i>The DNR will continue to offer indemnification to landfills that accept cervid carcass waste.</i>		
2018 DEADLINE			
	Expand outreach to landfills regarding CWD positive carcass waste and identify solutions.	DNR website continues to provide information to landfills on handling of deer carcass waste. DNR Waste & Materials Management staff communicated with Waste Management-Lynn Morgan regarding testing, corporate policy, & the draft suggested legislation during fall 2019.	






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Deadline			
	WDNR Implementation Step(s)	Progress	Status
K	<i>The State should restore funding for carcass removal and CWD testing of car-killed deer.</i>		
BEYOND DEADLINE			
	Carcass removal authority has transitioned to the Department of Transportation and we will not pursue action at this time.	The 2017-19 state budget has transferred car-killed deer collection to DOT.	
ONGOING			
	Sample car-killed deer when logistically convenient and provides required samples to meet surveillance goals.	The sampling of car-killed deer may be used as part of detection surveillance in areas where wild or captive new foci have been identified and where logistically possible.	
L	<i>The DNR will continue to cooperate with DHS to maintain the registry of persons known to have consumed venison from CWD-positive deer.</i>		
2017 DEADLINE			
	Continue to cooperate with DHS to maintain a consensual registry of persons known to have consumed venison from CWD positive deer.	Ongoing. Survey now being handled by DHS instead of DNR.	
M	<i>The DNR will actively market the pantry program to encourage an increase in hunter harvest, if necessary, in CWD affected areas.</i>		
2017 DEADLINE			
	Actively market the pantry program to encourage an increase in hunter harvest, if necessary, in CWD affected areas.	Ongoing. Included in deer communication plan.	





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Deadline			
	WDNR Implementation Step(s)	Progress	Status
N	<i>The DNR will partner with others to seek funding from nongovernmental organizations to help meat processors offset the costs of processing and storing donated venison.</i>		
2017 DEADLINE			
	<p>The DNR will partner with other public agencies and private organizations to seek funding to help meat processors offset the costs of processing and storing donated venison.</p>	<p>The department increased the Deer Donation Program’s reimbursement rate by \$15 per deer to help offset increased costs. Processors are now reimbursed \$80/deer for deer not required to be tested and \$90/deer for deer that are required to be tested for CWD. In 2021, Deer Donation Partners Program volunteers ran deer donation drop off sites in Marquette, Green Lake & Brown County. In the future the Department will be looking into potentially increasing participation of CWD Cooperators amongst participating processors or kiosk locations at these processors in counties requiring CWD-testing of donated deer. Not only will this help offset some of the costs incurred by processors but better facilitate CWD testing of donated deer at these locations.</p>	
VI. Enhance the Scientific Information about CWD			
A	<i>The DNR will continue to cooperate with outside researchers by sharing tissues & data and may initiate or collaborate on research when appropriate.</i>		






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Deadline			
	WDNR Implementation Step(s)	Progress	Status
<i>2017 DEADLINE</i>			
	Support of white-tailed deer survival study in the high prevalence portion of the state.	This is currently being done.	
	The DNR will collaborate on CWD research and continue to offer tissue samples and data through the Research Collaboration and Review Committee process.	We have made the research community aware of the availability of our tissue archive. We are collaborating with the University of Wisconsin, and the National Wildlife Health Center.	
<i>BEYOND DEADLINE</i>			
	The DNR will provide data to USGS for their disease spread and growth models to further understand the dynamics of the disease in WI.	DNR is currently funding research at USGS/UW-Madison for this research.	
	The DNR may fund CWD research of specific objectives or pertaining to unfilled knowledge gaps about the disease as funding is available.	DNR is currently funding research at USGS/UW-Madison, and UWSP for research on advancing prion-detection methods, prion persistence in soil, & composting.	
	Provide funding for post-doc positions with cooperating agencies.	DNR-funded research into prion detection methods is currently funding UW-Madison post-doc.	
<i>ONGOING</i>			




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Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Review tissue requests through the Research Collaboration and Review Committee for projects that provide enhanced information of CWD, especially in relation to free-ranging WTD (can include new testing strategies).	We welcome such requests and will review them accordingly.	
<i>B</i>	<i>An evaluation of the economic impact of the Wisconsin deer herd on the state's economy is needed to better understand the overall impacts of CWD.</i>		
<i>BEYOND DEADLINE</i>			
	Refine research questions that could be included in an economic assessment of WTD.	Dialogue will occur between DNR, researchers, & economist. Incorporate into research priority review process.	
	Consult with the department economist.	Dialogue will occur between DNR, researchers, & economist. Incorporate into research priority review process.	
<i>C</i>	<i>Funding is needed to support applied management-focused research on CWD, and to promote research into prion biology that may, in time lead to effective procedures for prevention and/or treatment of CWD in cervids and decontamination of environments.</i>		
<i>BEYOND DEADLINE</i>			
	Fund more research of specific objectives or unfilled knowledge gaps.	DNR is currently funding six CWD research projects.	

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Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Provide funding for post-doc positions with cooperating agencies.	DNR-funded UW-Madison post-doc research into prion detection methods, prion contamination in soils, deer movement, and CWD & deer populations.	
	Determine knowledge gaps that need to be filled.	Dialogue will occur between researchers and DNR. Incorporate into research priority review process. Over 3,500 WI deer hunters were surveyed to assess hunter attitude and behavior related to CWD.	
	Seek proposals for use of the Almond Farm or make it available as a research site for studies on environmental contamination and decontamination strategies.	Two research projects have been initiated at the Almond farm, on composting and prion detection in soil.	
<i>D</i>	<i>The DNR will continue to develop methods for assessing the progression of CWD distribution and prevalence in wild cervids, and its ecological impact for Wisconsin.</i>		
2017 DEADLINE			
	Conduct a major research project to evaluate the impacts of CWD on deer populations in the southern part of the state in cooperation with partner agencies.	DNR is conducting a major research project on CWD effects of deer populations and cooperating with USGS-NWHC on methods to monitor disease spread.	
	Cooperate with external agencies by data sharing to increase scientific statistical rigor in disease distribution assessment.	We currently provide data to all requests. USGS-NWHC provides us maps and distribution changes annually.	

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Deadline			
	WDNR Implementation Step(s)	Progress	Status
	Annual in house distribution and prevalence assessment.	The annual distribution and prevalence assessment will be prepared following the 2018 deer season. Annual assessments are done following each CWD sampling season.	
2018 DEADLINE			
	Assess past ability to detect CWD with a set confidence level at some assumed prevalence and use this information to develop a plan to expand surveillance efforts (either through weighted detection or traditional detection sampling) to include a more statewide approach.	Assessments for sampling efforts (providing information on detection levels in areas where CWD has not been found) were provided for planning for 2018 sampling efforts, and will continue to be utilized.	
	Expand surveillance efforts (either through weighted detection or traditional detection sampling) to include a more statewide approach based on risk and detection goals.	Assessments for sampling efforts (providing information on detection levels in areas where CWD has not been found) were considered for 2018 and will be incorporated annually.	

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Deadline			
	WDNR Implementation Step(s)	Progress	Status



Complete - Annual step



In progress



Complete - Finished step



Will not be done