
Objectives, Actions, and Anticipated Results

1. Prevent New Introductions of CWD

Based on Wisconsin's and other states' experiences in managing CWD and other diseases such as bovine tuberculosis, preventing new disease establishment in wild deer herds is much less expensive and less damaging to the state than fighting diseases after they are established. As a result, the DNR will pursue the following policies to reduce the risk of CWD establishment in areas of Wisconsin where the disease has not yet been detected.

(a) Carcass movement. Research indicates that tissues from deer, elk, and moose carcasses that are improperly disposed may be a potential source of CWD spread. Along with many other states and Canadian provinces, Wisconsin has adopted regulations addressing the transportation of hunter-harvested carcasses and potentially infectious tissue in an effort to minimize that risk.

→ **Action:** 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 within the CWD Management Zone into the rest of the state as well as into Wisconsin from other states and provinces that have CWD in wild cervids.



Photo by Jerry Davis

Normal movement and dispersal of deer is one of several ways CWD can spread.

(b) Wild deer herds. CWD can be spread to healthy animals through both animal-to-animal contact and environmental contamination. Deer herds with populations that are above ecologically sound goals will have a greater level of animal-to-animal contact and potentially greater environmental contamination from CWD prions than herds at goal.

→ **Action:** The DNR will continue to recommend annual statewide deer quotas and seasons designed to keep deer populations at the established population goals for Wisconsin's deer management units. When deer population goals are reevaluated as part of the statewide unit review process (currently every three years), disease control will be a primary consideration in those units adjacent to the CWD Management Zone.

(c) Baiting & feeding of deer. Baiting and feeding of deer causes unnaturally high concentrations of deer and increases the risk of transmission in areas where CWD is found. Once CWD is introduced, baiting and feeding facilitate the spread of the disease.

→ **Action:** The DNR will continue to encourage the legislature to pursue a statewide ban on the baiting and feeding of deer to reduce the risk of disease transmission and establishment of CWD and other serious cervid diseases in new areas.

(d) Farmed cervid regulation. Wisconsin's wild and farm-raised deer and elk herds are both at risk from CWD. Since January 2003 the DNR and the Department of Agriculture, Trade, and Consumer Protection (DATCP) have shared enforcement and regulatory oversight of the Wisconsin farmed cervid industry. Currently, there are over 600 active cervid farms in Wisconsin. DATCP's responsibilities include registration of all Wisconsin farmed cervid herds; regulation and monitoring of interstate and intrastate movements of farmed cervids; and disease testing programs and protocols designed to detect, monitor, and control diseases in the farmed-cervid industry. DNR's regulatory responsibilities include the administration of a white-tailed deer farm fence program and the investigation of and response to reports of escaped farm raised deer. Staff at different levels of both agencies meet regularly in an effort to facilitate inter-agency communication, share data and information,



Mature bucks are more likely to test positive for CWD than other age or sex classes.

and coordinate agency field enforcement and compliance efforts. A joint task force was established to oversee these shared responsibilities.

→ Action: The DNR will continue to build on our cooperative working relationship with DATCP. This will include efforts to work jointly for federal and state funding and to update a Memorandum of Understanding that clearly identifies each agency's responsibilities and roles.

(e) Farmed Cervid Escapes. Fencing failures and violations are a major cause of farmed cervid escapes. The state regulates all cervid farm fences; however, currently the DNR only has authority over white-tailed deer farm fencing. In an effort to standardize fencing requirements and recognizing the larger field staff of the DNR and the relative limitations that DATCP has with their ability to conduct on-site inspections, the DNR is seeking the legislative authority over all farmed cervid fencing. It is recognized that despite the currently available additional DNR field staff, this authority will likely involve a significant time commitment from the DNR and may require additional resources. Nonetheless, because the DNR has greater staff resources available for field observations, this authority will be a valuable tool for increasing the security of cervid farms and reducing escapes due to fencing failures.

→ Action: The DNR will work to reduce the number of animals escaping from cervid farms by seeking legislative authority for the regulation of all cervid-farm fencing.

(f) Farmed cervid testing and depopulation of infected farms.

The DNR recognizes the threat of disease spread to other farmed cervids and to wild cervids from either escapes from or interactions with cervid farms that have tested positive for CWD. Accordingly, it is imperative that DNR and DATCP work together to detect such positive farms and to quickly depopulate their herds once detected. Additionally, it must be recognized that once a CWD positive farm is depopulated, the amount of time that fencing must remain intact needs to be assessed on an individual basis to prevent the possible ingress and disease exposure of wild deer in the area.

→ Action: The DNR will continue to work with DATCP and the farmed cervid industry to: increase the compliance with monitoring, testing, record keeping and cervid movement regulations; expedite the depopulation of farms with CWD-positive animals; and minimize the future risk of those depopulated farms to wild and farmed herds by seeking legislative authority to regulate fences of depopulated farms.



Photo by Jerry Davis

Fawns of CWD infected does are not born with the disease, but contract it from contact with infected deer or exposure to prions in the environment.

Anticipated Results by 2025

- ◆ There is a statewide ban on baiting and feeding.
- ◆ The number of preventable escapes and number of animals per escape from cervid farms is minimized as much as possible.
- ◆ The time elapsed from notification of an escape event until the joint DNR/DATCP action to remove the escaped cervids from the landscape is reduced.
- ◆ Farms with CWD-positive animals are depopulated, secured, and decontaminated quickly.
- ◆ The DNR has fencing authority over farms of all cervid species and over farms that have been depopulated.
- ◆ Depopulated CWD-positive farms are secured against the ingress of wild cervids until, using the best science available, it is determined that those premises are no longer high-risk sources of CWD-causing prions.
- ◆ Hunters throughout the state are aware of the importance of proper disposal of butcher waste and carcass parts and options for proper disposal are readily available.
- ◆ High-risk parts of wild cervids are not being moved from CWD affected areas.
- ◆ There is significant progress in bringing statewide deer populations closer to ecologically sound population levels.



2. Monitor for and Respond to New CWD Disease Foci

To “minimize the area of Wisconsin where CWD occurs”, it is critical to expeditiously detect and respond to new disease foci. This will require ongoing and intensive statewide surveillance, especially adjacent to known CWD areas, and a plan for specific actions to implement when new CWD areas are identified so that they can be quickly and effectively initiated.

(a) Statewide Surveillance. A scientifically sound surveillance strategy is essential to the timely detection and effective response to new areas of disease (new disease foci). CWD is a disease that cannot be confirmed through simple, visual inspection. It requires the collection of specific tissues and testing conducted by a USDA-approved laboratory. Sampling and testing costs accounted for over 50% of the total DNR expenditures during 2002–2009 and will likely continue to be the single largest expense in the CWD program over the coming years. However, state and national efforts to improve the cost efficiency of surveillance methodologies (tissue collection, testing, and data management and assessment) should result in cost savings during the duration of this plan. There is increasing evidence that collection and testing of deer that show clinical signs consistent with CWD is a cost-efficient means of detecting CWD at low levels of prevalence. Research also supports a strategy of assigning weights to CWD test results of a deer based on the age, sex, and method of harvest because these factors influence the chance that the test results will be CWD positive. Strategies developed will include the testing of clinical-suspect deer and of samples provided by hunters.

→ **Action:** The DNR will develop and implement surveillance strategies to detect new foci of CWD outside of the current CWD Management Zone. These strategies will take advantage of the greater surveillance value of clinical suspect deer by encouraging people statewide to report adult deer that exhibit signs consistent with CWD. The approach will also include statewide hunter-harvest based surveillance using weighted approaches that balance efficiency and efficacy.

b) Surveillance response to new foci. Should a free-ranging CWD-positive deer be found outside of the current CWD Management Zone boundary, DNR staff, landowners, and hunters will be asked to assist with additional sampling in at least a ten-mile radius of the positive deer to define the extent of the disease. The exact radius will be determined by assessing the deer habitat, deer population density, and other factors of the area. Including the recent sampling history in the area, in general, the number of samples collected will be sufficient to be 95% confident of detecting the highest level of disease prevalence in the surveillance radius. The sample number is dependant upon the underlying level of prevalence in the area and the number of positive animals identified. The specific methods used to collect these samples will depend on a number of factors, including time of year when the positive is found, deer densities, and habitat. The results of that sampling will inform decision-making about subsequent management actions.

→ **Action:** After the detection of a free-ranging CWD positive deer outside of the current CWD Management Zone there will be intensive sampling and testing of deer in at least a ten-mile radius surrounding the new positive in order to assess the spatial extent and intensity of the outbreak.

c) Management response to new foci.

Management actions in areas of newly detected CWD foci will depend on the results of the assessment surveillance described in section (b) above.

If the new focus is in a deer management unit adjacent to the existing CWD Management Zone and prevalence at the new focus appears to be similar to that of the adjacent zone, then the new focus will be included in a new Management Zone boundary as allowed by the CWD rule currently in place (NR 10.41(3) (f) 1. —*The department may include additional deer management units in the CWD management zone where and when additional CWD positive deer are found*).

If the new focus is in a deer management unit adjacent to the existing CWD Management Zone and appears to be a cluster of positives (prevalence significantly higher than in the surrounding area) then that unit will be included within the new Management Zone boundary and additional measures will immediately be initiated to try to reduce deer numbers in the vicinity of that cluster.

If the new focus is distant from the existing CWD Management Zone, and the initial assessment indicates that an aggressive course of action is warranted for the purpose of effective disease management, the DNR will respond with extended hunting opportunities, landowner permits, and agency shooting, in an effort to further evaluate and manage the new focus. If DNR staff recommend local herd reduction as part of the response to a new disease focus, staff will conduct outreach and inform local citizens and landowners as the plan is developed.

If the new focus is found within the ceded territory (1837 and 1842) but off-reservation, the DNR will consult with the Ojibwe tribes prior to any action that reasonably impacts the Ojibwe harvest right. If the new focus is found on or adjacent to reservations, the DNR will meet

with and reach consensus on actions with the affected tribes.

In all cases, baiting, feeding, and rehabilitation of deer will be prohibited in areas around the new positive, as per ss 29.335, 29.336, and NR 19.72. Additional rules and regulations, such as those concerning the movement of deer carcasses, may be instituted to help assist with CWD control.

→ Action: If the new focus is in a deer management unit adjacent to the existing CWD Management Zone, then the new focus will be included in a new Management Zone boundary. If the initial assessment outlined in (b) above indicates that an aggressive course of action is warranted for disease management efforts, the DNR will employ localized herd reduction in an effort to control the new focus. When local culling is implemented, it will need to be intensive and implemented over a period of many years until the effects and efficacy can be assessed. Additional existent rules and regulations will go into effect as required by statute and code (deer rehabilitation, baiting and feeding) or as deemed necessary. Ojibwe tribes must be consulted before any action is taken in the ceded territory or on (or adjacent to) reservations that reasonably impacts the Ojibwe harvest right.

Anticipated Results by 2025

- ◆ New CWD-affected areas are discovered as quickly as possible.
- ◆ The extent and intensity of the new foci are defined in a timely manner to allow informed and collaborative response action planning.
- ◆ Aggressive control actions (in consultation with Indian Tribes when necessary) are implemented in a new CWD-affected area when the location, spatial extent, and intensity of the outbreak warrant that response.

3. Control Distribution and Intensity of CWD

Currently there are no therapeutic strategies available to control CWD in wild deer herds. Consequently, controlling prevalence and distribution of the disease requires both reducing the number of CWD-positive animals and reducing the number of susceptible deer through overall herd reduction. This may include focused culling of deer in localized areas of high disease prevalence or along the leading edge of the known disease outbreak. It also means reducing regional deer herds to at least interim population goals (see Appendix B) which are likely levels lower than would be desired for cultural and recreational uses and are also likely higher than desired for disease control.

Removing as many deer as possible, each year, from infected areas and adjacent areas provides the best opportunity for controlling the disease by:

- 1) increasing the likelihood of removing infected individuals capable of transmitting the disease from the population
- 2) eventually reducing the number of susceptible animals below the threshold needed for the disease to increase or persist
- 3) limiting the accumulation of infectious CWD prions in the environment.



Photo by Jerry Davis

CWD infected deer have shorter lifespans so infected does may produce fewer fawns over the course of their lives.

By increasing the number of deer removed from the population each year, the remaining population will have a lower density and thus contact between individual animals or groups of animals will likely be reduced. This is expected to reduce the rate of disease spread, at least partially by reducing the number of deer that move significant distances to new areas. Also, annual removal of infected animals at a rate greater than the number of deer that are estimated to be newly infected with the disease each year will, over time, result in reduced prevalence of the disease. Finally, reducing the number of infected deer will reduce the rate of environmental contamination from CWD positive animals.

In Wisconsin, an effective CWD response depends upon the cooperation and actions of deer hunters and landowners. Recreational hunting and access to huntable land are critical to reducing infected deer herds to target levels and then maintaining them at those levels. The DNR will implement deer season frameworks that continue to utilize recreational hunting as the primary tool to assist with deer herd reduction. The Department will recognize Wisconsin's socio-cultural hunting desires to the extent practical for effective, long-term disease management.

The DNR will inform hunters and landowners about the areas with a high proportion of CWD-positive deer and encourage maximum hunting effort in these locations. In situations and locations where recreational hunting is not able to provide the needed deer harvest for disease management, the DNR and researchers will explore and implement additional deer removal options working cooperatively with area landowners and hunters.



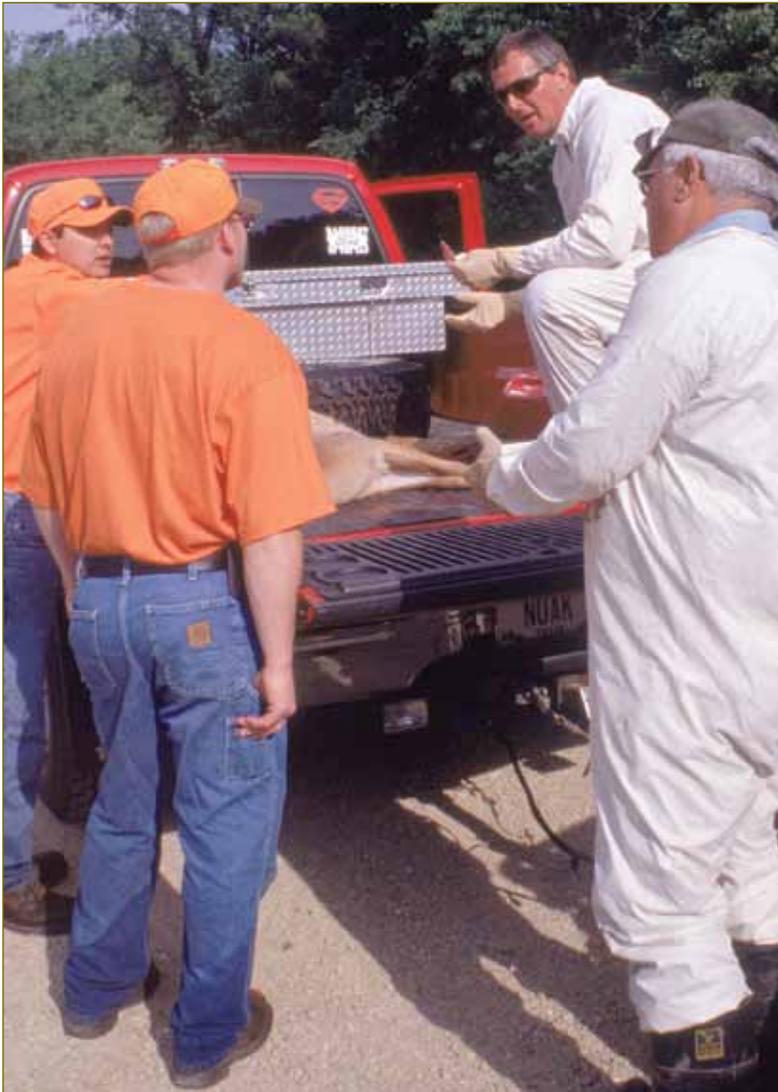
(a) Hunting season structure. A consistent hunting-season structure should improve hunter understanding of regulations and enhance both compliance and enforcement of those regulations. It should also make it easier to evaluate management efforts. For consistent season structures to be maintained throughout the duration of this plan, herd reduction will need to be sufficient to at least reach the interim population goals (as described in Appendix A). If regular assessments of the CWD response show that the structure in place is not sufficient to bring deer populations to the established goals, adjustments to the hunting season structure will be made accordingly to attempt to increase harvest numbers.

→ **Action:** The DNR recommends that the 2008 season structure (as described in Appendix A) be the basic season structure for all units in the CWD Management Zone through 2015. The effectiveness of this structure to at least reach the interim population goals will be assessed at five-year increments and will be modified if results indicate it is insufficient to contribute to population or disease management goals.

(b) Landowner permits. The use of post deer-hunting season landowner permits provides landowners and their designees the opportunity to remove more deer from their property.

These permits will be available for any landowner within the CWD Management Zone but outreach efforts to landowners will be focused on areas of high prevalence and along the leading edge of the disease.

→ **Action:** Issue post-season landowner hunting permits in the CWD Management Zone.



DNR wildlife staff working with hunters to collect samples for CWD testing.

(c) Sharpshooting. In addition to the contributions of the hunting season framework and landowner permits to the CWD Management Zone-wide deer population reduction, sharpshooting will be another tool available for more focused removal of CWD positive deer.

Sharpshooting will be used as a strategic, complementary tool for disease management and for additional surveillance in local areas. The total cost of removing a deer by sharpshooting in Wisconsin has averaged \$400 per deer. Given current financial resources, the DNR cannot afford to remove more than, at most, 1,000 deer a year, and likely far less than that. Even with increased funding, staff and financial resources simply will not allow for considerably more widespread uses of this tool thereby continuing to make recreational hunting the main population management method.

Sharpshooting will be used tactically along the periphery of the known CWD affected area in the vicinity of disease clusters as well as in new disease foci areas as indicated in section (2) above. If DNR staff recommend local herd reduction as part of the response to a new cluster, staff will conduct outreach and inform local citizens and landowners as the plan is developed. The Department may use DNR-trained citizens as well as agency employees when instituting sharpshooting and will only shoot on properties with the landowner's permission.

Sharpshooting is an effective tool for removing additional deer after hunting seasons are over. In the case of CWD management, it removes positive animals from the landscape at a greater rate than recreational hunting because it can be focused in areas of high disease prevalence. During January - March 2007, sharpshooting efforts removed 978 deer from the CWD Management Zone, of which 26 deer tested positive for CWD. Although sharpshooting accounted for 1.7% of the total kill in the CWD zone, the targeted nature of the shooting effort



Photo by Jerry Davis

Increasing the harvest of does has the greatest effect on reducing deer populations.

produced 12.5% of the CWD-positive deer shot. An additional benefit from Department shooting was that a much higher proportion of antlerless deer (79%) were killed by department shooters than by hunters (55%) in that same year, the 2006-2007 CWD Zone season.

Illinois reports similar success with sharpshooting, which is a key component of their CWD management strategy. To date, Illinois DNR sharpshooting has accounted for 12% of the deer tested for CWD but 38% of the positive deer removed. They believe their ability to focus culling and disproportionately remove positives can have a significant impact on the disease.

→ Action: The DNR will conduct focused sharpshooting on public lands and on private lands where permission can be obtained in areas of disease clusters in the periphery of the known CWD distribution (e.g. Devil's Lake State Park) or in the areas of newly identified CWD foci where assessments deem such activities strategically advantageous. Sharpshooting efforts will need to be intensive and sustained over a period of many years before the impact on disease progression can be assessed and control can be documented.



(d) Monitoring disease trends and patterns.

The Department will need to effectively monitor disease patterns and trends to determine whether management efforts are controlling the distribution and intensity of CWD. Current knowledge about CWD in wild white-tailed deer populations limits the ability to predict how the disease pattern would likely change over the next 15 years without management; thus, determining whether control efforts have limited the expected changes will be challenging. Such evaluations will therefore have to be based not only on data from Wisconsin, but will also have to consider results of monitoring and control efforts in other states and provinces that have CWD in wild cervid populations.

Detecting meaningful trends at the periphery of the currently known geographic distribution is difficult because there are relatively few CWD-positive deer in these areas. Assessing geographic spread and detecting significant changes in the intensity of the disease at very low prevalence requires testing extremely large numbers of deer. Meaningful trends in CWD prevalence and geographic distribution can only be measured if large-scale sampling is conducted at regular intervals not to exceed a few years.

Based on surveillance results in the known CWD-affected areas of Wisconsin, monitoring areas have been chosen in the higher prevalence CWD areas in south-central and southeastern Wisconsin. These are the best areas for monitoring the effects of control efforts on disease patterns, including changes in geographic distribution and number of positive deer. Sampling and testing of hunter-harvested deer from the western core, eastern, and Baraboo monitoring areas at levels sufficient to continue to monitor these trends will be conducted regularly for the duration of this plan.

→ Action: The DNR will conduct sampling and CWD testing that is sufficient to monitor trends in prevalence and disease pattern within the western core monitoring area in Dane and Iowa counties, the eastern monitoring area in Rock and Walworth counties, and in the Baraboo monitoring area. In addition, the DNR will monitor spatial and prevalence patterns at selected higher prevalence areas along the periphery of the currently known CWD geographic distribution.

(e) CWD Zone Deer Population Monitoring.

Monitoring changes in deer populations in the CWD-affected areas over the next 15 years is important for understanding changes in CWD transmission and prevalence rates and the effectiveness of response efforts. Reducing the deer population is currently the only available management strategy for the control of CWD once it is established in a free-ranging deer population. For all units in the CWD Management Zone to reach the interim goals recommended by the CWD Stakeholder Advisory Group (SAG), the population would have to drop nearly 60% (equivalent to ~68,000 deer post-hunt or 19 deer/square mile of deer range) (Appendix B).

→ Action: Trends in the size of the deer population in the CWD Management Zone will be monitored using a combination of helicopter and fixed-wing aircraft surveys and population modeling. Deer population monitoring will likely be conducted annually over the duration of the plan.



(f) Collaborate with Illinois. The effectiveness of Wisconsin's CWD response efforts is ultimately tied to the effectiveness of CWD management in Illinois. It is essential that the states work cooperatively in order to complement and maximize each other's management efforts. To this end, the Wisconsin and Illinois DNRs signed a Memorandum of Understanding (MOU) in mid 2010 which outlines the development and enhancement of mutually beneficial management methods and practices, research endeavors, and communications and messaging strategies for managing CWD as a joint venture.

→ **Action:** The DNR will continue to work cooperatively with the Illinois DNR on CWD management, as outlined in the MOU.

(g) Conduct reviews after the 2015, 2020, and 2025 deer hunting seasons. The DNR has based its CWD response approach on the best scientific and social information available and will continue to modify management strategies over time as new CWD information and data become available. As part of our adaptive response approach, the DNR will conduct management program reviews after the conclusions of the 2015, 2020, and 2025 deer seasons to assess progress towards meeting the Plan's established goal and objectives. Factors that will be considered include

- 1) trends in the prevalence of the disease in the western and eastern monitoring areas,
- 2) trends in the known geographic distribution of CWD,
- 3) progress in reducing deer populations in the CWD Management Zone toward goal,
- 4) changes in public attitudes and actions relevant to CWD and the CWD management program,
- 5) current funding and prospects for future funding for CWD management,

- 6) results of assessments of additional tools for disease control,
- 7) information from CWD programs in other states and provinces, and
- 8) information from research into the risks and impacts of CWD on deer populations.

Based on the results of these reviews, recommendations will be made to alter CWD management efforts being implemented, possibly including the hunting season framework, the use of landowner permits, the use of sharpshooting, and outreach and education methods.

→ **Action:** The DNR will conduct program reviews of our progress toward meeting the goal and objectives of this plan after the 2015, 2020, and 2025 deer seasons and, based on these reviews, make any needed modifications, some of which are outlined in actions (h), (i), and (j) below.

(h) Additional days of gun-hunting opportunity. Additional days of gun hunting opportunity may be added if the review indicates the need for further herd reduction.

→ **Action:** Based on the results of the review, add more days of gun-hunting opportunity.

(i) Additional focused sharpshooting. If deer densities are not being adequately reduced towards goals, the DNR will consider implementing or expanding focused sharpshooting in areas of high disease prevalence and/or high deer density that are within and not necessarily along the periphery of the known CWD-affected area. Department staff will work with local citizens and landowners if such sharpshooting is recommended.

→ **Action:** Consider the use of sharpshooting on public and private lands, where permission can be obtained, in areas of high disease prevalence.

(j) Additional tools. As tools other than recreational hunting and sharpshooting are developed for managing the disease, it will be important to evaluate those techniques for their applicability in Wisconsin. These tools may include but are not limited to incentives and alternative deer removal-methods.

→ **Action:** Conduct and support research to develop and evaluate additional tools that have management applications and implement those that meet efficacy and acceptability criteria as needed to enhance progress towards CWD control objectives.

Anticipated Results by 2025

- ◆ Through population reduction and focused and targeted removal of deer from high prevalence areas, the estimated number of infected deer in the CWD Management Zone is significantly less than estimates show it would have been in the absence of management.
- ◆ The geographic distribution of the disease is not significantly larger than the known distribution in 2010.
- ◆ Overall deer populations in the CWD Management Zone have been reduced to at least the interim population goals.



University of Wisconsin researchers attach a radio collar to a deer in the CWD zone.



4. Increase Public Recognition and Understanding of CWD Risks and Public Participation in Disease Control Efforts

Information about CWD is growing as additional experience is gained and research is completed. It is important that Wisconsin's citizens are kept informed on the latest scientific knowledge and recommendations for managing this disease in order to facilitate a cooperative understanding and effort among all stakeholders.

Outreach activities are used to inform the public about CWD and garner support for CWD management policies and strategies. It is critical that the public, especially hunters and landowners in the CWD Management Zone, understand and support the CWD response plan if it is going to be effective in minimizing the impacts of this disease in Wisconsin. Outreach activities should be informed by research conducted to understand public perceptions about CWD and its risks as well as research on how the public and tribes feels about methods for management of the disease.

(a) Human Dimensions of CWD Management.

While providing the public with timely, complete, and accurate information about CWD has been an important component of Wisconsin's CWD control efforts, sufficient resources have not been consistently directed toward communicating with the public and hunters to inform them of the magnitude of the risks posed by CWD to Wisconsin's deer hunting tradition. Furthermore, these efforts have largely been conducted by staff without expertise in this kind of communication. Relying on recreational hunters to play an important role in controlling CWD will continue to be a challenge unless communication and social marketing efforts result in increased support (attitudinal and behavioral) from constituents.

Substantial changes in public attitudes toward CWD and its management will take time, perhaps best measured by decades. Literature on social marketing advises that if there are barriers to a particular behavior (*i.e.*, shooting more deer) that are insurmountable within the target audience (*i.e.*, hunters and landowners), focusing on that behavior without first reducing the barriers will be self-defeating. In this case, if hunters are being asked to shoot more deer than they traditionally shoot, and if landowners are being asked to allow hunters onto their land to shoot deer, then the barriers to those desired behaviors must first be identified and reduced. Hence, it is essential that our constituents be re-visited to identify those barriers. Information garnered from these discussions could be used to inform an outreach effort designed to build support and change behavior.

A 2006 survey of Disease Eradication Zone hunters conducted by the University of Wisconsin Stevens Point found that buck hunters, on average, passed up more shots (~5.0 shots) than either-sex hunters (2.4 shots). These findings underscore the difficulty in getting hunters to shoot additional deer, but also demonstrate that there is an opportunity for hunters to kill more deer if they understand and agree that the long-term risks to the deer resource are significant and that their actions will contribute to disease control.

→ **Action:** Working with a professional communication firm, the DNR will use group interviews and survey data to better understand public opinions about CWD management and to develop, test, and refine messages and delivery mechanisms that enhance public understanding about CWD and the long-term threat the disease poses to Wisconsin. The DNR will utilize this information to develop communication strategies that attempt to overcome the barriers to deer herd reduction and accessibility to land for deer removal.



(b) Monitoring Changes in Public Opinion.

We will continue to monitor public opinions and attitudes towards CWD and CWD response strategies over the next 15 years. Assessing specific public opinions and attitudes towards CWD will involve monitoring trends in

- 1) the public support of the DNR's CWD response goal and its strategies,
- 2) the public acceptance of the fundamental assumptions and basic disease information about CWD,
- 3) the public agreement that the risks of CWD to the deer herd and to recreational hunting warrant the efforts to control CWD,
- 4) the level of concern regarding CWD in the state,
- 5) hunters and landowners feeling a personal responsibility for helping to manage the deer population in the area they most frequently hunt/on the land that they own, and
- 6) the public opinions regarding our overall communication strategies.

Public support must go beyond attitudinal measures. Public support must be demonstrated through changed behavior for CWD management efforts to be effective. As with public attitudes, we must continue to monitor hunter and landowner behavior—that is, are hunters shooting more deer now in an effort to assure good hunting and a healthy herd for future generations? Specific behavioral measures to be monitored include

- 1) the number of hunters in the CWD Management Zone (including hunter retention, recruitment, and changed hunting locations to non-CWD deer management units),
- 2) hunter effort in the CWD Management Zone (including number of days hunted and hours hunted per harvested deer),
- 3) the number of antlerless and antlered deer harvested,

- 4) the number of deer donated to food pantry programs from the CWD Management Zone,
- 5) the number of hunters that landowners allow to hunt on their land, and
- 6) the number of landowners who grant hunters and the Department access to their land to kill deer.

→ **Action:** To assess the impacts of outreach and education efforts, the DNR will conduct scientific behavioral and attitudinal studies of hunters, landowners, and Wisconsin residents in general on a regular basis, especially in response to a change in management strategy.

Anticipated Results by 2025

- ◆ With guidance from communications professionals both inside and outside the DNR, communication strategies to increase knowledge and support for the state's approach to CWD management among hunters, the general public, and decision makers have been developed, are being implemented, and increases in understanding and support are being realized.
- ◆ The number of deer hunters in the CWD Management Zone has not declined more than deer hunter numbers in the rest of the state.
- ◆ Hunter effort has increased and hunters are spending more time in the field (as the deer population declines, more time will be required to harvest a deer).
- ◆ Access to private land for deer removal has increased.
- ◆ The percent of deer harvested in relation to the total deer population in the CWD-MZ has stayed consistent or increased and the deer population has shown a steady declining trend.

5. Address the Needs of Our Customers

Human dimension research has shown that a large majority of hunters believe that the state should offer CWD testing to hunters who shoot deer in areas where CWD is present. In addition, most hunters surveyed believe that the state should contribute to the costs of processing venison donated to food pantries and should assume the costs for disposal of deer carcasses, butcher waste, and road-killed deer from the CWD affected area. However, recent budget cuts to the CWD program have significantly limited the DNR's ability to meet these expectations. Public expectations for these services and the resulting costs are projected to increase if the area of Wisconsin affected by CWD increases.

(a) Hunter service testing. The World Health Organization, Centers for Disease Control, and Wisconsin Department of Health Services (DHS) recommend that deer that test positive for CWD not be consumed. The vast majority of hunters surveyed responded that they believed testing should be available in the CWD affected area and for some families the ability to get a deer tested affects their willingness to kill deer. Currently, only laboratories certified by the USDA are authorized to conduct CWD tests and virtually all CWD testing in Wisconsin is conducted through a program jointly operated

by the DNR and the Wisconsin Veterinary Diagnostic Laboratory. This program has been funded by the DNR, and testing fees have generally not been charged to hunters to cover the costs of the testing service provided. However, it must be realized that strictly hunter service testing provides little additional knowledge to the state outside of the test result status of that one animal, yet it continues to be a relatively costly part of the management program. Nonetheless, alternatives, such as hunters directly submitting samples to veterinarians or testing facilities, have not proved economically viable for the hunting public. Until such programs can be developed further, the DNR will continue to try to provide this service for little or no cost to hunters.

→ Action: The DNR will insure that hunters have continued access to CWD testing in areas with the highest prevalence of CWD. The DNR will explore alternative strategies for reducing or recovering costs and/or privatizing this program such as developing programs that would allow hunters to collect their own samples or charging testing fees to partially cover costs of sample collection and testing. The DNR also will support efforts to develop quicker and less expensive sampling and testing procedures.



Photo by Jerry Davis

Public CWD informational meeting at Mt. Horeb High School, 2002.

(b) Donation of venison to food pantries. The DNR and local partners have operated a food pantry program for CWD zone deer in cooperation with DATCP and DHS. A protocol was established following DATCP and DHS recommendations that prevent meat from deer that test positive for CWD from being distributed to food pantries. Meat from deer with negative test results is distributed to cooperating food pantries that indicated an interest in receiving it.

Donations to the pantry program have, to date, accounted for 2–3% of the total deer harvest in the CWD zones. Although few hunters have increased their deer harvest because of this program, the majority of survey respondents believe that the DNR should continue to pay these costs as a way to encourage hunters to participate in the deer donation program. The existence of the venison donation program continues to motivate some hunters to harvest additional deer. Therefore, increasing hunter participation in the venison donation program may be an effective tool to increase the number of deer killed each year in the CWD zone.

→ Action: 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 the CWD Management Zone to provide hunters an avenue for donation of harvested deer in excess of their personal needs. The DNR will actively market the pantry program to encourage an increase in hunter harvest. The DNR will partner with others to seek funding from nongovernmental organizations to help offset the costs of processing and storing donated venison.



In 2009, hunters donated over 170,000 pounds of venison to food pantries in Wisconsin.

(c) Deer carcass disposal assistance. Containing prions from CWD-infected deer carcasses is important for limiting new infections and providing disposal assistance can help facilitate hunter harvest. The Interagency CWD Health and Science Team conducted a qualitative risk assessment in 2002 and concluded that engineered sanitary landfills provide a safe and effective means for carcass disposal. An indemnification bill has been enacted that protects landfills from financial liability. Additionally, the

University of Wisconsin-Madison has completed a quantitative risk assessment that supports landfilling of deer. However, local governments, landfill operators, and municipal wastewater treatment facilities throughout the CWD Management Zone remain concerned about accepting unwanted carcasses, butcher waste, and car-killed deer. Providing easy and cost-effective disposal options for hunters and meat processors will become a bigger problem if the geographic extent of the disease increases. If hunters cannot easily dispose of deer carcass waste in the recommended manner, they may end up disposing of it improperly or be reluctant to harvest a deer.

→ Action: The DNR will continue to work with local governments, landfill operators, and municipal wastewater treatment facilities to increase their understanding of the safety and cost-effectiveness of landfilling deer in order to increase the availability of landfills for carcass disposal. The DNR will continue to offer indemnification to landfills that accept CWD positive carcasses and waste.

(d) Monitoring for human prion diseases.

Although there is no evidence that CWD has ever caused illness in people, because bovine spongiform encephalopathy (BSE) has been linked to the new variant form of Creutzfeldt-Jakob disease (CJD) in humans and there is still much to be learned about prion diseases in general, uncertainty remains about the health risks posed by CWD. International health authorities continue to recommend that deer known to be infected with CWD not be consumed by people and that people avoid consuming certain tissues where prions are more likely to accumulate. The DHS is conducting surveillance for CJD to assess potential relationships between CJD and CWD. This surveillance is based on reports from clinicians as well as ongoing reviews of all death certificates. DHS, in cooperation with DNR, has established a registry of persons known to have consumed venison from CWD positive deer for later comparison to the CJD case list.

→ Action: The DNR will continue to cooperate with DHS to maintain the registry of persons known to have consumed venison from CWD-positive deer. The DNR will monitor and support research to better assess the risks that CWD may pose to humans. The DNR will continue to provide hunters with information on ways to reduce risks when field dressing and butchering deer.

(e) Investigating potential risk to livestock.

The risk of transmission to traditional livestock cannot be dismissed. When CWD is injected directly into the brain, it has been shown that cattle and sheep can be infected. However, there have been no cattle infections in studies where cattle are exposed orally or when cattle co-habit with infected deer, and TSE-like disease has not been detected in cattle in areas of North America where they share range with CWD-affected wild deer and elk populations. Studies have shown that TSEs can go through changes when in an abnormal host and increase their ability to affect

new species; this increases concern about the possibility that eventually, if uncontrolled, CWD could become a problem for cattle or sheep. Uncontrolled CWD in wild Wisconsin deer poses a high risk to the state's farmed cervids and is of great concern to those producers.

→ Action: The DNR will support and cooperate with research to better assess the risks that CWD may pose over time to livestock, including farmed cervids.



To date, CWD has not been found to pose a health risk to Wisconsin's dairy herds.

Anticipated results by 2025:

- ◆ Hunters in CWD affected areas are able to get their deer tested and financial and logistical partnerships have been expanded to provide this service.
- ◆ Food pantries will accept donated venison from the CWD Management Zone and hunter contributions to the pantry program will exceed historic contributions.
- ◆ Additional landfills within the CWD Management Zone will accept untested deer carcasses and carcass waste.
- ◆ Hunters have a clear understanding of what is known about the human health risks associated with consuming venison from CWD-positive deer and ways to minimize those risks.
- ◆ Stakeholders have access to current information about potential risks to livestock, and cervid farmers' concerns continue to be part of the consideration in state CWD management planning.



6. Enhance the Scientific Information about CWD

The DNR has played an important role in generating new information on many aspects of CWD: by conducting in-house research, directly funding university research, and by collaborating in studies conducted nationally and internationally. Although a sustained research and monitoring effort is needed, funding available for these activities has declined. Outside funding, primarily federal grants, has offset some of the decline in state funding, but reliance on such funding could jeopardize long-term research efforts if such funding diminishes.

Priorities for CWD research in Wisconsin should be reviewed and updated so that efforts most important to disease control will continue. Research related to improving our understanding of the risk of CWD to humans, livestock, and other animals and the effectiveness of public communication strategies are addressed elsewhere in this plan (objectives 4 and 5). Continued research and modeling to assess changes in spatial distribution and prevalence of disease will be important for assessing the effectiveness of management actions. Analysis of our existing data to identify opportunities to increase the cost-effectiveness of disease detection and monitoring strategies should be a priority.

Management experiments to directly assess the effects of specific disease control strategies on the intensity and spread of CWD are critically needed for improving long-term control efforts. Specifically, research to determine the effects of intensive deer population reduction on disease dynamics is needed to resolve questions about the effects of deer density on CWD transmission and spread, and to establish what level of deer population reduction is needed to achieve CWD management goals. In addition, research is needed to evaluate the cost-effectiveness of alternative tools beyond recreational hunting and sharpshooting to reduce deer populations

and/or remove CWD-positive deer. These evaluations should also consider animal welfare issues, the ability to selectively remove deer without significantly affecting non-target species, and social acceptability.

Additional information on the persistence and availability of prions in the environment, and how these are affected by environmental conditions such as temperature, moisture, or soil ecology, is needed to improve our forecasts of disease dynamics and long-term implications. Control of CWD transmission risk from deer and elk farms would be enhanced by the development of effective disinfection mechanisms.

A better understanding is needed of host and habitat factors that may affect disease transmission and geographic spread. By understanding the effects of factors such as deer density, deer movement patterns, habitat composition, and landscape pattern, we will be able to improve predictions of disease progression and to focus management efforts appropriately. Research to identify specific mechanisms of disease transmission and to assess the relative contribution of direct (deer-to-deer) and indirect (deer-to-environment-to-deer) transmission is needed to identify opportunities to block transmission.

Research is being conducted on how host genetics relate to susceptibility to CWD, on treatments that would lessen disease effects, on methods to decontaminate small, prion-infected areas, and on the development of vaccines applicable to both free-ranging and farmed cervids. While very early in the research and development process at this stage, effective therapeutic measures such as treatments and vaccines with feasible delivery systems would greatly facilitate the control of CWD.

Increased understanding about the effects of CWD on deer reproductive rates and susceptibility of CWD-positive deer to different sources of mortality (hunting, predation, vehicle-collisions, *etc.*) will improve estimates

of impacts to deer populations in Wisconsin. Additional information is needed to predict how these changes to deer populations will affect the citizens of Wisconsin.

The importance of deer and deer hunting to Wisconsin must be a major consideration in all management decisions. Research is needed to compare the socio-economic costs of disease control activities to those resulting from the failure to control the spread of CWD in Wisconsin.

→ Action: The DNR will continue to cooperate with outside researchers by sharing tissues and data and may initiate research when appropriate. The DNR will continue to: develop methods for assessing the progression of CWD; seek funding to support applied, management-focused research on CWD; and promote research into prion biology that may, in time lead to effective procedures for prevention and/or treatment of CWD in deer and decontamination of environments.

Anticipated Results by 2025

- ◆ There is a well-funded and active CWD research program for the state.
- ◆ Research to fill important knowledge gaps related to disease transmission mechanisms and CWD effects on deer populations in Wisconsin is progressing or has been completed.
- ◆ Better methods are available to assess the progression of CWD.
- ◆ Management experiments to assess the effects of disease control strategies on the progression of CWD are progressing or have been completed, such as
 - the effects of intensive, prolonged, local deer culling on disease dynamics, and
 - the cost-effectiveness of alternative tools beyond recreational hunting and sharpshooting to reduce deer populations and/or remove CWD-positive deer.



Staff at the WDNR's Black Earth Lab process samples collected from hunter-killed deer in preparation for CWD testing