

*Northeast Association
of Fish and Wildlife
Agencies*

**Chronic Wasting Disease
Plan**

Approved 11-2-06
Northeast Association of Fish and Wildlife Agencies

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GOAL AND PURPOSE

While there are many scientific uncertainties regarding the basic biology and ecology of CWD that may hinder development of efficient strategies for combating this disease in free-ranging deer, the actions outlined in this plan are designed to accomplish the following goals:

- (1) **communicate** and coordinate with the public and other appropriate agencies on issues relating to CWD and the steps being taken to respond to this disease;
- (2) **determine** the prevalence and the distribution of CWD through enhanced surveillance efforts;
- (3) **reduce** the risk of further spread of this disease, prevent further introductions of the disease and possibly eliminate the disease where it is found.

The purpose of this plan is to describe the Northeast Association of Fish and Wildlife Agencies intended response to the threat of a CWD event or outbreak in our region. Most states and provinces in our Association have endorsed the recommendations contained within the Multi-State Guidelines For Chronic Wasting Disease Management In Free-Ranging White-Tailed Deer, Mule Deer And Elk (Appendix A). The plan that follows provides additional details so that member agencies can provide as consistent a response to CWD as possible. CWD response will be a coordinated effort among wildlife management agencies within the Association, and will involve various state/provincial and federal agencies within each member's jurisdiction.

Each jurisdiction will work with other state/provincial agencies within its borders to develop their own strategic program for the prevention, early detection and possible eradication of CWD in free-ranging and captive cervids. Cooperating agencies within a jurisdiction may include the Governor's/Premier's Office, state/provincial and federal departments of agriculture, department of health, and the state department of environmental protection, or their equivalents. Cooperating agencies will communicate with other officials throughout North America.

This response plan will be updated periodically. The response plan is intended to provide consistent guidance but should not be construed to be a legally binding document. All agencies have the authority to be flexible with their management activities as new information becomes available or as constrained by factors outside their control.

BACKGROUND

Cervids, or mammals that have antlers, include white-tailed deer, elk, moose and caribou, and are valuable natural resources in the Northeast United States and eastern Canadian provinces. Hunters play a valuable role in society by managing cervid populations through regulated harvest. An important incentive for hunters to hunt is the food provided by venison. Hunters prefer to harvest healthy animals. A deer herd with CWD may not be attractive to hunters, and may jeopardize the ability of state and provincial wildlife agencies to manage deer populations.

In recent decades, the captive cervid industry has increased markedly. With this expanding industry, interstate and intrastate movement of captive cervids is a significant activity with associated wildlife disease risks.

CWD is one of a group of diseases called transmissible spongiform encephalopathies (TSEs) or prion diseases. These diseases are believed to be the result of infectious, self-propagating “prion” proteins. Prions are normal cell proteins whose shape has been transformed in such a way that they cause disease. Much of their biology is poorly understood. CWD is closely related to, but different than, other TSEs in other species, including Scrapie in sheep, Bovine Spongiform Encephalopathy (BSE) in cattle, and Creutzfeldt-Jakob Disease (CJD) and variant Creutzfeldt-Jakob Disease (vCJD) in humans.

CWD was first recognized as a disease in 1967 in captive mule deer at a wildlife research facility in Fort Collins, Colorado. In 1977, CWD was determined to be a TSE. The disease was first diagnosed in free-ranging elk, mule deer, and white-tailed deer in Colorado and Wyoming in 1981, 1985, and 1990, respectively. CWD was found in mule deer in the Toronto Zoo that was traced back to a shipment from the Denver Zoo in 1974. The first diagnosis of CWD in captive elk was made in Saskatchewan in 1996. Canadian investigations have suggested that infected elk were apparently imported into Canada from South Dakota in the late 1980s, if not earlier. To date, CWD has been diagnosed in captive cervid facilities in Colorado, Kansas, Montana, Minnesota, Nebraska, New York, Oklahoma, Wisconsin, South Dakota and the Canadian provinces of Alberta and Saskatchewan, and in free-ranging cervids in Colorado, Kansas, Nebraska, New Mexico, New York, South Dakota, West Virginia, Wisconsin, Illinois, Utah, Wyoming and the Canadian provinces of Alberta and Saskatchewan (Appendix B). Current information can also be obtained from the following website: <http://www.aphis.usda.gov/vs/naahps/cwd/cwd-distribution.html>.

Pronghorn antelope, bighorn sheep, mouflon sheep, mountain goats, and blackbuck, that had contact with CWD-infected deer and elk or lived in premises where CWD occurred, have not developed the disease, nor have domestic cattle, sheep, and goats that have shared research facilities with CWD-infected deer and elk for prolonged periods. Cattle intensively exposed to CWD-infected deer and elk under experimental conditions have remained healthy for over eight years. A variety of species can be experimentally infected with CWD when challenged by dosages and routes that would not occur naturally, but the epidemiological significance of this route of infection is questionable. No case of human disease has been epidemiologically associated with CWD. Examination of the available data has led the U. S. Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) to conclude that there is no scientific evidence of CWD infecting humans. However, as a precaution, the WHO recommends people or other animals eat no part of a deer or elk diagnosed with CWD.

Although CWD is clearly infectious among certain species of cervids, details of transmission have not been determined. Available evidence suggests transmission of CWD is via animal-to-animal contact and contamination of feed/water with infectious saliva, feces, and possibly urine. Maternal transmission may occur, but it appears to be relatively uncommon and insufficient to maintain outbreaks currently observed in the wild. Prion contaminated environments may play a role in epidemics and the recurrence of CWD. In some cases, the CWD agent apparently persisted in heavily contaminated environments for years after all live cervids had been removed. Transmission appears more likely where cervids are crowded or congregate at supplemental feed stations.

CWD has been found in elk, red deer, moose, mule deer, black-tailed deer, white-tailed deer, and hybrids of these. Species-specific behavioral differences may influence transmission. Prevalence is higher in older animals, particularly in males. There appears to be some genetic influence on

susceptibility in elk and deer, although 95% of deer in Wisconsin are susceptible. Chronic wasting disease appears to be maintained naturally in both captive and free-ranging cervid populations; epidemics persist in the absence of exposure to contaminated feeds or other likely outside sources of infection. In high density captive herds, CWD can reach high prevalence and result in high mortality; in one study, more than 90% of mule deer living on an infected premise for >2 years either died or were euthanized due to CWD. In free-ranging deer and elk populations, epidemiological models available to date indicate that CWD may lead to local extinctions or to an endemic equilibrium.

Cervids with natural CWD infections are generally infected for 20-30 months before they show obvious symptoms, but incubation may be somewhat shorter (16 months) or considerably longer (60+ months) in individual cases. For prion diseases in general, the incubation period appears to be dose-related. Cervids incubating CWD may test “non-detect” early in the incubation period, before prion levels in tissues reach test threshold levels.

Symptoms of CWD include one or more of the following: severe weight loss, excessive salivation, increased drinking/urination, and abnormal behavior (e.g., stumbling, trembling, depression). Infected deer and elk may allow unusually close approach by humans. Subtle changes in behavior (e.g., increased or decreased social interactions, repetitive movements, periods of sleepiness) may precede end stage disease. Once symptoms appear, the course of CWD varies from a few weeks to more than a year, with most animals surviving several months before succumbing to complications related to CWD. Free-ranging cervids may not survive long once symptoms begin because of vulnerability to predation and starvation. Chronic wasting disease is inevitably fatal once symptoms appear. No effective treatment or vaccine is known.

Other health problems, particularly pneumonia and injury, may appear outwardly similar to CWD. Consequently, laboratory diagnosis is essential to confirm infections in suspect animals. There is no practical live animal test for CWD. Definitive diagnosis must be made by testing of brain, lymph node, and/or tonsil tissue from a dead animal by immunohistochemistry (IHC). A rapid test has been approved for screening purposes only, the enzyme-linked immunosorbent assay (ELISA).

RISK FACTORS

Risk factors are attributes of the landscape, environment, or animals associated with a greater probability of CWD occurring in a target region or target population. Establishing the presence (or absence) of risk factors is fundamental for focusing attention and allocating resources in a response plan. Risk factors include: population density of free-ranging cervids, number of captive cervid herds, unknown status of CWD in captive and free-ranging populations, areas artificially concentrated with cervids, interstate and intrastate movement (both natural and by man) of live or dead cervids from CWD infected areas, and proximity to CWD positive areas. See Appendix C for more discussion on risk factors.

PHASES OF RESPONSE PLANNING

There are four phases to effective response planning: prevention, preparation, response and recovery.

1) Prevention

Prevention strategies include:

- Development and implementation of a communication/education program to provide the most up-to-date information on CWD and the inherent risk it poses to deer and elk, both captive and free-ranging (Appendix D).
- Development and implementation of importation/intrastate movement requirements for live cervids. These requirements may include participation in a recognized CWD herd certification program, or import/movement moratoriums.
- Development and implementation of importation/intrastate movement requirements or recommendations for high-risk cervid parts, to reduce the likelihood of CWD-contaminated materials ending up in the environment of free-ranging or captive cervids.
- The Northeast Association of Fish and Wildlife Agencies has taken a very strong position on the issue of captive cervids and resolved that they be eliminated entirely from the region.
- Recommend that hunters use caution in spreading urine-based lures in the environment and avoid placing deer lures on the ground or on vegetation where deer can reach them.
- Consider implementing regulations that prohibit the feeding and/or baiting of deer.
- Consider implementing hunting regulations that allow for the harvesting of adequate numbers of female deer to maintain deer populations in balance with available habitat and prevent overabundance.

2) Preparation/Early Detection

Maintaining an updated response plan, acquisition of necessary supplies and materials, developing laboratory capabilities, keeping personnel trained and the public informed represent the Northeast Association of Fish and Wildlife Agencies preparation to respond and recover from a CWD incident.

In the event a CWD incident occurs within a jurisdiction, an incident management system (IMS) approach may be deployed to best position the jurisdiction to fully and effectively respond to the incident. While the state/provincial wildlife management agencies and departments of agriculture will serve as lead agencies, the IMS will include various state/provincial and federal agencies.

Cooperating agencies within a jurisdiction will convene immediately for certain scenarios listed below to take action quickly and decisively. It is the purpose of the inter-agency CWD task force to take every reasonable action to prevent CWD from spreading within the jurisdiction and into neighboring jurisdictions. It is also the purpose of these agencies to educate citizens about the threat of CWD and to prepare for and manage any future event in which CWD is found.

Early detection of CWD is a best management practice for minimizing the adverse effects of response. Efforts to detect CWD will require a long-term surveillance strategy including both captive and free-ranging cervids.

Surveillance Plan:

- A. For Free-Ranging Cervids. State/provincial wildlife management agencies, in cooperation with other agencies, will conduct surveillance (i.e. acquisition of specimens and testing of animals to determine the presence/absence and extent of disease) of free-ranging cervids. Surveillance will consist of two types: targeted (sick animal) and active (healthy animal). For both types, collected specimens or tissue samples will be delivered to a USDA accredited laboratory for testing. Disposal of specimens will be via regulated landfill, incineration or alkaline digester. It is important to obtain and maintain fresh specimens in order to maximize the effectiveness of diagnostic tests.
1. Targeted surveillance (High priority): Identify and test free-ranging cervids that have been observed by the public or agency staff as showing symptoms consistent with CWD. These animals will be collected by wildlife management agency staff and transported to a laboratory for tissue sampling and testing.
 2. Active surveillance (Medium priority): Testing of outwardly healthy cervids harvested by hunters, shot by agency personnel or killed in nuisance/damage situations or vehicle collisions. Based on evaluations of standard and simulation-based sampling strategies, random surveillance of free-ranging white-tailed deer is an expensive activity that has a low probability of detecting CWD at <1% prevalence levels. Consequently, targeted (sick animal) and captive cervid surveillance should receive higher priorities. Given limitations of active surveillance as a CWD detection program, free-ranging surveillance is designed to: 1) annually sample and test cervids, 2) provide scientific baseline data on presence and distribution of CWD, 3) train personnel in sample collection, extraction, and testing procedures 4) increase public awareness and education concerning CWD surveillance activities, and 5) provide a platform for additional disease monitoring.
- B. For Captive Cervid Herds (High priority). CWD should be designated to be a dangerous transmissible disease with mandatory reporting of suspect animals in each state/province. The appropriate agency should be obligated to investigate any reports of suspect captive animals. In addition, mandatory CWD herd certification/monitoring programs should be developed and implemented for all captive cervids. Draft federal guidelines may represent a minimum set of standards that individual states could consider when preparing their own set of rules/guidelines.

3) Response

Increasing Levels of Readiness

States and provinces will be at varying levels of readiness depending on the proximity of CWD to their jurisdiction, as described below.

Level 3 – Not Yet Detected

CWD has not been documented in any live cervids within the jurisdiction, or within 50 miles of the jurisdiction's border. CWD is known to exist elsewhere on the North American

continent, and in the northeast states of New York and West Virginia. Interstate transportation of live cervids and cervid body parts is known to take place routinely, therefore the need for education and surveillance remains high. Precautions must be taken to ensure CWD does not inadvertently spread into the jurisdiction's captive and/or free-ranging cervid populations.

Cooperating agencies will actively monitor the status of CWD cases throughout the continent and in the Northeast, and will continually consider modifications to regulations and protocols that serve to improve or enhance existing barriers intended to keep CWD from entering.

Level 2 – Heightened

If an animal from the jurisdiction tests suspect positive for CWD, that jurisdiction's level of readiness should be elevated to Level 2. Samples will be forwarded to the National Veterinary Services Laboratories (NVSL) for definitive confirmation.

Level 2 should also be achieved when an animal within 50 miles of the jurisdiction's border tests confirmed positive for CWD.

All cooperating agencies should be notified and take appropriate action, e.g., review response and communications plans and consider enhanced prevention and early detection strategies.

Level 1 – Confirmed Positive

If CWD is confirmed in a jurisdiction, cooperating agencies should convene and initiate appropriate actions as outlined in the Communication/Education Plan (Appendix D), the Response Plan (Appendix E) and Carcass Disposal Plan (Appendix F).

4) Recovery

Recovery of free-ranging cervid populations that have been reduced will consist of adjusting hunting seasons or bag limits, as practical.

APPENDIX A. Multi-State Guidelines for Chronic Wasting Disease Management in Free-Ranging White-tailed Deer, Mule Deer and Elk – November, 2004

INTRODUCTION

Chronic wasting disease (CWD), a naturally-occurring prion disease, poses a threat to the health of deer and elk populations in areas where it already occurs as a self-maintaining disease and potentially to native deer and elk species throughout their North American ranges. Therefore, the signatory states mutually agree to adopt comprehensive guidelines for addressing CWD in their respective jurisdictions.

GOALS

It is the collective desire of the represented states to manage CWD with five specific objectives:

- (1) Minimize the potential for CWD to spread beyond current affected areas.
- (2) Manage infection rates (prevalence) within existing affected areas using results and techniques provided by ongoing and future research according to objectives set by each state. Based on current understanding of CWD in free-ranging deer and elk, eradication of CWD may not be a justified or realistic management objective within endemic areas.
- (3) Determine the status and extent of CWD when the disease is discovered in a previously unknown location and, if determined to be feasible, attempt to eliminate the disease.
- (4) Support and conduct, on a priority basis, applied research that will facilitate continued expansion of knowledge of CWD.
- (5) Provide timely, complete and accurate information about all facets of CWD to personnel of participating agencies and the public of involved states and throughout the United States.

CWD has infected free-ranging elk and deer populations since at least 1981, but probably much longer. Within the last 5 years, concern over CWD has risen due to a number of factors. The represented states are committed to reducing the impact of this disease on free-ranging and captive deer and elk populations within their jurisdictions. States will use the best scientific information available and take all reasonable and necessary steps, consistent with these guidelines, to achieve these five objectives. Further, representatives will meet periodically on the status of the disease and management efforts in their respective states. Representatives will also periodically review these guidelines and associated objectives to provide additional guidance as needed or as dictated by new information.

DEVELOPMENT OF POPULATION OR HERD PLANS FOR AFFECTED AREAS

There are numerous challenges inherent in managing free-ranging wildlife populations. In light of the added difficulty in managing wildlife populations with CWD, detailed population or herd plans appear critical to successful long-term management of CWD. Therefore, represented states will expedite the development of management plans for areas where CWD has been found. The plans will focus on management objectives designed to limit geographic spread, to manage CWD prevalence consistent with state objectives and to eliminate it where feasible. At a minimum, artificial feeding and baiting of deer and elk should be discouraged or banned throughout CWD-affected areas, unless authorized by the wildlife agency specifically to facilitate the management or eradication of disease. Where feasible, adaptive approaches to CWD management should be applied.

In situations where infected deer or elk populations span jurisdictional boundaries (e.g., state lines, federal lands and tribal lands), either seasonally or year-round, these common deer and elk populations should be managed cooperatively with respect to achieving CWD-related goals. Additionally, represented states will develop contingency plans for managing new foci of CWD detected through passive or active surveillance programs based on statistically sound sampling. In such cases, the preferred objective will be to define and eliminate these foci wherever feasible. Depending on success or failure of these contingency management efforts, states may need to redefine boundaries of endemic areas or declare presence of a new endemic area.

RESEARCH

Represented states will conduct, support, and/or otherwise encourage, on a priority basis, research on CWD. Management of CWD requires a more thorough understanding of CWD transmission, ecology, natural host range, and relationship to other TSEs, as well as development and refinement of diagnostic, therapeutic, and preventive tools. States will continue to participate in ongoing and planned research conducted by agency personnel and through contracts with external research facilities, as appropriate. Representatives also will continue to monitor research that is occurring throughout the world on CWD and TSEs to ensure that the most current and comprehensive data are available.

THE ROLE OF HUNTING IN AFFECTED AREAS

It is our collective goal that hunting opportunities in existing affected areas, or in areas that may be exposed to CWD in the future, will be continued to assist in managing deer and elk herds to limit or reduce CWD prevalence and its spread. In endemic areas, however, conflicts between disease management and recreational hunting opportunity goals will be resolved in favor of the health and long-term viability of deer and elk populations. Hunting has historically provided the primary means of managing deer and elk populations throughout most of the United States. The represented states support the use of hunting to manage herd populations and herd densities.

In some cases, the occurrence of CWD in an area can raise human health concerns beyond those normally associated with the consumption of wild game meat. According to public health experts, there is currently no evidence that CWD poses an additional health risk to those who choose to consume animals from affected areas. No one, however, can guarantee that no risk exists relative to human consumption of animals that may have contracted CWD. Represented state wildlife management agencies will continue to work cooperatively with their respective state and local public health departments, as well as federal public health officials, to assess and monitor the health risks of CWD to humans. Representatives will also continue to ensure that the assumptions regarding transmissibility are consistent with the best available science, and will recommend reconsideration of relevant policies in the event that credible evidence reveals a significant modification in current understanding of the transmissibility of CWD.

HUNTER INFORMATION

At this time there is no evidence that CWD poses a risk to human health. However, it is important that prospective hunters make an informed decision prior to hunting in affected areas. Providing information relative to CWD to those who choose to hunt in an affected area is both appropriate and necessary. Individuals contemplating hunting in affected areas should have access to the best scientific information available. This information must be accurate, current and understandable by the general public. To this end, represented states will continue developing and sharing specific strategies for ensuring that current information relative to CWD is available to all prospective hunters in affected areas. Such strategies may include dissemination of information through application brochures, traditional media news releases, Internet postings and direct mail to successful deer and elk license applicants, particularly those hunting in affected areas of a state. In addition, information about the availability and logistics of testing animals and precautionary guidelines provided by public health experts should be provided.

USE OF AGENCY STAFF TO REMOVE ANIMALS FROM AFFECTED AREAS FOR MANAGEMENT AND/OR RESEARCH

Although regulated public hunting is the preferred method of deer and elk population control, the presence of CWD may compel agencies to consider using professional staff or agents to assist in the process of CWD management and research. Because of the threat posed by CWD in deer and elk populations, represented states should establish necessary authorities for using agency staff or agents to manipulate ungulate populations, in a manner consistent with disease management, research and/or herd management plans, where such manipulations are determined to be necessary to manage or research CWD. Decisions made

regarding specific methods will be left to the discretion of represented states, and may be influenced by geographic constraints, landowner cooperation and human density in the management area, risk to staff or agents and public input regarding the proposed technique(s). Effective management of CWD will require cooperation from private landowners both within and outside of affected areas. Consistent with existing laws, states should work cooperatively with landowners, recognize and respect private property rights and provide the appropriate level of information to landowners during development and implementation of any management or research plan.

SURVEILLANCE

Represented states will conduct surveillance to determine if CWD exists in wild deer and elk. Surveillance should be based on a prioritized assessment of risk and available resources. In those states that have CWD, continued surveillance will allow the monitoring of CWD distribution and prevalence. It is impractical and unnecessary from a scientific surveillance standpoint to test every animal killed for the presence of the disease. Surveillance data should be gathered using appropriate biological and epidemiological standards to assure the reliability of results and inferences drawn from the data. At a minimum, efforts to collect any free-ranging deer and elk exhibiting clinical signs of CWD should continue. Examining road-killed deer and elk may also provide information on CWD in areas where hunter-provided samples numbers are low. Road-kill information can also be used to augment other surveillance approaches designed to detect new CWD foci or better define distribution of known foci.

TESTING OF DEER AND ELK KILLED

Deer and elk killed by agency personnel for research or management purposes should be tested for CWD wherever feasible. In addition, states will work cooperatively with public and private testing facilities to provide information regarding testing facility locations and costs for public hunters who choose to have their deer or elk tested at their own expense. These guidelines do not infer that states should accept responsibility for testing unrelated to surveillance or for providing carcass quality assurances of deer and elk harvested by recreational hunters in their respective jurisdictions. In fact, it is recommended that state wildlife agencies do not assume responsibility for assuring food safety. With respect to affected areas, testing of deer and elk provides two primary benefits. First, testing provides critical data for management and research. Second, testing allows hunters to minimize the risk of consuming deer or elk that have contracted CWD. These two benefits are distinct. States may, as a component of a management or research plan, by rule, require that deer or elk taken by public hunters be submitted for testing in specific areas; in such cases, an agency may choose to bear the costs of testing. Additional sources of federal or other funding to support increasing CWD surveillance demands should be pursued.

THE ROLE OF AGRICULTURAL AGENCIES IN CWD MANAGEMENT

Represented states are committed to minimizing the impact of CWD on both free-ranging and captive populations of deer and elk. However, the ability to manage CWD in some states may be limited by statutory authorities of state wildlife management agencies. In states where statutory and regulatory responsibility for managing disease in captive or free-ranging deer and elk is shared with state agriculture agencies, continued cooperation between the two agencies is encouraged to ensure comprehensive and successful CWD management. States should strive to develop consistent and comprehensive regulations aimed at reducing (or preventing increases in) disease prevalence within affected areas, minimizing the risk of the disease spreading beyond established affected areas and eliminating localized outbreaks.

MOVEMENT OF LIVE DEER AND ELK (UNDER WILDLIFE MANAGEMENT AGENCY JURISDICTION)

Live free-ranging deer and elk will not be translocated from areas where CWD exists, either for management or rehabilitation purposes; exceptions may be made for acquiring deer and elk for research purposes. Given the uncertainty about the complete geographic distribution of CWD, states should exercise caution when contemplating deer and elk translocations from other areas as well.

In addition, to the extent allowed by existing laws, movement of captive deer or elk between commercial facilities will be restricted to minimize opportunities to spread CWD. Managing free-ranging deer and elk populations in affected areas addresses only part of the potential threat to deer and elk populations within our jurisdictions and beyond. The movement of live captive animals between commercial facilities poses a threat to native wildlife resources. Therefore, prior to the authorization of movement, captive herds should be monitored for at least 60 months. Monitoring should include, among other things, a requirement for record keeping (including an annual accounting of all additions to and subtractions from the herd), individual unique animal identification, reporting all mortalities and testing them for CWD. Where they do not already exist, states should support and encourage such regulations to facilitate enforcement of these guidelines.

REMOVAL AND DISPOSAL OF CARCASSES FROM AFFECTED AREAS

No research exists to prove conclusively how CWD is transmitted from one deer or elk to another. However, because high levels of the infectious agent apparently accumulate in specific organs and body parts of diseased animals, some restriction on movement and disposal of carcasses and portions of carcasses harvested in affected areas should be considered through either recommendation or regulation. These recommendations or regulations should address, at minimum, acceptable locations for meat processing and taxidermy of deer and elk harvested in affected areas and proper disposal of discarded carcass materials. States should also attempt to adopt carcass transportation recommendations and regulations that are as uniform and consistent as possible to avoid confusing hunters and to minimize conflict with regulations from other states.

TRAINING AND EDUCATION

There are many unknowns regarding CWD. However, much is being learned as research and management progress. Given the rapidly changing nature of CWD, it is important for state wildlife agencies to train all staff involved, directly or indirectly, in CWD issues. It is also important for state and federal agencies to communicate often enough to ensure actions are coordinated as much as possible.

COMMUNICATION

CWD is of interest locally, nationally and internationally. As the public agencies charged with managing CWD in wildlife populations, the represented state agencies have an obligation to provide timely, complete and accurate information about all facets of the disease to the public in respective states and throughout North America. There is inherent difficulty in providing accurate and up-to-date information regarding this rapidly changing issue. Because of these challenges, continuing and effective communication is paramount to any plan to manage CWD on a regional basis. Therefore, represented states will continue to maintain, as a high priority, mechanisms for effective communication with the general public, constituent groups and the media about CWD. As appropriate, all available communication tools should be enlisted to provide timely, complete and accurate information about CWD. Communication resources and strategies should be coordinated and shared among represented states wherever feasible.

Although these guidelines should not be construed as binding on any signatory agency, all states are encouraged to follow them to the extent possible. Cooperating CWD management partners are:

Kevin C. Duffy, Commissioner
Alaska Department of Fish and Game

Scott Henderson, Director
Arkansas Game and Fish Commission

Robert C. Hight, Director
California Department of Fish and Game

Bruce McCloskey, Director
Colorado Division of Wildlife

Pat Emory, Director
Delaware Division of Fish and Wildlife

Noel Holcomb, Director
Georgia Wildlife Resources Division

Steve Huffaker, Director
Idaho Department of Fish and Game

Jeffrey R. Vonk, Director
Iowa Department of Natural Resources

J. Michael Hayden, Secretary
Kansas Department of Wildlife and Parks

C. Tom Bennett, Commissioner
Kentucky Department of Fish and Wildlife Resources

Paul A. Peditto, Director
Maryland Department of Natural Resources
Wildlife and Heritage Service

K. Cool, Director
Michigan Department of Natural Resources

Gene Merriam, Commissioner
Minnesota Department of Natural Resources

Rex Amack, Director
Nebraska Game and Parks Commission

Lee E. Perry, Executive Director
New Hampshire Fish and Game Department

Bruce Thompson, Director
New Mexico Department of Game and Fish

Gerry Barnhart, Director
Division of Fish, Wildlife and Marine Resources
New York Dept of Environmental Conservation

Dean Hildebrand, Director
North Dakota Game and Fish Department

Vern R. Ross, Executive Director
Pennsylvania Game Commission

John Cooper, Secretary
South Dakota Department of Game, Fish and Parks

Kevin K. Conway, Director
Utah Division of Wildlife Resources

William L. Woodfin, Jr., Director
Virginia Department of Game & Inland Fisheries

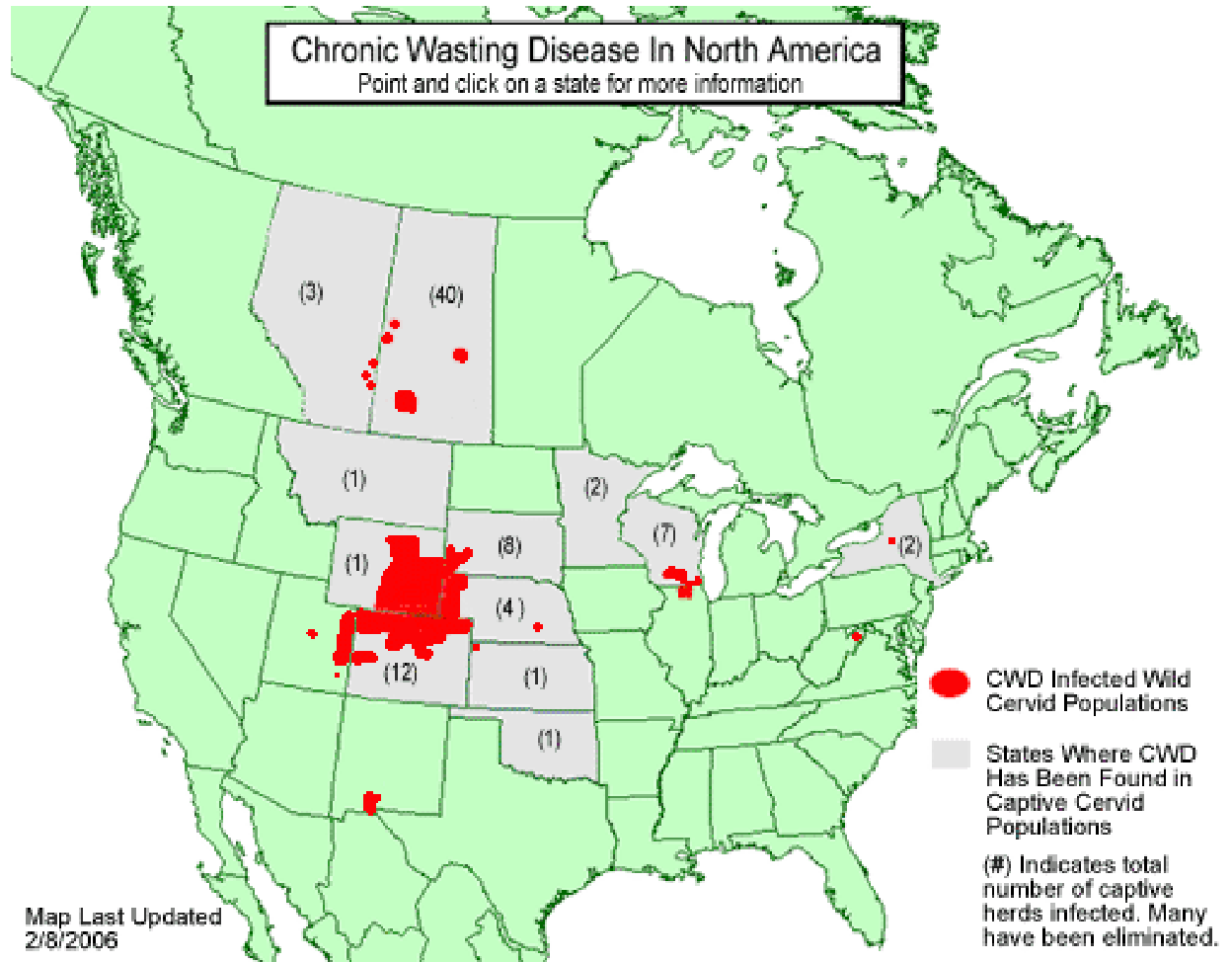
Jeffrey P. Koenings, Director
Washington Department of Fish and Wildlife

Mr. Curtis Taylor, Chief
Wildlife Resources Section
West Virginia Division of Natural Resources

P. Scott Hassett, Secretary
Wisconsin Department of Natural Resources

Brent Manning, Director
Wyoming Game and Fish Department

APPENDIX B: Map – Chronic Wasting Disease in North America



For Current Map refer to <http://www.cwd-info.org/>, click on “Learn About CWD”, then click on “Map”.

APPENDIX C: Determining Risk Factors

Determining Risk Factors

Risk factors are attributes of the landscape, environment, or animals associated with a greater probability of CWD occurring in a target region or target population. Establishing the presence (or absence) of risk factors is fundamental for focusing attention and allocating resources in any large-scale surveillance strategy. This is particularly important for CWD because in most areas the disease is likely to occur at a low prevalence that is difficult to detect, and the disease is not evenly distributed over the landscape. Current information suggests that CWD occurrence and prevalence can vary among geographic areas (states), among regions within states, and occurs in disease clusters of affected animals within these regions. As a result, surveillance to detect CWD without reference to potential risk factors is likely to be inefficient. At the current time, our knowledge of the risk factors is limited: a better understanding of risk factors is needed to improve the efficiency of surveillance programs.

Table 2 lists major CWD risk factors in two groups: related to exposure (introduction of the disease into a new area or target population) and related to amplification (spread of disease through a target population or region). As stated previously, the CWD agent is thought to be transmitted by direct animal contact or indirectly through its presence in the environment. The risk of free-ranging animals being exposed to CWD is, therefore, greater in areas where CWD-positive animals have already been found. Further, human assistance increases the exposure risk to uninfected populations. The frequent movement of farmed elk and deer between production facilities, the animals' concentrated presence on such facilities, and the possibility of their escape into the wild increases the risk of spreading CWD to uninfected populations of free-ranging animals. Because the infectious agent likely persists in the environment, the introductions of uninfected animals (either captive or free-ranging) into a contaminated environment could increase the risk of infection. Locations from which CWD-positive animals have been removed may remain contaminated.

Once exposure occurs, the risk of amplifying the disease (increasing the number of infected animals) in a target population or location likely increases with higher elk or deer population density as well as habitat and other ecological characteristics that influence animal distribution, movements, and behavior. The absence of predators may allow sick animals a longer period in which to spread CWD. Baiting or feeding increases concentrations of animals and may increase the chance of disease spread through direct contact among animals or indirect contact with environmental contamination. Contaminated environments may serve as a source of infection to animals for extended periods.

Evaluation of risk factors helps to focus resources on locations or target populations with a greater likelihood of being infected and increases the efficiency of surveillance efforts. Presently, our ability to quantify the importance of risk factors is limited and determination of their importance for any specific area must rely on the judgment and experience of experts. Surveillance on and around CWD-positive elk or deer farms or farms that have received animals from known CWD areas, and along the borders with other jurisdictions with CWD-positive animals can increase the effectiveness of surveillance efforts. Additional risk factors, such as the presence of scrapie in sheep populations that are in the same area with elk and deer, illegal feeding of animal protein to elk or deer, baiting and feeding programs, or environmental factors also may be considered,

although their role in CWD epidemiology has not been clearly established. Understanding the distribution, movement, social behavior, population characteristics, and dynamics of affected deer and elk populations is helpful, if not essential, to fully evaluate the risk factors for CWD in free-ranging populations.

Table 2: Known or Suspected CWD Risk Factors

Exposure Risk Factors	Areas adjacent to CWD-positive wildlife
	Areas adjacent to land on which CWD-positive animals, farmed or free-ranging, have lived
	Areas with concentrations of farmed or captive elk or deer
	Areas that have received translocated deer or elk from CWD-affected regions
	Areas permitting transport of hunter-killed elk or deer carcasses from CWD infected areas.
Amplification Risk Factors	Areas with high elk or deer population density
	Areas with a history of CWD animals or CWD contaminated environments
	Areas with low abundance of large predators
	Areas where free-ranging elk or deer are artificially concentrated (baiting, feeding, water development, and other human related habitat modifications)

Reference

USGS-National Wildlife Health Center. 2003. Surveillance Strategies for Detecting Chronic Wasting Disease in Free-ranging Deer and Elk: Results of a CWD Surveillance Workshop. Madison, Wisconsin. 40 pp.

APPENDIX D: Northeast Association of Fish and Wildlife Agencies CWD Education/Communication Plan

In the event of a CWD confirmation in the Northeast communication will play a critical role. While CWD has potentially serious consequences, there is currently no evidence that it can be transmitted to humans and domestic animals. Consequently, it is important that the response to an outbreak of CWD is in proportion to the health risks and economic impact the disease imposes.

1. Upon receiving laboratory notification of the first CWD positive sample from within a given state, appropriate internal notification should be given that a preliminary positive case of CWD has been detected and that back-up samples are being tested for confirmation at a second independent USDA-approved laboratory. Confirmation may take several days from the initial positive CWD case notification.
2. If the positive case is confirmed by a second independent USDA-approved laboratory, States should notify the appropriate and predetermined intradepartmental contacts within the respective departments.
3. Concurrently, State's should notify the appropriate multi-agency task force.
4. Concurrently, States and designees should notify key constituency/stakeholder groups, including state fish and wildlife agencies from surrounding states, appropriate federal agencies, legislators, and local community officials where the CWD positive case was found, informing them that CWD has been identified and make them aware of the impending public announcement.
5. A limited number of staff members should be assigned as a CWD communications team with one staff person serving as the team leader. All CWD-related questions from the public and the media will be routed, including public appearances and interviews, to this team. The communications team should:
 - Develop key messages to deliver to media
 - Develop and publish news releases as needed
 - Identify and train principal media contacts
 - Update agencies web pages and fact sheets
 - Develop presentations
 - Schedule informational meeting(s) in surveillance areas
 - Conduct informational meeting(s)
 - Inform agency personnel regarding ongoing surveillance efforts
6. Within 24-48 hours of final confirmation, and after all key stakeholders both internal and external have been notified, the media should be advised of the positive CWD case through a press release. The press release should include media packets providing background information on CWD, a synopsis of the state's CWD surveillance efforts, an outline of likely CWD response management actions, and other CWD-related materials deemed needed or appropriate to the particular facts at the time. When possible, news releases should be prepared ahead of time to aid in their timely delivery.

7. Within 14 days of detection, a series of CWD public meetings, including a Question and Answer session, should be held near the CWD index case.

8. Each agency should collect and analyze news stories to help determine and modify, as needed, the communication and outreach efforts. News and feature stories, as well as editorials and letters to the editor, will help indicate public awareness and understanding.

APPENDIX E: Northeast Association of Fish and Wildlife Agencies CWD Response Plan

I. Identification of an infected captive cervid facility:

A. The lead agency may set up an incident command structure utilizing assistance from other state/provincial and federal agencies as needed. Cooperating agencies will also convene.

B. The appropriate agency should initiate herd and premise plans with the goal of depopulating the positive cervid facility.

1. Quarantine the facility.
2. Conduct a complete epidemiological investigation to determine the specific cause, source of disease, population exposed, and population infected.
3. Herd should be depopulated, with indemnification if available (e.g., USDA).
4. Test all animals for CWD.
5. Landfill/incinerate/alkaline digest all carcasses.
6. Clean and disinfect positive herd premises to minimize the spread of CWD.
7. Maintain fencing to exclude wild cervids for at least five years.
8. Trace forward exposed animals with quarantine of facility.
 - 8a. Remove exposed animal(s), with indemnity if available, and test for CWD.
 - 8b. If the exposed animal is positive, the entire herd is considered positive.
 - 8c. If the exposed animal is negative, routine CWD surveillance (testing of death losses over 6 months of age) will continue.
9. Trace back exposed animals with quarantine of facility.
 - 9a. Quarantine the trace back herds as appropriate from the last case traced back to the herd.
 - 9b. Monthly inspection of the herd by appropriate personnel with euthanasia and testing of any suspect animals. Indemnity will be paid for these animals if available.
10. Surveillance (testing all death losses over 6 months of age) will continue for 60 months.

C. A primary objective of wildlife agency response efforts is to determine if free-ranging cervids in the vicinity of the captive herd are also infected with CWD. If so, the magnitude and geographic extent of that infection should be determined, and efforts made to reduce populations of infected and exposed animals with the intent of limiting further transmission of the disease and eradicating CWD from free-ranging cervids (Figure 1).

1. Geographic Information Systems (GIS) methods are recommended to map the location of the infected captive cervid and herd (index case). A 5 to 10 mile radius circle is recommended to be drawn around the index case and referred to as the Surveillance Area. Sampling outside this area may be appropriate under certain conditions.

An appropriate sample (Table 1) of free-ranging deer ≥ 6 months of age is recommended to be collected expeditiously from the Surveillance Area and tested

for CWD. Efforts should be made to ensure the sample is geographically representative. The sample would provide sufficient statistical basis to be 99% confident of detecting the disease if it is present in the area at a prevalence of at least 1%. A variety of options for securing needed sample sizes should be considered and appropriate collection techniques implemented (e.g., landowners may be allowed under permit to harvest deer from private land, cooperating agency personnel may collect deer, and road kills and damage kills may be used). It is possible that hunting and sharp shooting may be inappropriate due to safety concerns or the inability to access cervids. In these areas, cervids may be captured with the use of clover traps, box traps, drop nets, rocket nets, and other methods, and euthanized. In addition to these animals, deer harvested by hunters in the Surveillance Area may also be subject to mandatory testing. Close cooperation and coordination with landowners will be essential to ensure successful collections from private lands

Table 1. Sample sizes for detection and estimation of prevalence of CWD for a range of deer populations. All sample sizes assume 1% prevalence and 99% confidence.

Deer Population	No. CWD Positives ¹	Sample size
500	5	300
1,000	10	368
1,500	15	396
2,000	20	410
2,500	25	419
3,000	30	426
3,500	35	430

¹ – Number of expected CWD positive deer at 1% level of prevalence

2. Deer carcasses under test can be processed for human consumption, but should be held pending test results. Carcasses with CWD not detected can be eaten, but carcasses testing positive for CWD should be land filled or incinerated/alkaline digested.

3. Two possible scenarios may result from sampling free-ranging cervids in the Surveillance Area surrounding the index case:

a. No infected free-ranging cervids are found. The Surveillance Area is recommended to be maintained. Long-term sampling in the area is recommended to be continued for a period to be determined by epidemiological analyses of surveillance data and findings from the index captive herd, but for no less than five years.

b. Infected free-ranging cervids are found. In this event, free-ranging cervid population reduction is recommended to commence, with the primary deer management goal being to contain, control and possibly eliminate CWD in a Containment Zone.

- 1) CWD Containment Zone: A containment zone is recommended to be established based on the surveillance area plus a surrounding buffer zone of at least a radius equal to the surveillance area. The boundary should be determined based on epidemiological evidence, geophysical features and other logistical constraints. Surveillance is recommended to become routine. The majority of samples should be obtained from hunter-harvested animals during regular hunting seasons, with non-hunter harvested animals tested opportunistically as they become available.
- 2) Population reduction should be carried out in the most effective and efficient means possible by using hunters and wildlife agency personnel.
- 3) All collected animals ≥ 6 months of age are recommended to be tested for CWD.
- 4) Two possible scenarios may result from testing animals removed from the Containment Zone:
 - a) No additional infected free-ranging cervids are found. The CWD Containment Zone is recommended to be monitored for 5 years with adequate annual samples.
 - b) Additional infected free-ranging cervids are found. The CWD Containment Zone may need to be expanded. As effective environmental decontamination methods are identified by research or the experience of other states, efforts may be made to apply them to the CWD Containment Zone.
- 5) Only capes and skull/antlers from which brain and spinal tissue have been removed, and meat without backbones of harvested free-ranging cervids should be allowed to leave CWD Containment Zone.
- 6) Rehabilitation of free-ranging cervids should be banned within the Containment Zone. Human-assisted movement of all live wild cervids out of the Containment Zone should be prohibited.
- 7) Road-killed deer should be collected and tested for CWD within the Containment Zone.
- 8) Feeding and baiting of cervids should be prohibited within the CWD Containment Zone.
- 9) Increasing the harvest rate of adult males should be emphasized within the Containment Zone.

10) Overall effectiveness of management strategies will be evaluated based on annual CWD prevalence data in the Containment Zone. The effect of management on cervid populations could be evaluated using a variety of techniques (e.g., population estimates obtained through aerial surveys, survivorship determined from radio-marked animals, etc). Other aspects of disease ecology, including changes in population size, density, distribution, age structure, sexual bias for CWD prevalence, and disease-related mortality should be monitored. Human dimension surveys may be important for evaluating effectiveness of or need for additional education/communications efforts.

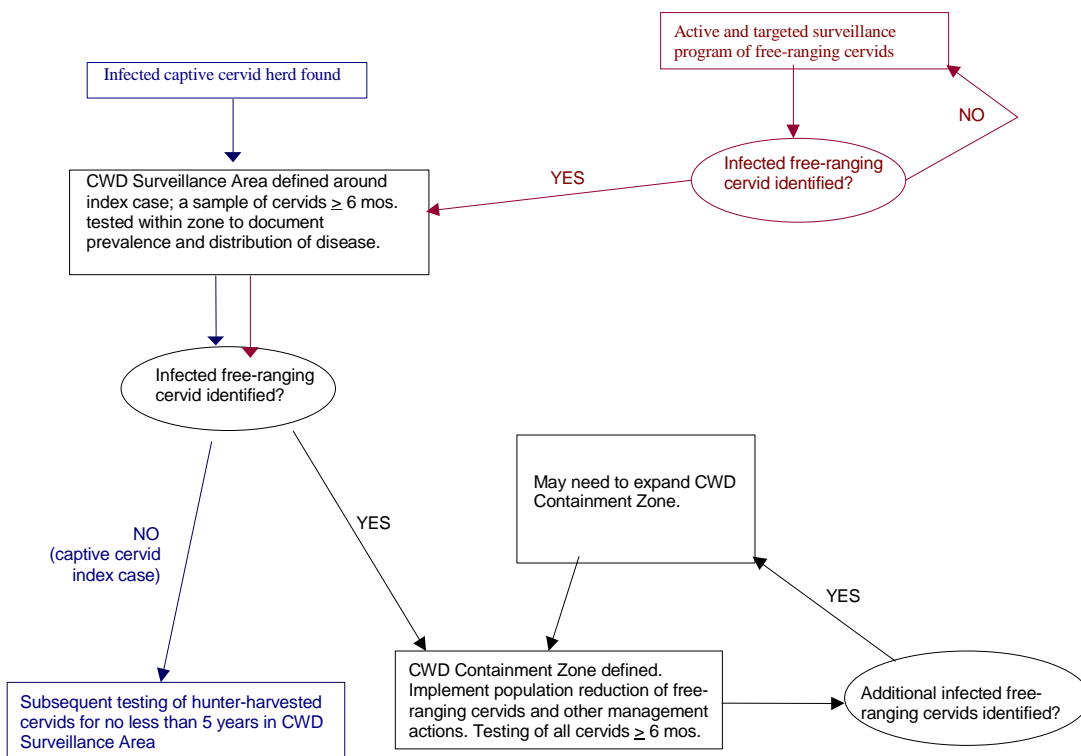
II. Identification of an infected free-ranging cervid.

Response measures will proceed as already described for the scenario of a captive cervid index case, with the exception that the initial CWD positive surveillance area should be drawn around the location of the first positive free-ranging cervid.

III. For all captive cervid facilities contained in a CWD Containment Zone that are not part of the trace-forward, trace-back, or index herd the following is recommended:

- A. Depopulation of all captive cervid premises, offering indemnification if funds are available.
- B. For herds not depopulated, require all captive cervid premises to double fence and participate in either a CWD Herd Certification Program or CWD Herd Monitoring Program to avoid quarantine.
- C. Require continuous testing of all death losses ≥ 6 months regardless of level of program.
- D. Intrastate movement of live captive cervids should only be from CWD Herd Certification Program participants Year 5 or above that meet the criteria of C above, or movements may be banned entirely.

Figure 1. Flowchart of Chronic Wasting Disease response activities to be undertaken by wildlife agency on free-ranging cervids.



APPENDIX F: Carcass Disposal Plan

Deer carcasses or their butchered remains have been disposed of since deer were first hunted. Since the advent of environmental regulations in the 1970s, the most common disposal methods have been landfills (both municipal waste landfills and deer disposal pits), rendering plants, and decomposition in the natural environment. Because the hunter ethic stresses using the meat of animals that are taken during a hunt, the most common forms of material requiring disposal are butcher waste (head, bones, internal organs, hide) and vehicle-killed deer. Butcher waste has traditionally gone to rendering plants or is sent to the local landfill along with other trash (entrails have traditionally been removed from the deer in the field and left for scavengers). Vehicle-killed deer have traditionally been picked up and taken to rendering plants or to local landfills. Although deer disposal pits were widely used in the 1970s and 1980s, their use is limited today.

In the event CWD is found in a jurisdiction, outbreak surveillance and population reduction activities will likely begin (Appendix E) and disposal of large numbers of potentially CWD-positive animals will be required.

The Wisconsin Department of Natural Resources (DNR), in conjunction with representatives of the Wisconsin Department of Health and Family Services, the Wisconsin Veterinary Diagnostic Lab, and the Department of Agriculture, Trade and Consumer Protection, prepared a detailed risk assessment, “An Analysis of Risks Associated with the Disposal of Deer from Wisconsin in Municipal Solid Waste Landfills,” and concluded that landfills provided reasonable containment of the prion (Go to http://www.dnr.state.wi.us/org/land/wildlife/Whealth/issues/Cwd/risk_analysis.pdf). The risk assessment concluded “that landfilling of CWD-infected deer does not pose a significant risk to human health” and “the risk of spreading CWD among Wisconsin’s free-ranging deer population by landfill disposal of infected carcasses is quite small.”

The risk assessment completed in Wisconsin points out that deer can be disposed safely. However, the potential reality of public perceptions must be acknowledged. Some may be concerned that prions will escape from the landfill and present a risk of the disease spreading to humans and other animals. Landfill operators may be concerned that treatment plants would no longer accept their leachate, leaving them with the choice of closing down or establishing their own treatment systems at an extremely high cost.

Rendering was mentioned as an environmentally sound disposal method in Wisconsin’s disposal document. However, current FDA regulations prohibit CWD-positive materials from entering the rendering process. Rendering continues to be a viable option for disposal of cervid carcasses not known to have been exposed to CWD.

Three viable options for environmentally sound disposal of CWD-positive carcasses are 1) landfilling in a site which meets modern sanitary landfill standards such as engineered liners, caps and leachate and gas collection systems; 2) incineration in a controlled system at temperatures sufficiently high to destroy the prion; and 3) tissue digestion with a strong base such as sodium hydroxide (lye). There are a number of sub-options within each category.

Landfilling

In general, landfilling is the most cost effective of the three major options for disposing of deer suspected of having CWD. It also has the advantages of being able to handle large numbers of animals, and the infrastructure for transportation and disposal is already well understood and in-place. A disadvantage to landfilling is while it is very effective at containing the prions, this method of disposal does not immediately destroy the prion. It is expected that the prions in the landfill will degrade over time, but it is not known how long it would take to completely inactivate all prions.

There are three sub-options for landfilling, each progressively reducing the risk of prions leaving the system, but each also progressively becoming more costly. The first sub-option is to use an existing modern sanitary landfill, which is the simplest and least expensive to implement. The second is to use an existing sanitary landfill but restrict the area used for deer disposal so that any leachate collected from this area can be handled separately. This reduces the concern that prions could escape through the leachate extraction and wastewater treatment system. However, it increases the cost and introduces a number of operational concerns that may be counterproductive to the containment of the prions. The third is to build a landfill dedicated to deer carcasses. Unlike a deer disposal pit, this landfill would be fully engineered with all the environmental safeguards required of modern sanitary landfills (liner, leachate collection system, etc.). The extracted leachate would be low in volume and could be solidified on-site and reintroduced into the landfill, creating a closed loop system. This sub-option could be designed for the number of carcasses expected and expanded as future needs dictate.

Incineration and Heat Inactivation

Incineration is a proven technology for disposing of TSE-infected animal carcasses. It has been used in North America and Europe. The European Union recommends a temperature of 850° C or above for at least two seconds for direct incineration of carcasses.

There are two sub-options for incinerating carcasses. The first is to use a controlled furnace, which is equipped with a primary and secondary combustion chamber. This includes pathological incinerators and animal crematories. These units are generally expensive and have a limited capacity (making it difficult to handle large numbers of animals), but are able to effectively meet the temperature criteria listed above. The second method is to use an “air curtain destructor.” This is a combustion unit consisting of an open topped pit or combustion box with a fan mounted along the length of the box. The unit is fueled with wood and the fan serves to provide oxygen as well as provide a curtain of air over the open top of the box to prevent the escape of smoke and unburned particulates. This method has been used in a number of other states for burning CWD carcasses as well as animals with other diseases. The drawback to this method is that it is extremely difficult to operate reliably since wind, rain and loading operations will disrupt the curtain and allow smoke to escape. It is also very difficult to maintain consistently high temperatures throughout the combustion box, and there is no secondary chamber to burn organics escaping with the flue gas.

Tissue Digestor

Although commonly called a digester this method of carcass disposal is based on alkaline hydrolysis. The basis of this technology is the use of sodium or potassium hydroxide solutions

under pressure and at elevated temperatures (~150° C) to hydrolyze proteins into peptides and amino acids. As TSEs are believed to be caused by an abnormal prion protein, this technology is ideally suited for inactivation and disposal of infected animals and tissues derived from them. USDA APHIS and Health Canada have purchased units for use in inactivation of prion-contaminated biological materials. USDA used the unit to destroy the “Vermont sheep” (sheep imported from Belgium infected with a TSE of unknown foreign origin).

The limitations of this technology are its relatively high cost and limited capacity. In addition, the digested material is extremely high in biological oxygen demand and requires dilution when introduced to a wastewater treatment plant.

Planned Disposal Activities

Where CWD is found, outbreak surveillance and population reduction activities will likely begin. Hunters should play an important role in these activities. In CWD-positive areas, hunters should store processed deer until test results are available, and they should be informed that CWD test results are not food safety tests. For hunters who do not want to keep their deer, for deer that are made available from shooting operations, or for vehicle-killed deer, the first choice for disposal of deer is at existing landfills, based on their low risk of spreading the disease and their low relative cost. Operational guidelines (immediate covering, placement that maximizes the travel distance to the leachate collection system) can be established to further reduce any risk associated with landfilling. Carcasses that have been tested but CWD was not detected, and that are suitable for human consumption, may also be made available to local food banks.

However, if landfills are unwilling to accept potential CWD-positive deer, then storage of carcasses until test results are available will be necessary. Existing landfills should be willing to accept carcasses that test negative for CWD. CWD-positive carcasses will be disposed of by incineration or alkaline digestion. These are safe but relatively more expensive options. Each jurisdiction will determine the location and capacities of these resources in their areas.

Outside of CWD-positive areas individuals should dispose of their butcher waste either through a local waste hauler to a sanitary landfill or on their own property. Meat processing facilities that previously sent their scraps to a rendering facility (rendering companies may not be willing to accept deer after CWD is discovered) will likely switch to a sanitary landfill.

Risks

The risks of using existing landfills and incinerators for the disposal of carcasses are minimal. These disposal methods have been used for many years for general animal carcass disposal and will continue in the foreseeable future. No adverse impacts have been identified. Carcasses that may be infected with CWD do not significantly change the situation. The risk assessment completed in Wisconsin concluded that landfilling of CWD-infected deer does not pose a significant risk to human health or spreading CWD among free-ranging deer. The greatest negative impact of using existing landfills is public perception. A public education and outreach effort is the best method of correcting this misperception, along with proactive coordination with local and state solid waste authorities.

APPENDIX G: Northeast Association of Fish and Wildlife Agency CWD Contacts

CONNECTICUT

Dale May
CT Dept. of Environmental Protection
Wildlife Division
79 Elm Street
Hartford, Connecticut 06106
Telephone: (860) 424-3011
Email: dale.may@po.state.ct.us

DELAWARE

Eugene Greg Moore
DE Dept. of Nat. Res. and Envir. Control
Division of Fish and Wildlife
89 Kings Highway
Dover, Delaware 19901
Telephone: (302) 739-5297
Email: Eugene.Moore@state.de.us

MAINE

Mark Stadler
Maine Dept. of Inland Fisheries and
Wildlife
Wildlife Division
284 State Street, Station 41
Augusta, Maine 04333
Telephone: (207) 287-5252
Email: mark.stadler@mail.gov

MARYLAND

Mark Hoffman
Maryland Wildlife Division
Tawes State Office Building, E-1
Annapolis, Maryland 21401
Telephone: (410) 260-8449
Email: mhoffman@dnr.state.md.us

MASSACHUSETTS

Thomas O'Shea
Mass. Division of Fisheries and Wildlife
Field Headquarters
Westboro, Massachusetts 01581
Telephone: (508) 792-7270 x128
Email: tom.o'shea@state.ma.us

MASSACHUSETTS (cont.)

Thomas French
Mass. Division of Fisheries and Wildlife
Field Headquarters
Westboro, Massachusetts 01581
Telephone: (508) 792-7270
Email: tom.French@state.ma.us

NEW HAMPSHIRE

Steve Weber
New Hampshire Fish & Game Department
11 Hazen Drive
Concord, New Hampshire 03301
Telephone: (603) 271-1439
Email: sweber@wildlife.state.nh.us

NEW JERSEY

Larry Herrighty
New Jersey Division of Fish and Wildlife
P.O. Box 400
Trenton, New Jersey 08625-0400
Telephone: (609) 292-6685
Email: larry.herrigh@dep.state.nj.us

Larry Niles
New Jersey Division of Fish and Wildlife
P.O. Box 400
Trenton, New Jersey 08625-0400
Telephone: (609) 292-9101
Email: larry.niles@dep.state.nj.us

NEW YORK

John Major
New York Dept. of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
625 Broadway
Albany, New York 12233-4755
Telephone: (518) 402-8919
Email: jxmajor@gw.dec.state.ny.us

PENNSYLVANIA

Calvin DuBrock
Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, Pennsylvania 17110-9797
Telephone: (717) 787-5529
Email: cdubrock@state.pa.us

Scott Klinger
Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, Pennsylvania 17110-9797
Telephone: (717) 787-6818
Email: scklinger@state.pa.us

RHODE ISLAND

Michael Lapisky
Rhode Island Division of Fish and Wildlife
4808 Tower Hill Road
Wakefield, Rhode Island 02879
Telephone: (401) 789-3094
Email: Michael.Lapisky@dem.ri.gov

VERMONT

Ronald Regan
Vermont Fish and Wildlife Department
Division of Wildlife
103 S. Main St., 10 South
Waterbury, VT 05671-0501
Telephone: (802) 241-3707
Email: ron.regan@state.vt.us

VIRGINIA

Robert Ellis
Virginia Dept. of Game & Inland Fisheries
P.O. Box 11104
Richmond, Virginia 23230-1104
Telephone: (804) 367-6482
Email: bellis@virginia.gov

VIRGINIA (cont.)

David Whitehurst
Virginia Dept. of Game & Inland Fisheries
P.O. Box 11104
Richmond, VA 23230-1104
Telephone: (804) 367-0940
Email: David.Whitehurst@dgif.virginia.gov

WEST VIRGINIA

Paul Johansen
West Virginia Division of Natural
Resources
Wildlife Resources Section
State Capitol Complex, Building 3, Room 815
Charleston, West Virginia 25305
Telephone: (304) 558-2771
Email: pauljohansen@wvdnr.gov

**WILDLIFE MANAGEMENT
INSTITUTE**

Scot Williamson
Wildlife Management Institute
RR 1, Box 587, Spur Road
North Stratford, New Hampshire 03590
Telephone: (603) 636-9846
Email: wmisw@together.net

U.S. FISH AND WILDLIFE SERVICE

Diane Pence
U.S. Fish and Wildlife Service
Division of Migratory Birds
300 Westgate Center Drive
Hadley, Massachusetts 01035
Telephone: (413) 253-8577
Email: diane_pence@fws.gov

John Organ
U.S. Fish and Wildlife Service
Division of Federal Aid
300 Westgate Center Drive
Hadley, Massachusetts 01035
Telephone: (413) 253-8501
Email: john_organ@fws.gov