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☞ Details: Proposed Audit: Chronic Wasting Disease

(FORM UPDATED: 08/11/2010)

WISCONSIN STATE LEGISLATURE ...
PUBLIC HEARING - COMMITTEE RECORDS

2005-06
(session year)

Joint
(Assembly, Senate or Joint)

Committee on Audit...

COMMITTEE NOTICES ...

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)
  (**ab** = Assembly Bill) (**ar** = Assembly Resolution) (**ajr** = Assembly Joint Resolution)
  (**sb** = Senate Bill) (**sr** = Senate Resolution) (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

* Contents organized for archiving by: Stefanie Rose (LRB) (July 2012)

Record of Committee Proceedings

Joint Legislative Audit Committee

Proposed Audit: Chronic Wasting Disease

April 5, 2006 **PUBLIC HEARING HELD**

Present: (9) Senators Roessler, Cowles, Miller and Lassa; Representatives Jeskewitz, Kaufert, Kerkman, Travis and Cullen.

Absent: (1) Senator S. Fitzgerald.

Appearances For

- Laurie Osterndorf, Madison — Administrator, Division of Land, Department of Natural Resources
- Alan Crossley, Madison — Wildlife Manager South Central Region, Department of Natural Resources
- Dale Schultz, Richland Center — Senator, Wisconsin State Senate
- Steve Freese, Dodgeville — Representative, Wisconsin State Assembly
- Lee Fahrney, Hollandale

Appearances Against

- None.

Appearances for Information Only

- Janice Mueller, Madison — State Auditor, Legislative Audit Bureau
- Paul Stuiber, Madison — Legislative Audit Bureau

Registrations For

- None.

Registrations Against

- None.

April 5, 2006 **EXECUTIVE SESSION HELD**

Present: (6) Senators Roessler, Cowles and Lassa; Representatives Jeskewitz, Kaufert and Kerkman.

Absent: (4) Senators S. Fitzgerald and Miller; Representatives Travis and Cullen.

Moved by Representative Jeskewitz, seconded by Senator Roessler, that **Proposed Audit: Chronic Wasting Disease** be approved according to the scope statement dated March 22, 2006 prepared by the Legislative Audit Bureau.

Ayes: (6) Senators Roessler, Cowles and Lassa; Representatives Jeskewitz, Kaufert and Kerkman.

Noes: (0) None.

Absent: (4) Senators S. Fitzgerald and Miller; Representatives Travis and Cullen.

ADOPTION RECOMMENDED, Ayes 6, Noes 0

Karen Asbjornson
Committee Clerk

Vote Record

Joint Legislative Audit Committee

Date: 4-5-06

Bill Number: CWD

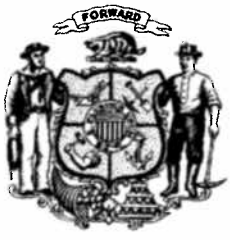
Moved by: Jeskewitz Seconded by: Roessler

Motion:

Committee Member	Aye	No	Absent	Not Voting
Senator Carol Roessler Co-Chair	☑	☐	☐	☐
Representative Suzanne Jeskewitz Co-Chair	☑	☐	☐	☐
Senator Robert Cowles	☑	☐	☐	☐
Senator Scott Fitzgerald	☐	☐	☑	☐
Senator Mark Miller	☐	☐	☑	☐
Senator Julie Lassa	☑	☐	☐	☐
Representative Dean Kaufert	☑	☐	☐	☐
Representative Samantha Kerkman	☑	☐	☐	☐
Representative David Travis	☐	☐	☑	☐
Representative David Cullen	☐	☐	☑	☐
Totals:	6	—	4	—

☒ Motion Carried ☐ Motion Failed

WISCONSIN STATE LEGISLATURE



STATE OF WISCONSIN
Legislative Audit Bureau

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Janice Mueller
State Auditor

DATE: March 22, 2006

TO: Senator Carol A. Roessler and
Representative Suzanne Jeskewitz, Co-chairpersons
Joint Legislative Audit Committee

FROM: Janice Mueller
State Auditor

SUBJECT: Proposed Audit of Chronic Wasting Disease—Background Information

At your request, we have gathered some background information the Joint Legislative Audit Committee may find useful in considering a request from Senator Schultz and Representative Freese to audit Wisconsin's efforts to combat chronic wasting disease (CWD). CWD is a fatal neurological disease that affects members of the deer family, including white-tailed deer and elk. The Department of Natural Resources (DNR) is the lead agency for coordinating the development of state policy on CWD-related efforts and for managing the disease in the wild deer population. DNR works cooperatively with the Department of Agriculture, Trade and Consumer Protection, the University of Wisconsin Diagnostic Veterinary Laboratory, and the Department of Health and Family Services, which play important roles in addressing the spread of CWD among captive animals, identifying infected animals through laboratory examination, and monitoring the potential effects of CWD on humans.

CWD was first confirmed in Wisconsin in February 2002. In March 2002, DNR established a disease surveillance plan to identify and combat the spread of CWD. Since that time, DNR and other state agencies have worked to prevent the spread of CWD among both wild and captive animals. Information on total CWD expenditures is not centrally maintained. However, in October 2003 we released a report on CWD that found $14.7 million had been spent on combating CWD in Wisconsin through fiscal year 2002-03. Of this amount, $12.6 million was spent by DNR.

Several concerns have been raised about the State's efforts to combat CWD. First, some have questioned the effectiveness of the State's policy because the disease continues to spread in spite of the increasing amount invested in prevention. Second, questions have been raised about the extent to which CWD efforts are funded with fees paid by hunters and anglers and whether CWD control efforts have come at the expense of other fish and wildlife programs.

An audit of the State's CWD efforts could:

- analyze overall program goals and accomplishments;
- review trends in program expenditures, including administrative costs, staffing costs, and supplies and services;
- assess trends in the number of staff devoted to CWD and the effect disease eradication efforts have had on other fish and wildlife projects;
- compare Wisconsin's approach to addressing CWD with those of states with similar problems; and
- determine whether DNR and other agencies have developed appropriate plans and budgets for dealing with CWD in the future.

If you have any additional questions regarding this request, please contact me.

JM/PS/bm

cc: Senator Robert Cowles
Senator Scott Fitzgerald
Senator Mark Miller
Senator Julie Lassa

Senator Dale Schultz

Representative Samantha Kerkman
Representative Dean Kaufert
Representative David Travis
Representative David Cullen

Representative Stephen Freese

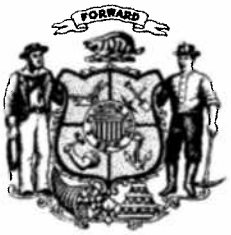
Scott Hassett, Secretary
Department of Natural Resources

Helene Nelson, Secretary
Department of Health and Family Services

Rod Nilsestuen, Secretary
Department of Agriculture, Trade and Consumer Protection

Kevin Reilly, President
University of Wisconsin System


WISCONSIN STATE LEGISLATURE


FORWARD

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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Joint Audit Committee – Proposed Audit on CWD
April 5, 2006
Laurie Osterndorf, Administrator, Division of Land
Alan Crossley, CWD Project leader

Thank you for this opportunity to testify this morning on the proposed audit of the DNR's effort to manage chronic wasting disease. As you know, the state has undertaken a policy of disease eradication since CWD was discovered in 2002. Our aim is to keep our efforts on CWD as transparent as possible, and we look forward to working with the Legislative Audit Bureau on this audit. I also want to take this opportunity to let you know about other reviews of CWD that have taken place recently, and efforts to find efficiencies within our CWD efforts.

We believe that the discovery of CWD in southern Wisconsin represents a significant threat to the state's white-tailed deer population and the culture of deer hunting in the state. Wisconsin has more than 700,000 deer hunters who have harvested an average of 460,000 deer annually during the past decade. Deer hunting contributes more than 7 million days of recreation each year. Deer hunting generates more than $500 million dollars in retail sales and nearly $1 billion in total impact to the state's economy each year.

Wildlife disease experts have concluded that in the absence of management intervention, CWD will most likely increase in prevalence and distribution. There is no evidence that CWD will "burn itself out" if left alone. There is also no evidence of genetic resistance to CWD in white-tailed deer or mule deer. A simulation model suggests that if left unmanaged over the next 10-30 years, CWD will spread widely throughout Wisconsin and will substantially increase in prevalence to more than 40% of adult deer. The model simulations are consistent with recent findings from Colorado that have shown increases in prevalence over the past few years in numerous local populations. Prevalence on some local winter ranges now exceeds 25-30%. In addition, the known affected area in both Colorado and Wyoming has expanded to the west and northwest more than 100 miles during the past 5 years. A spread of the disease consistent with what we've seen in Colorado can be devastating. As we saw with the Buckhorn Flats deer farm in Portage County, the prevalence of the disease (which was 70%) can become very high where deer populations are concentrated.

For these reasons and more, we are spending about $5 million each year on CWD. We have been receiving about $1 million dollars each year from the USDA to assist in this effort. The balance has been coming from state funds. Our management efforts ARE coming at the expense of some fish and wildlife programs as we have redirected staff and financial resources to respond to this disease. Although we feel the investment of $5 million to protect this $1 billion "industry" is a wise investment, we welcome the possibility of identifying other sources of funding that would spread these costs more equitably.

It was just 2 ½ years ago that two significant audits of our CWD management effort were finalized. On October 10, 2003, the final report from the External Review of our efforts was released. This External Review was conducted by experts in wildlife disease from other states, and was independent of DNR. The key findings and recommendations of the review panel (pages 4-5) deem Wisconsin's policy of eradication to be appropriate, and failure to contain and eradicate will result in a spread of the disease throughout Wisconsin.

Less than two weeks after the External Review panel released its report, the Legislative Audit Bureau also released a review of state efforts to combat CWD. The LAB review points out that even if eradication of the disease does not turn out to be a viable strategy, many believe that DNR's current efforts will prevent or limit the spread of CWD, because depopulation reduces the concentration of deer within areas known to have infected animals, thereby limiting opportunities to transmit the disease. They also highlight the continued attention that state officials must give to the potential spread of CWD to humans and livestock.

In June of 2005, we also produced a progress report detailing the first three years of our CWD efforts to coincide with the International Symposium on CWD, which was hosted in Madison last summer, and attended by major players in the animal health community worldwide.

The LAB is also currently undertaking an audit of the Fish and Wildlife Account in DNR. In the course of that audit, we have supplied LAB with much of the information that will be used in a CWD audit, especially as it relates to program expenditures.

In reviewing where we have come since the last audit 2 ½ years ago, I can say that we have made progress in reducing expenses and staff necessary to continue our efforts to eradicate CWD. As I said earlier, we spend on average, approximately $5 million per year on CWD. We have fine tuned many of our approaches and are looked to by other states such as New York for advice on the operational approach to responding to CWD. We believe the legislature's recent passage of AB 609, which will allow us to landfill carcasses will take us another step toward reducing costs associated with carcass handling and creating efficiencies in our handling of CWD.

In addition to the questions listed in the LAB's background letter to the Committee, we think a few other questions could be addressed by the audit:

1) What would be the future costs to the state if we don't eradicate or slow the spread of CWD in Wisconsin?

CWD testing statewide if the disease were to spread could ultimately be a much more costly venture than the current efforts.

2) Are there more effective and less costly means to eradicate or slow the spread of CWD in Wisconsin? Could other tools aid in the success of disease eradication, or supplement other control measures being employed currently?

The External Review panel recommended that baiting and feeding should be banned throughout the state. Baiting and feeding concentrates deer and creates opportunities for disease transmission. Prevention is always cheaper than the cure.

We also find that the lack of deer harvest by some landowners in the DEZ result in deer refuges which allow the disease to persist. This prolongs the disease management timeline and increases our costs.

3) Are there sufficient resources now dedicated to effectively stop or slow the spread of CWD in Wisconsin?

Even though the ramifications of CWD go far beyond the hunting community, CWD efforts are funded with fees paid for by hunters. Should other types of resources be dedicated to fighting CWD in Wisconsin?
Again, we welcome the opportunity this audit will provide to make the case that CWD is an issue of statewide significance and something that should be of concern to more than just the deer hunters in the state.

External Review of Chronic Wasting Disease Management in Wisconsin

October 10, 2003

Program Review Panel Members

John R. Fischer, Southeastern Cooperative Wildlife Disease Study, College of Veterinary Medicine, The University of Georgia, Athens, Georgia

Lynn H. Creekmore, Veterinary Services, Animal and Plant Health Inspection Service, United States Department of Agriculture, Fort Collins, Colorado

R. Larry Marchinton, Warnell School of Forest Resources, The University of Georgia, Athens, Georgia

Shawn J. Riley, Department of Fisheries and Wildlife, Michigan State University, East Lansing, Michigan

Stephen M. Schmitt, Wildlife Disease Laboratory, Michigan Department of Natural Resources, East Lansing, Michigan

Elizabeth S. Williams, Department of Veterinary Sciences, University of Wyoming, Laramie, Wyoming

Executive Summary

On February 28, 2002, the Wisconsin Department of Natural Resources (DNR) announced that chronic wasting disease (CWD) had been detected in three wild white-tailed deer killed by hunters during the 2001 hunting season. The DNR, in cooperation with several other state and federal wildlife management, domestic animal health, and public health agencies, took immediate and aggressive actions to better define and begin managing this serious wildlife disease problem. The DNR is to be commended for its rapid and continuing response to the presence of CWD in Wisconsin's highly valued wild deer population.

The overall aim of *"minimizing the negative impact of chronic wasting disease on cervid populations, the state's economy, hunters, landowners and others who are affected by deer management policies"* is a comprehensive and laudable goal. The DNR's policy of eradicating CWD in the limited area where it occurs, before it can spread throughout the state and elsewhere, is entirely appropriate. Intensive CWD surveillance in the affected area and throughout the state already has provided essential information for directing management efforts. Concurrently, deer population reduction in the region surrounding the known affected area, restrictions on human transport of live cervids, and a statewide ban on baiting and supplemental feeding of deer were implemented to limit the spread of CWD. All of these approaches are supported by widely accepted guidelines for CWD management, including the *Plan for Assisting States, Federal Agencies, and Tribes in Managing Chronic Wasting Disease in Wild and Captive Cervids* (National CWD Plan) and the *Multi-state Guidelines for Chronic Wasting Disease Management in Free-ranging White-tailed Deer, Mule Deer, and Elk* (Multi-state CWD Guidelines).

The DNR has based its CWD management on the best scientific information and has modified management strategies as new data have become available. This adaptive strategy is essential because of certain gaps in the current understanding of CWD epidemiology and the efficacy of CWD management techniques in free-ranging populations. As additional information develops in Wisconsin and elsewhere, the DNR should continue to modify its CWD management strategies and techniques to increase their effectiveness. Because disease management strategies must fit local conditions to be effective, research efforts in Wisconsin are directed at CWD ecology and dynamics, white-tailed deer behavior and ecology, and human dimensions. Research on CWD is a critical component of the DNR's management plan, and a substantial amount of information already has been generated regarding CWD distribution and prevalence in Wisconsin, as well as sociological responses to the recognition of CWD and associated control efforts.

The Wisconsin policies and actions are based on the following assumptions: (1) Chronic wasting disease is a transmissible spongiform encephalopathy caused by prions that are spread by direct contact between animals but also may be transmitted indirectly via environmental contamination. (2) Chronic wasting disease recently was introduced into the state, and its distribution is limited to a defined area in southern Wisconsin. (3) Chronic wasting disease may have a significant negative impact on

white-tailed deer populations, and its presence diminishes the real or perceived value of deer and elk. (4) High host animal density and frequent animal contact are associated with increased prevalence of the disease. (5) Chronic wasting disease will not disappear spontaneously in the absence of management actions, and restrictions on human activity are necessary to prevent its spread into new areas. All of these assumptions are valid in view of the current scientific knowledge of CWD, and they provide the foundation for the strategies of the two widely accepted guidelines for CWD management.

The management of disease in free-ranging wildlife populations generally is difficult, expensive, and controversial, particularly when marked population reduction is a component of the plan. Additionally, management of CWD in a high density, free-ranging, white-tailed deer population is unprecedented, and some may regard the DNR's eradication policy as inappropriate because proven techniques are not available. Consequently, the DNR must address the concerns of all stakeholders, including laymen, as well as wildlife professionals and scientists, as it continues to develop and maintain support for its eradication policy.

The DNR has done a commendable job of providing accurate and timely information to the public, as well as offering forums for discussion with hunters, landowners, and the general public. However, opposition to the CWD management plan by the public, especially landowners in the Disease Eradication Zone, represents a potentially significant obstacle to CWD eradication because success of the DNR management plan is highly contingent upon public acceptance and participation. It is essential that the DNR recognizes this potential obstacle and engages landowners and hunters in the disease management area to gain their support and assistance. The message of the DNR to the public should clearly state the risks CWD poses to Wisconsin's deer herd and those who appreciate it; that the lack of proven techniques to eradicate CWD does not justify inaction; that the management plan employs the best available techniques; and that the DNR is engaged in data collection and research to assess management actions and will continue to modify them to increase their efficiency and decrease negative impacts on the stakeholders when possible.

The DNR should continue to closely monitor the effects of its management strategies on CWD in the state. Currently, it is not possible to predict whether CWD will be eliminated from Wisconsin, although the consequences of inaction or inadequate response are clear: The prevalence and geographic distribution of CWD will increase. Because the management of CWD in wild cervids must be regarded as experimental, the acquisition and analysis of data during control efforts are critical to measure the progress of the program and to adapt strategies to maximize the effectiveness of CWD management and minimize the negative impacts of the disease. The Program Review Panel commends the DNR, all cooperating agencies, landowners, hunters, and others for their efforts to eradicate CWD from the state. If they are successful, they will have protected the remainder of Wisconsin, as well as other states, from the spread of CWD. Furthermore, Wisconsin is providing valuable information for other wildlife managers throughout the country who may find themselves faced with CWD or other significant infectious diseases in wild deer or elk populations.

Key Findings of the Program Review Panel

- The Wisconsin policy to attempt eradication of CWD from free-ranging and captive cervids is appropriate.
- Failure to contain and eradicate CWD in its current location will result in spread of CWD throughout Wisconsin's white-tailed deer population.
- The integrated, multi-agency approach to CWD eradication is commendable.
- The emphasis on CWD research and adaptive management specific to the Wisconsin situation is critical.
- The system developed for collection, transport, testing, and disposal of samples for CWD is impressive and has resulted in unprecedented data acquisition in a very short period of time.
- Disposal of carcasses and heads is a significant management and resource issue for the state.
- The combination of high densities of free-ranging white-tailed deer and a large dispersed captive cervid industry necessitates close coordination between managers and regulators of these entities.
- Wisconsin is providing timely and accurate information to the public about CWD.
- Public opposition to the DNR's management plan, particularly by landowners in the affected area, represents a potentially significant obstacle to the successful eradication of CWD from the state.

Key Recommendations of the Program Review Panel (not in order of priority)

- The goal of statewide CWD eradication should be consistently stated.
- Baiting and feeding of deer should be prohibited throughout the state.
- Consistent terminology should be used when discussing the CWD management areas.
- Passive (targeted) surveillance for CWD should be continued and expanded.
- Active CWD surveillance using hunter-harvested samples should continue in order to provide statistically valid data on CWD distribution in Wisconsin and to focus efforts around sites of higher risk.
- Spatial information gathered on CWD positive animals should be used to develop more immediate strategies to eliminate foci of high CWD prevalence.

Key Recommendations of the Program Review Panel (*continued*)

- Wisconsin should develop polices to prohibit transport out of the CWD area of materials from deer other than boned meat, antlers, hides, and clean skull plates.
- Wisconsin should work with landfill operators and the public to make the use of land fills a more cost effective and less contentious method for carcass disposal.
- Appropriate resources should be made available to the Wisconsin Department of Trade and Consumer Protection to educate captive cervid owners and enforce regulations regarding CWD in the cervid industry.
- Better fencing options for white-tailed deer should be developed to separate captive and free-ranging white-tailed deer.
- The DNR should develop and publicize its restoration plan for the CWD management zone.
- A more organized and structured plan for stakeholder education and participation should be developed.
- Because the Cary model underpins the need for aggressive actions to control and eradicate CWD in Wisconsin, an independent outside review of the model, preferably resulting in publication in a peer-reviewed journal, should be conducted.

Introduction

Chronic wasting disease is a member of the family of diseases known as transmissible spongiform encephalopathies (TSE). Other TSEs include Creutzfeldt-Jakob disease (CJD) of humans; scrapie of sheep and goats; and bovine spongiform encephalopathy (BSE), also known as "mad cow disease." Chronic wasting disease is distinctly different from the other TSEs, and unlike BSE, it never has been linked epidemiologically to human neurological disease. Furthermore, CWD never has been demonstrated to infect species other than white-tailed deer, mule deer, and elk under natural conditions.

The origin of chronic wasting disease (CWD) is unknown. It was first recognized as a syndrome in captive mule deer in Colorado research facilities in the 1960s but was not identified as a transmissible spongiform encephalopathy (TSE) until the late 1970s. In the 1980s and 1990s, CWD was found in free-ranging deer and elk in northeastern Colorado/southeastern Wyoming, and since 1996, it has been documented in captive elk or white-tailed deer herds in eight states and two Canadian provinces. The recognized geographic distribution of CWD in wild cervids has increased dramatically since 2000, when many states and provinces initiated or increased CWD surveillance. The size of the original endemic area in Colorado/Wyoming now is recognized to be larger, and foci of wild cervid infection have been found at locations remote from the endemic area.

The DNR began active CWD surveillance among hunter-killed deer in 1999, and approximately 1,000 animals from 72 of the state's 130 deer management units were tested with assistance from USDA-APHIS during the first 3 years. On February 28, 2002, the DNR learned that 3 hunter-harvested deer from a single deer management unit in southern Wisconsin had tested positive for CWD infection. Chronic wasting disease, which previously had been regarded as a "western problem," had been found for the first time in densely populated, wild white-tailed deer east of the Mississippi River. Within days of the announcement, the DNR, in cooperation with other state and federal agencies, landowners, and others, began aggressive efforts to determine the geographic distribution and prevalence of CWD infection in wild deer in the affected area. Within approximately 1 month, 516 deer were collected and tested from a 415-square mile area, and a total of 18 infected deer ultimately were identified within this region through May 2002.

In the summer of 2002, the DNR, in cooperation with the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP); Wisconsin Department of Health and Family Services; and other state and federal agencies, announced that it would implement an adaptive, interagency management plan to control and minimize the impact of CWD in Wisconsin. The DNR used the newly obtained distribution data to establish a CWD Management Zone in southern Wisconsin, including a 361-square mile Disease Eradication Zone in which all wild deer were targeted for removal to eradicate CWD before it could spread. Intensive CWD surveillance of approximately 50,000 wild deer throughout the state was identified as an essential element of the CWD management plan for 2002-2003. Additional actions taken by the interagency management group during the spring and summer of 2002, included implementation of rules that prohibited baiting

and feeding of wild deer statewide and stringently regulated importation and CWD monitoring of captive cervids, as well as public forums to discuss CWD and its management with stakeholders. Furthermore, research projects were developed to increase the understanding of CWD and deer ecology, evaluate effectiveness of the CWD management program, and analyze the human dimensions of CWD management.

There has been unprecedented reaction of the media, politicians, hunters, landowners, and the general public to the recognition of CWD in Wisconsin, as well as to CWD management policies and actions undertaken by the DNR and cooperating agencies. Wisconsin has an extremely rich outdoor recreation tradition: White-tailed deer are a key component of this heritage, and management actions impacting this important species could be expected to generate controversy. The DNR has enjoyed strong support from several groups for their CWD management efforts since the disease was found in the state while also enduring criticism from other groups within Wisconsin and elsewhere.

In April 2003, the DNR formed an external Program Review Panel to evaluate its management policies and actions regarding CWD. The panel convened in a public forum on April 21-22, 2003, in Madison, Wisconsin, where it received briefing materials and oral reports covering all aspects of the state's CWD management program. Informational items included the *State of Wisconsin CWD Management Plan* (January 21, 2003 Draft), *Overview of CWD and Research Needs for Wisconsin*, documents concerning alternative theories regarding the cause of CWD and on alternative management strategies, statewide CWD surveillance data for 2002-03, preliminary results of field studies, and other reports. The panel met with the Wisconsin Natural Resources Board and fielded questions regarding the state's management approach to CWD, particularly the statewide ban on supplemental feeding and baiting of deer that was implemented during the summer of 2002. The panel also received a tour of the CWD-affected area, including the sample processing facility at Black Earth.

The Program Review Panel was asked to:

1. **Assess management goals, policies, and ongoing strategies**
2. **Evaluate underlying assumptions**
3. **Assess merits of alternatives**
4. **Assess potential consequences**
5. **Identify other areas for consideration**

The Program Review Panel evaluated the Wisconsin program in the context of two similar, widely accepted CWD management plans rather than on the basis of potentially arbitrary criteria established by the Program Review Panel or others. The *Plan for Assisting States, Federal Agencies, and Tribes in Managing Chronic Wasting Disease in Wild and Captive Cervids* (National CWD Plan) was completed on June 26, 2002, by a joint task force representing the U.S. Department of Agriculture and the U.S. Department of the Interior, as well as numerous state universities, wildlife management

agencies, and animal health agencies. In April of 2003, the *Multi-state Guidelines for Chronic Wasting Disease Management in Free-ranging White-tailed Deer, Mule Deer, and Elk* (Multi-state CWD Guidelines) were adopted by the wildlife management agencies of several states that assisted in their development. To date, 19 state fish and wildlife agencies, including the Wisconsin DNR, have formally adopted these non-binding guidelines, indicating broad acceptance by agencies responsible for conservation of publicly owned natural resources.

1. Assess management goals, policies, and strategies

Although attention naturally focuses on the reactive disease management policies, extensive consideration must be given to proactive strategies to prevent CWD introduction and establishment in other areas of Wisconsin. Several aspects of the CWD management plan, especially those concerning baiting and feeding, captive cervid management, live animal movement, and carcass handling have a strong preventive component. There is no substitute for disease prevention as a strategy for managing disease in populations, and it is this panel's firm belief that prevention is the most efficient strategy to be employed in combating diseases in free-ranging wildlife. The extreme difficulty and expense of controlling diseases in wild animals are clearly evident in Wisconsin. The costs also are evident in Michigan, where several state and federal agencies have been working together to eradicate bovine tuberculosis since it was recognized in free-ranging deer in 1994, and in the Greater Yellowstone Area, where interagency programs have been working to eradicate brucellosis from elk and bison.

The overall aim of the interagency CWD management effort in Wisconsin focuses on "minimizing the negative impacts of CWD on cervid populations, the state's economy, hunters, landowners and others who are affected by deer management policies." To accomplish this comprehensive goal, the DNR and cooperating agencies have established the primary objective of CWD eradication in the known affected area via depopulation of wild deer within the Disease Eradication Zone combined with preventing the spread of CWD outside this area. Additionally, the interagency team will conduct research to increase the knowledge of CWD distribution, ecology, management, and human dimensions and use results obtained in Wisconsin and elsewhere to adapt its CWD management strategies accordingly. These goals are appropriate in view of the current knowledge of CWD and the management of disease in free-ranging wildlife, and they are consistent with the goals of the National CWD Plan and Multi-state CWD Guidelines. The Program Review Panel recommends the goal of CWD eradication consistently be stated to include the entire state of Wisconsin. The goal of statewide eradication is easily justified by the risk that CWD poses to cervids wherever it is found, the investment Wisconsin already has made to eradicate CWD in the known affected area, and the substantial evidence that CWD is not yet widely distributed in the state.

Extensive statewide surveillance data, including CWD test results from more than 41,000 wild cervids, strongly suggest that CWD was introduced in Wisconsin relatively recently and is confined to a comparatively small geographic area. From a disease control standpoint, the current situation affords the opportunity to implement aggressive

measures with optimal chances for success. A similar approach has been used effectively for infectious disease control in livestock and poultry, most often via localized depopulation or massive immunization programs. In the absence of vaccines and other disease control methods, depopulation or marked population reduction of the host species is the strategy of choice for CWD eradication in wild cervids.

Criticism of the Wisconsin CWD Management Plan arose, in part, because the DNR chose a strategy that has not yet been proven effective for CWD management in free-ranging cervids, and therefore, its success could not be guaranteed. Wildlife disease management strategies are based upon manipulation of the disease agents, the hosts, the environment, and human activities. Disease control efforts often are hindered by a number of factors, including the inherent difficulties of dealing with free-ranging wildlife and a paucity of tools documented to be effective under field conditions. Nevertheless, the lack of proven methods for management of CWD or other diseases in wild populations cannot be used to justify inaction by agencies charged with conserving valuable natural resources: Increased infection rates and geographic spread of CWD are the anticipated consequences of an inadequate management response.

The Program Review Panel commends the DNR, all cooperating agencies, landowners, hunters, and others for their efforts to eradicate CWD from the state. If successful, the remainder of Wisconsin, as well as other states, will be protected from the spread of CWD from this focus. Currently, it is not possible to predict whether CWD will be eliminated from Wisconsin, although the consequences of inaction or inadequate response are clear: The prevalence and geographic distribution of CWD will increase. Because CWD management in wild cervids must be regarded as experimental, acquisition and analysis of data during control efforts are critical to measure the progress of the program and to adapt strategies to maximize the effectiveness of CWD management and minimize the negative impacts of the disease. Wisconsin's experience is providing invaluable information for other wildlife managers throughout the country who may find themselves faced with CWD in wild deer or elk populations.

Baiting and feeding

Although precise modes of CWD transmission have not been delineated, the disease agent clearly spreads laterally from animal to animal, it may be transmitted indirectly via environmental contamination, and consumption of the disease agent causes infection of deer and elk. These facts support prohibition of practices that cause artificial congregation of deer. Baiting and feeding cause unnatural congregation of wild animals that normally are dispersed. These conditions enhance direct contact between infected and uninfected animals, as well as contact with feed or other materials contaminated with the disease agent from infected animals.

Many significant wildlife disease problems are associated with artificial feeding. In Michigan, baiting and feeding are strongly associated with establishment of bovine tuberculosis for the first time ever in a wild deer population in the United States, while winter feeding has been linked to bovine brucellosis in elk in the Greater Yellowstone

Area. These diseases became well established in wildlife receiving supplemental feed before the problems were recognized, and it is unlikely that they will be eliminated as long as the artificial practices persist.

Feeding and baiting should be prohibited throughout the state to reduce opportunities for CWD, or other significant infectious diseases, to become established in Wisconsin's wild deer herd. Testing of more than 41,000 wild deer in Wisconsin last year produced evidence that CWD is not widespread throughout the state. Nevertheless, a ban on baiting and feeding is warranted because our incomplete understanding of the risk factors for CWD introduction does not allow us to state categorically that the disease is absent. The recent identification of CWD in wild deer in Walworth County emphasizes the importance of recognizing limitations of even the most intensive surveillance programs.

The Program Review Panel also recommends that shooting over bait not be used as a population control tool in the Disease Eradication Zone by landowners or agency personnel. This practice, which may not be significantly more effective than shooting without bait, sends a mixed message to the Wisconsin public and potentially erodes support for the much-needed statewide prohibition of baiting and feeding.

Population reduction

Population reduction is at the center of CWD eradication efforts in Wisconsin, and it may also play a key role in prevention of CWD introduction to other areas of the state. The Herd Reduction Zone, in which deer population density is to be reduced to 10 deer per square mile, surrounds the Disease Eradication Zone and is designed to minimize the risk of CWD transmission from the affected area to adjacent areas. Additionally, Zone-T seasons are conducted in specific deer management units around the state where it has been determined that normal hunting pressure will not remove deer to a level compatible with the carrying capacity of the land.

Within the Disease Eradication Zone, the stated goal is depopulation of all wild deer within approximately 4.5 miles of any positive animal. Although, the DNR recognizes total depopulation of wild deer in the affected area is unlikely, this goal strongly indicates the intention of the DNR to reduce the deer population density to a level at which CWD cannot be maintained. Because this threshold density is unknown and because CWD is maintained in low-density wild cervid populations in some western states, attempts to depopulate the Disease Eradication Zone are appropriate.

Public hunting is the most efficient method to accomplish management of deer populations. In the Disease Eradication Zone, public hunting has been supplemented by personnel from state and federal agencies shooting deer in order to reach surveillance and management objectives. All of these options must remain open to minimize costs and maximize the efficiency of CWD management actions, and additional methods should be considered. A reward system for hunters who submit deer that test positive for CWD already has been initiated. Consideration also should be given to the judicious

application of additional techniques, including night shooting and shooting of deer from aircraft, by agency personnel to supplement current methods.

CWD testing and surveillance

The strong collaboration between the DNR, Wisconsin Veterinary Diagnostic Laboratory, and USDA-APHIS allowed testing of more than 41,000 samples collected through the 2002 hunting season. The implementation of a computerized system to track specimens from the hunter to the final report is a notable accomplishment. Use of retropharyngeal lymph node greatly increased the efficiency and numbers of animals that could be tested in a given time and also decreased the cost of testing.

Use of immunohistochemistry, regarded as the "gold standard," for testing all samples collected during the 2002 season was appropriate because it was the only technique approved by the USDA at the time the surveillance program was planned. With the infrastructure in place for large-scale immunohistochemistry testing, this method is appropriate for continued surveillance as well as for use as a confirmatory test. Consideration also should be given to the use of other testing methods validated and licensed within the last year.

It is essential that testing for CWD continue to be conducted in facilities that have been approved by the USDA in order to assure the reliability and consistency of test results from laboratory to laboratory. The lobbying by some private companies for use of unlicensed tests for CWD was unfortunate and served as a distraction for personnel attempting to implement an enormous surveillance program. Furthermore, apparently false positive CWD results obtained from use of one unlicensed test were reported in the media causing undue public concern and additional distraction to agency personnel.

Surveillance programs for CWD have three general objectives: (1) early detection in areas not known to be affected; (2) determination of the distribution and prevalence of CWD in newly identified areas; and (3) measurement of the response to CWD management strategies. Wisconsin is doing an excellent job with objectives 1 and 2, has made a good start on number 3, and should be commended for developing and implementing an extensive statewide CWD surveillance program in a very short time. The plan was based on sampling deer (every deer taken within the Disease Eradication Zone, 500 deer 18 months or older from each of 15 Deer Management Units comprising the CWD Management Zone, and 500 deer per county or group of counties statewide) in order to provide nearly 99% confidence of detecting CWD if it were present in approximately 1% of deer in each population. This surveillance strategy is dependent upon voluntary and mandatory submission of heads of hunter-killed deer for testing. Although the numbers of animals tested did not quite meet the goals stated for the 2002 hunting season, in nearly 90% of sampling units there is $\geq$90% chance that CWD would have been detected if present in approximately 1% of animals. Furthermore, it should be possible over the next few years to bring the confidence level up to 99% that CWD would have been detected if it were present in 1% or more of the wild deer throughout the state.

Wisconsin leads the nation in having a statistically valid understanding of CWD distribution.

The data collected with Wisconsin's CWD samples is very useful. Knowledge of the precise location of deer from which samples were collected is essential for monitoring changes in CWD over time for management and research. Localization to the section level (640 acres) is especially important for identifying small areas of high prevalence ("hot spots"), because CWD, like most wildlife diseases and wildlife populations, is not distributed uniformly across the landscape. Identification of "hot spots" might aid in eradication by concentrating deer depopulation activities and therefore be more acceptable to landowners and the public.

Wisconsin's CWD surveillance program also has provided a significant level of assurance that the disease is not widely distributed throughout the state. However the possibility that CWD could be present outside the affected zone, due to the highly clustered distribution of the disease, was realized in August 2003, with the announcement of a positive wild deer in Walworth County. Because it is impractical and cost-prohibitive to test every hunter-harvested deer in the state, random surveillance programs should be combined with targeted surveillance to test those deer most likely to be infected. The infected Walworth County animal was identified through targeted surveillance, highlighting the importance of this tool for CWD detection.

Future surveillance recommendations include targeted surveillance statewide for clinically affected animals; random surveillance of hunter-killed deer in areas of the state based on risk factors, including positive captive cervids, high numbers of unmonitored captive cervid facilities, and proximity to positive wild deer in Wisconsin and Illinois; as well as intensive hunter-harvested and cull surveillance in the expanded Disease Eradication and Herd Reduction Zones. Future surveillance programs should be adaptive, science-based, and practical in terms of manpower, money, and laboratory capacities.

Carcass Issues

Although carcasses of infected hunter-killed animals have not been documented as a source of CWD introduction into new areas, it is prudent to take measures to reduce the likelihood of such an event. The Program Review Panel recommends that Wisconsin develop policies similar to those in Colorado which prohibit transport out of the affected area of materials from deer other than boned meat, hides, antlers, and clean skull plates. Additionally, the Wisconsin DNR should advise its residents that those who hunt out of state should follow regulations and recommendations regarding carcasses in the areas where they hunt.

Based on current knowledge, Wisconsin's handling and disposal procedures for carcasses of infected animals are more than adequate. Processes should be employed that reduce the amount and activity of the disease-associated protein (PrP^{CWD}), and CWD-contaminated materials should be disposed of in ways that prevent exposure of wildlife,

domestic animals, or humans. Destruction or inactivation of PrP^{CWD} is difficult, and there are few treatments documented to be completely effective; however, proper incineration and alkaline digestion are two such treatments. Wisconsin has used incineration for disposal of CWD-positive carcasses and landfilled carcasses in which the CWD agent was not detected and is in the process of setting up an alkaline digester.

Disposal methods for carcasses of animals with TSEs vary around the world, as well as within the United States. In Great Britain, treatment and disposal of carcasses of animals with bovine spongiform encephalopathy (BSE) or scrapie are quite rigorous because of the connection of new variant Creutzfeldt-Jakob disease in humans to consumption of BSE-contaminated beef and the uncertainty regarding the origin of BSE. Scrapie animals in the United States currently are incinerated, buried, or disposed at landfill in accordance with state and local regulations; on-site disposal of carcasses or ashes is allowed as long as state and local requirements are met. Now that intensive surveillance has been completed and the distribution of CWD in Wisconsin is better defined, disposal options, particularly at landfills, should be expanded in those areas where CWD has not been found.

Management of farmed deer and elk

The presence of more than 900 captive cervid facilities warrants extensive industry involvement in CWD management if the disease is to be eliminated from Wisconsin. Despite relatively low levels of monitoring to date, CWD has been recognized in three captive deer or elk herds in Wisconsin, as well as in a white-tailed deer that escaped from one of the facilities. To prevent future occurrences, complete epidemiologic investigations should be conducted to identify possible sources of CWD introduction in these facilities, as well as potential spread of the disease to other premises.

Since CWD was recognized in Wisconsin's wild deer, several steps have been taken to monitor and eliminate CWD from captive cervids, including initiation of a state CWD program for captive deer and elk. The Wisconsin captive cervid CWD program, which includes importation restrictions and requirements for individual animal identification and CWD monitoring, is consistent with the framework of the proposed USDA-APHIS program (*Chronic Wasting Disease Herd Certification Program and Interstate Movement of Captive Deer and Elk*). Wisconsin's implementation of intrastate movement requirements equivalent to APHIS' proposed interstate movement requirements insures that producers moving animals within the state have an incentive to participate in surveillance programs and should serve as a model for other states.

Although the DATCP has been working with Wisconsin's captive elk producers for some time, regulatory authority over captive white-tailed deer was transferred from the DNR to DATCP in January 2003. The Program Review Panel recommends that appropriate resources be made available for the DATCP to educate captive cervid owners and to enforce regulations for this sizable industry currently consisting of 575 registered white-tailed deer herds.

It is critical to maintain complete separation of captive and free-ranging cervids in order to prevent transmission of CWD, or other diseases, between the two groups. Escapes from captive cervid herds or movement of wild deer in and out of captive facilities represent potential sources of CWD introduction into Wisconsin's wild deer herd. Conversely, entry of infected free-ranging animals into captive facilities could introduce CWD into farmed cervids in areas where CWD is present in wild deer. Fencing must be adequate to keep farmed cervids within their premises and wild cervids out of captive cervid facilities. White-tailed deer present a particular challenge in this regard because they are able to move in and out of facilities that would effectively contain elk or other cervid species, and a recent audit of white-tailed deer farms in Wisconsin documented several hundred escapes throughout the state. Wisconsin already has experienced a worst case scenario in this respect when, in late 2002, a deer was culled from the wild and tested positive for CWD six months after it had escaped from a CWD-infected captive white-tailed deer facility in Walworth County. However, preventing the escape of captive cervids is a national problem, not just a Wisconsin problem. The cooperative relationships between deer producers as well as state and federal wildlife management and animal health agencies in Wisconsin provide a unique opportunity to explore better fencing options for white-tailed deer and the Program Review Panel recommends that this work be pursued.

Monitoring, measurement, and adaptive management

The extensive surveillance program and associated research efforts in Wisconsin allow the DNR to monitor progress towards the elimination of CWD, as well as to identify features that may be exploited to increase the efficiency of management efforts. The interagency CWD team has identified and prioritized research needs for the development of information that will be critical for directing and modifying management strategies.

Research priorities in Wisconsin fall into three general categories: CWD ecology and dynamics, ecology of white-tailed deer, and sociology. Study of these topics in Wisconsin is greatly facilitated by the fortuitous presence of scientists with appropriate expertise within the state. Scientists from the DNR, the University of Wisconsin, the National Wildlife Health Center (U.S. Geological Survey), and other agencies are working on a variety of CWD studies following a plan developed by the interagency CWD team. These studies are integrated within the state and nationally and will provide information necessary for wildlife managers and the public to make decisions about CWD management in Wisconsin. It is too early to evaluate many of Wisconsin's research projects because they are in early stages of development and implementation; however, significant progress already has been made in some areas.

Although there is some overlap between Wisconsin research projects and CWD studies in western states and provinces, it is essential that local information be developed because several differences exist between the Wisconsin and western situations. Differences including species (white-tailed deer vs. mule deer and elk), cervid density (70-120 deer per square mile vs. 3-5 deer per square mile), and habitat (rolling

agricultural and mixed hardwood vs. prairie and montane) may have a profound influence on CWD transmission and dynamics. Local information is critical for development of site-specific CWD management plans. The study of CWD ecology and dynamics is made possible by the massive statewide surveillance program to determine geographic distribution, prevalence, demography, and epidemiology. Researchers and managers also are obtaining and archiving valuable frozen and fixed tissues for use in collaborative CWD studies which require work directly with the CWD agent from Wisconsin deer.

Another CWD research question concerns the potential for the disease to be naturally transmitted to other species, including wildlife, domestic animals, and humans. Several projects have been conducted or are underway in Wisconsin and elsewhere to develop information on this topic. The Wisconsin CWD Management Plan identifies the Department of Health and Family Services as the key agency to study any possible human health aspects of CWD. Active surveillance will be conducted for Creutzfeldt-Jakob disease (CJD) and unusual clusters of human illnesses that could suggest a novel source for CJD or CJD-like illnesses. This area of research is essential in view of the need for information to provide to hunters and others who consume venison, as well as the public concerns that have been fueled by intense media coverage of neurological diseases in Wisconsin hunters.

Research regarding the biology associated with intraspecific transmission and geographic spread of CWD in Wisconsin primarily is directed at the movements and social behavior of white-tailed deer. White-tailed deer ethology and ecology have been subjects of considerable research, and there is a body of knowledge on the subject. However, the white-tailed deer is a highly variable species over its large geographic range, and its behavior has been found to be unusually labile, depending on environmental and population parameters. Therefore, information obtained from other populations may not apply very well to the affected area in Wisconsin.

Areas of particular interest in cervid biology research in Wisconsin should include social groupings, reproductive behavior, and communication systems, particularly those involving direct contact or semiochemicals. Careful studies of infected animals in relation to all deer tested in the affected area already are providing information and may reveal clues as to how CWD is transmitted under field conditions. Results in Wisconsin and Colorado indicate higher CWD prevalence in males than in females, especially in older age groups. White-tailed deer social behaviors potentially related to higher prevalence in males may include signposting activities and pheromonal communication systems. Research to enhance detection of the CWD agent is critical to determine if it is present in saliva, urine, feces, as well as apocrine, and/or sebaceous secretions.

Another important area of cervid research is movement ecology of uninfected and infected cervids. University of Wisconsin researchers are investigating uninfected deer movements through radio telemetry studies in the Disease Eradication Zone and in an area in which population reduction is not occurring. Early findings include unusually long dispersals by does, and it has been suggested that depopulation efforts may result in increased dispersal among young females. The literature on whitetail dispersal suggests

that removal of adult does from an area may decrease dispersal among young bucks. These behaviors warrant further study because they may have a significant effect on the spread of CWD in wild populations. Studies to evaluate movements and behavior of infected animals prior to the development of obvious clinical signs are more appropriately conducted in endemic areas in western states because they are not consistent with Wisconsin's CWD eradication program.

Increased funding is becoming available for CWD and other TSE research. A team effort should be maintained by researchers in Wisconsin with others around the country to prevent inefficiencies, such as duplication of research. Coordination of CWD research and control efforts on a continental scale is vital.

Communications and human dimensions

It is essential to provide timely and accurate information about CWD to all persons potentially impacted by the presence of the disease in Wisconsin, including agency personnel, landowners, hunters, captive cervid farmers, the media, politicians, and the general public. The DNR and other Wisconsin agencies have maintained a high level of professionalism under excruciating circumstances, and care must be taken to guard and improve upon this excellence. Many of the ongoing Wisconsin outreach programs, such as the 1-800 numbers, agency websites, county liaisons, public meetings, and one-on-one sessions, are valuable and should be continued. Nevertheless, with the initial crisis-oriented phase over, effectiveness of communication efforts may be enhanced by evaluation and prioritization, as well as by the determination of clear objectives and a systematic approach to their implementation.

Strides have been made to better understand public reaction to CWD through focus groups and questionnaires. Town meetings were held; however, these venues potentially involve unidirectional communication with the organized flow of information principally from DNR to stakeholders. A structured process for collecting and interpreting information from stakeholders should be employed to preclude development of anecdotal synopses of stakeholder beliefs, attitudes, and expected behaviors. Additionally, agency personnel must be included in structured communication programs because they also are stakeholders with varying beliefs and attitudes regarding CWD and its management, and their opinions and actions have great influence on public perceptions of the DNR and its disease management policies.

Communication regarding CWD essentially is risk communication, which typically is defined as an interactive process of exchange of information and opinions among stakeholders concerning a specific risk. There are real or perceived health risks to humans and deer from CWD as well as secondary risks to economic, esthetic, cultural, and environmental values from the effects of the disease or its management. A key component of risk communication is a dialogue with stakeholders about risks and how to best manage those risks, many of which may be perceived risks for which "experts" cannot readily provide solutions. Investments in sociological research will be necessary

to achieve a level of understanding of human dimensions comparable with the desired understanding of environmental dimensions of CWD and its management.

In addition to appropriate risk communication, outreach activities must be used to enhance public support for CWD management policies and strategies. Opposition to the CWD management plan by the public, especially landowners in the Disease Eradication Zone, represents a potentially significant obstacle to CWD eradication because success of the DNR management plan is highly contingent upon public acceptance and participation. It is essential that the DNR recognizes this potential obstacle and engages landowners and hunters in the disease management area to gain their support and assistance. These outreach activities should be the product of research conducted to understand the public perceptions about CWD and its risks as well as the methods the public finds acceptable for management of the disease.

Environmental decontamination and restoration

Potential contamination of the environment from excretions, secretions, or decomposing carcasses of infected animals will be reduced under Wisconsin's CWD management strategy. However, it is not possible to know the extent of environmental contamination that has occurred to date or its potential contribution to maintenance of CWD in the remaining deer or reemergence of CWD following restoration. The Program Review Panel recommends that the Wisconsin interagency CWD team conduct or strongly support research to determine the potential role of environmental contamination in the epidemiology of CWD in Wisconsin and the efficacy of mitigation methods, and incorporate results of such research into the adaptive CWD management program, particularly during the restoration phase.

Restoration of animal herds destroyed in disease control operations is an essential part of any comprehensive management plan. It is important that the DNR publicize its restoration plan for the affected area and the scientific principles on which restoration will be based in order to facilitate public support and assistance with disease control measures. Acquisition of additional data will be necessary to make informed decisions regarding the timing of deer restoration in the Disease Eradication Zone in order to prevent reemergence of CWD in the area.

2. Evaluate underlying assumptions

The Wisconsin CWD Management Plan is based on several assumptions the Program Review Panel regards as validated by scientific information. (1) Chronic wasting disease is a transmissible spongiform encephalopathy caused by prions that are spread from infected animal to susceptible animal by direct or indirect contact, with a possible role for environmental contamination. (2) Chronic wasting disease recently was introduced into the state and its distribution is limited to a defined area in southern Wisconsin. (3) Chronic wasting disease may have a significant negative impact on cervid populations and its presence diminishes the real or perceived value of deer and elk. (4) High host animal density and frequent animal contact are associated with increased

prevalence of the disease. (5) Chronic wasting disease will not disappear spontaneously in the absence of management actions, and restrictions on human activity are necessary to prevent its spread into new areas.

The DNR is relying heavily on modeling for developing and adapting management plans. The objective of the model is to visualize, illustrate, and communicate alternative management approaches and consequences. As such, the Cary model is similar to previously published models on CWD management with the addition of spatial dynamics of disease transmission and its predicted impact on deer populations. The model follows a logical process and depicts an appropriate scale of analysis, and the author does a good job of stating assumptions and conducting sensitivity analyses.

The chief issue around any model is the accuracy of the assumptions on which the model is based. A primary assumption of the Cary model is that CWD transmission is frequency-dependent rather than density-dependent. In a frequency-dependent model, an infected animal transmits disease to a given number of other animals, regardless of how many other animals are in the area. In contrast, the number of animals to which disease is transmitted becomes fewer as the population declines in a density-dependent model. If transmission actually is more density-dependent than frequency-dependent in Wisconsin, then the Cary model likely would overestimate the probable effects of CWD on deer populations. It is assumed that the Cary model will be refined as data are generated by research projects in Wisconsin and elsewhere.

The model is fairly complex, and efforts should be made to make the model more transparent in how it was developed, how it functions, and in its limitations for prediction. Additionally, the credibility of the DNR relative to their management actions could be improved if an independent outside review of this central document were conducted, including publication of the Cary model in a peer-reviewed scientific journal. Although landowners who have chosen not to participate in the deer reduction policy may not be swayed by a document generated in-state, they may be more willing to accept the predicted impact of CWD on the deer and support aggressive local control measures if they can be shown that outside scientists agree with the overall findings of the model.

3. Assess merits of alternatives

The Program Review Panel evaluated theories regarding the cause of CWD. They found that the preponderance of scientific evidence supports prions (proteinaceous infectious particles) as the cause of CWD and other TSEs. The panel found little valid information to suggest other causes including micronutrient deficiencies or excesses, exposure to chemical compounds such as insecticides, and more conventional infectious disease agents such as bacteria.

Alternative CWD management methods for Wisconsin have been proposed by various interest groups and stakeholders within and outside the state. Strategies that have been advocated include elimination of clinical suspects only, testing live deer with subsequent culling of positive animals, reliance on natural resistance, and treatment or

vaccination. Vaccines and treatments for CWD are not available, and scientific evidence suggests that there is very little, if any, genetic CWD resistance among white-tailed deer or that removal of individual live animals that are clinically affected or test positive is practical or effective for managing CWD at the population level. Additionally, alternative approaches often were based on assumptions for which the Program Review Panel found little scientific support. These assumptions included beliefs that CWD is widely distributed throughout Wisconsin, it is of no significance to wild deer populations, and/or that its elimination is unfeasible and management efforts should focus on "living with CWD." Recent testing of more than 41,000 deer across Wisconsin has provided considerable evidence to refute the first assumption. Models, based on the best available science, indicate that in the absence of appropriate CWD management, the disease will spread and the infection rate will increase to a point where it has severe negative impacts on the deer population. While there currently is no scientific evidence or guarantee that CWD will be eliminated from Wisconsin, the potential consequences to the state and elsewhere warrant aggressive management by the interagency team to eradicate the disease while it is confined to a relatively small area.

4. Assess potential consequences

The anticipated consequences of CWD management actions in Wisconsin include containment and elimination of the disease from wild and captive cervids within the state, and progress toward this end will be monitored via intensive CWD surveillance. Potential adverse consequences of management actions include geographic spread of CWD via dispersal of deer in response to hunting pressure, spread/maintenance of CWD via attraction of unexposed deer to the area of lower deer density, spread/maintenance of CWD via changes in deer distribution, socioeconomic changes due to altered deer populations, and changing public perceptions of the DNR and other agencies involved in CWD management in Wisconsin. The research projects outlined in Wisconsin's CWD Management Plan allow monitoring of CWD, deer movement and distribution, and human dimension aspects of the ongoing efforts to eliminate CWD from the state and should provide the information necessary to adapt management strategies to correct for any of these adverse developments.

The ultimate adverse consequence is failure of adaptive CWD management in Wisconsin to contain or eradicate CWD. The DNR should continue to closely monitor the effects of its management strategies on CWD in the state and should be prepared to shift to a more passive plan if the aggressive efforts to eradicate CWD via deer depopulation become clearly unsuccessful. Severe deer population reduction in affected areas is not a benign treatment, and like the disease, the deer depopulation process will have long-term negative effects on the hunting culture and tradition. Because of this, efforts to depopulate free-ranging deer should not be continued any longer than there is reasonable hope that they will be effective. However, it is important to reemphasize that as long as there remains a reasonable hope of eradicating or controlling spread of CWD, every effort must be made to that end.

5. Identify other areas for consideration

Wisconsin's science-based, adaptive management strategy to eliminate CWD is comprehensive and provides few opportunities to identify other areas for consideration. One issue to be considered is using the spatial data obtained via CWD surveillance in the Disease Eradication Zone to identify precise locations of higher infection rates among deer and target these areas for especially aggressive management. This approach affords the opportunity to remove greater numbers of infected deer that may serve as sources of infection for uninfected animals within the area and from adjacent areas, as well as greater numbers of infected deer that could potentially spread CWD to remote areas via long dispersals or wandering. Additionally, this strategy may be more acceptable to landowners and others who have not supported the management approach so far if they realize that deer in specific areas may be serving as a potential source of CWD infection for other deer.

Consideration should be given to the nomenclature used to describe disease management areas and actions. The use of Disease Eradication Zone, Intensive Harvest Zone, CWD Management Zone, Buffer Zone, and Herd Reduction Zone terminology may be confusing, and a minimal number of explicit terms should be adopted and used consistently. One suggestion would be to describe the entire area in which disease management is the highest priority as the "CWD Management Zone" that consists of only two zones: The core area (Disease Eradication Zone) and the surrounding area (Disease Buffer Zone). Because disease management is the highest priority for the deer population within this area, terminology used for disease work is appropriate, although use of this terminology could discourage some from hunting or consuming venison. However, use of disease terminology clearly conveys the primary intent of the deer management being employed in the area.


FORWARD

DAVID CULLEN
STATE REPRESENTATIVE

APR 10 2006

April 7, 2006

Senator Carol Roessler, Co-Chair
Joint Committee on Audit
Room 8 South, State Capitol

Dear Senator Roessler,

I wanted to submit to you how I would have voted had I been present for the executive session of the Joint Committee on Audit this past Wednesday, April 5th.

Unfortunately, despite being present for most of the public hearing, I had to leave the meeting in order to visit with a group of students from Mother of Good Counsel, a school within my district.

Had I been allowed to vote, I would have voted accordingly:

- Proposed Audit: IT Systems Projects in State Agencies (Yes)
- Proposed Audit: Wetland Permitting & Mitigation Programs, DNR (Yes)
- Proposed Audit: Chronic Wasting Disease (Yes)

Although this may be too late in terms of the executive session vote, I think it is important to note how I would have voted into the committee record.

Sincerely,

David Cullen

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FORWARD

CONTROLLING
CHRONIC WASTING DISEASE
IN WISCONSIN

A PROGRESS REPORT AND LOOK TOWARD THE FUTURE

Wisconsin Department of Natural Resources
Bureaus of Wildlife Management and Integrated Science Services

PUB-CE-461 2005

Controlling Chronic Wasting Disease in Wisconsin:

A Progress Report and Look Toward the Future

By Robert E. Rolley
Bureau of Integrated Science Services

Wisconsin Department of Natural Resources
Bureaus of Wildlife Management and Integrated Science Services
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2005

PUB-CE-461 2005

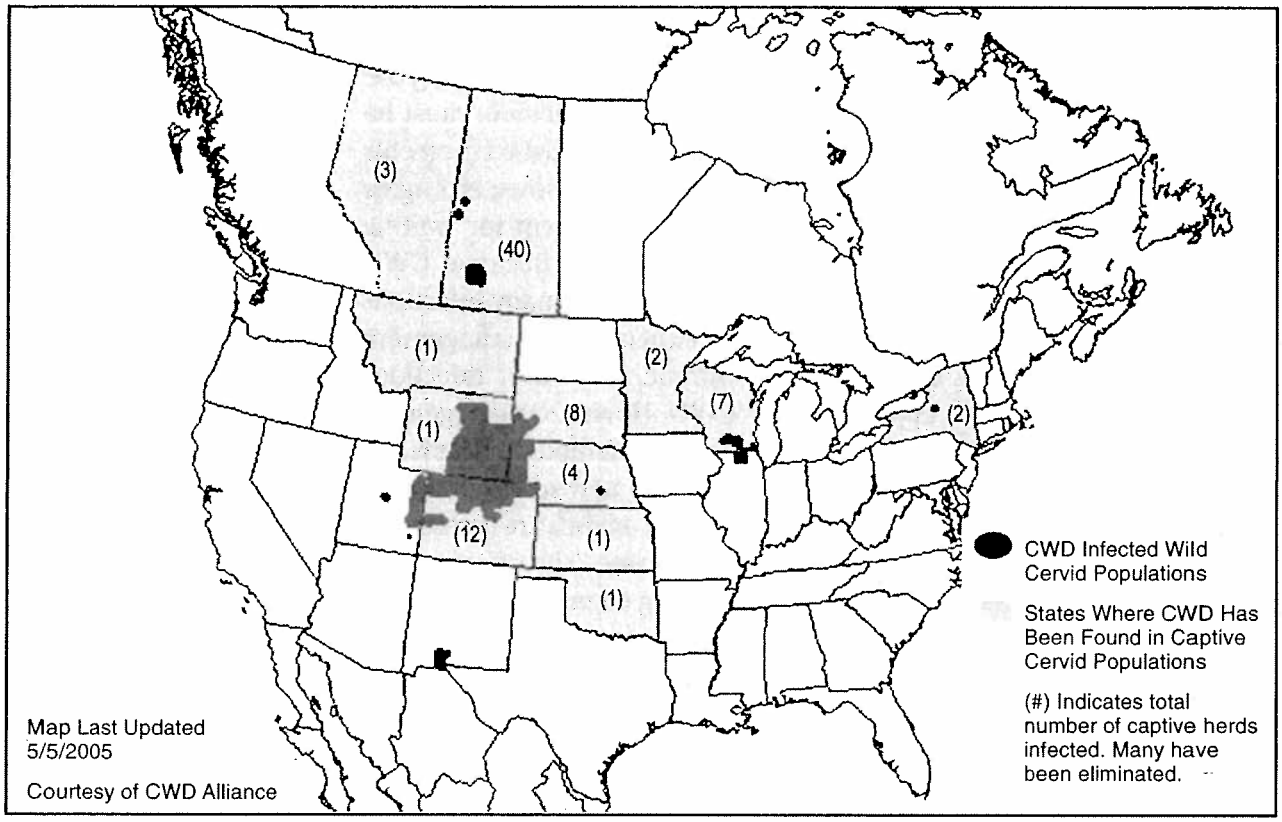
Chronic wasting disease (CWD) belongs to a group of fatal diseases of animals known as transmissible spongiform encephalopathies or TSEs. Other TSEs include scrapie in sheep, bovine spongiform encephalopathy (BSE, also called "mad cow disease") in cattle, and Creutzfeldt-Jakob disease of humans. TSEs are thought to be caused by an abnormal form of a protein called a prion. Infection occurs by conversion of normal prion proteins into a disease-associated, misfolded form that is highly resistant to degradation. CWD is characterized by slow accumulation of abnormal prions in nervous and lymphatic tissues. Clinical signs of the disease typically appear after more than 1.5 years, as accumulation of prions causes microscopic holes in brain tissues. Animals in later stages of the disease exhibit behavioral changes and progressive weight loss. The clinical signs are not unique to the disease and each could be due to another condition such as malnutrition, vehicle trauma, etc. Currently, there are no proven treatments or vaccines for prion diseases and all infections are believed fatal.

CWD is a Risk to Deer and Deer Hunting Which are Important in Wisconsin

The discovery of CWD in southern Wisconsin represents a significant threat to the state's white-tailed deer population and the culture of deer hunting in the state. Wisconsin has more than 700,000 deer hunters who have harvested an average of 460,000 deer annually during the past decade. Deer hunting contributes more than 7 million days of recreation each year. In 2001, deer hunting generated more than $500 million dollars in retail sales and nearly $1 billion in total impact to the state's economy. Deer are also important to non-hunters. In 2001, an estimated 2.2 million state residents participated in wildlife-watching activities and deer are among the most popular species for wildlife watching. In addition, nearly 300,000 nonresidents made trips to Wisconsin in 2001 to observe wildlife.

Wildlife disease experts have concluded that in the absence of management intervention, CWD will most likely increase in prevalence and distribution. There is no evidence that CWD will "burn itself out" if left alone. Further there is no evidence of genetic resistance to CWD in white-tailed deer or mule deer. A simulation model suggests that if left unmanaged over the next 10-30 years, CWD will spread widely throughout Wisconsin and will substantially increase in prevalence to more than 40% of adult deer. Simulations of effects on deer population size in the CWD affected area depend on the assumptions made about the transmission process, but all models show a moderate to substantial long-term reduction in deer population density. The model simulations are consistent with recent findings from Colorado that have shown increases in prevalence over the past few years in numerous local populations. Prevalence on some local winter ranges now exceeds 25-30%. In addition, the known affected area in both Colorado and Wyoming has expanded to the west and northwest more than 100 miles during the past 5 years.

Distribution of CWD in Captive and Wild Deer and Elk in North America



The discovery of CWD in 2002 was associated with a 10% reduction in deer license sales. License sales recovered somewhat in 2003 once statewide surveillance indicated that CWD is limited to the southern part of the state. Although there is no known instance of CWD affecting people, many hunters remain concerned because of a perceived similarity between CWD and BSE (mad cow disease). National and international human health agencies currently advise against consuming meat from CWD-infected animals.

Should the prevalence and distribution of CWD increase dramatically, the disease could severely impact the social and economic stability of the communities that depend on hunting. Sociological surveys of deer hunters suggest that nearly half would stop hunting if CWD prevalence increased to 50% and losses of deer hunters would be even greater if a linkage is ever confirmed between CWD and human disease. This could have significant effects on the economic vitality of rural communities that are dependent on hunting revenue, the preservation of cultural and family traditions, management and control of deer populations, wildlife agency revenue, and public support for wildlife management. If prevalence or distribution of CWD increases substantially it is likely that hunter demand for CWD testing of individually harvested deer will rise.

Wisconsin's CWD Management: The Plan

Because of the many scientific uncertainties regarding the basic biology and ecology of CWD, management must be considered experimental; there are no established protocols or proven solutions. However, wildlife disease experts agree that this should not be used as an argument for waiting for new research or for doing nothing. Because CWD behaves, in general, in a manner similar to many infectious diseases, it is reasonable to expect that management techniques used for other chronic, late-onset infectious diseases are appropriate for CWD. However, management should be conducted within an adaptive framework that includes methods to assess the effectiveness of management actions in controlling the disease. As new research information becomes available and as the results of current management actions are assessed, techniques should be reviewed and adjusted or replaced if appropriate. The effectiveness of management actions will be assessed primarily by monitoring changes in geographic distribution and prevalence of CWD. Therefore, intensive disease surveillance must be an integral component of the CWD management program.

Following the discovery of CWD in Wisconsin a management plan was developed by an interagency partnership between the departments of Natural Resources; Agriculture, Trade, and Consumer Protection; and Health and Family Services, together with the University of Wisconsin, U.S. Department of Agriculture, and the U.S. Geological Survey's National Wildlife Health Center and Cooperative Wildlife Research Unit. The goals for CWD management in Wisconsin are to minimize the negative impact of chronic wasting disease on wild and captive cervid populations, the state's economy, hunters, landowners and others people dependent on healthy wild and farmed populations of deer and elk. The 5 major actions to accomplish these goals are 1) surveillance, 2) human health protection, 3) research, 4) communications, and 5) disease prevention and control.

Wisconsin's CWD management program is based on the following assumptions: (1) Chronic wasting disease is a transmissible spongiform encephalopathy caused by prions that are spread by direct contact between animals but also may be transmitted indirectly via environmental contamination. (2) Chronic wasting disease was introduced into the state, is not part of our native ecosystems, and its distribution is limited to areas in southern Wisconsin. (3) If left uncontrolled, chronic wasting disease could have a significant negative impact on white-tailed deer populations, and its presence diminishes the real or perceived value of deer and elk. (4) High host animal density and frequent animal contact are associated with increased transmission and prevalence of the disease. (5) Chronic wasting disease will not disappear spontaneously in the absence of management actions, and restrictions on human activity are necessary to prevent its spread into new areas.

In April 2003, an external panel of wildlife disease experts evaluated Wisconsin's CWD management program. The panel concluded that the Department's overall goal of *"minimizing the negative impact of chronic wasting disease on cervid populations, the state's economy, hunters, landowners and others who are affected by deer management policies"* is a comprehensive and laudable goal. They further concluded that the objective of eradicating CWD in the limited areas where it occurs, before it can spread throughout the state, is entirely appropriate and consistent with the *Plan for Assisting States, Federal Agencies, and Tribes in Managing Chronic Wasting Disease in Wild and Captive Cervids* (National CWD Plan) and the *Multi-state Guidelines for Chronic Wasting Disease Management in Free-ranging White-tailed Deer, Mule Deer, and Elk* (Multi-state CWD Guidelines). The external review panel also concluded that the assumptions on which the management plan is based are valid in view of the current scientific knowledge of CWD.

The management of disease in free-ranging wildlife populations is difficult, expensive, and can be controversial, particularly when marked population reduction is a component of the plan. Management of CWD in a high density, free-ranging, white-tailed deer population is unprecedented. Some stakeholders regard Wisconsin's disease eradication policy as inappropriate because proven techniques are not available. Opposition to the CWD management plan by the public, especially landowners in the Disease Eradication Zone, represents a potentially significant obstacle to CWD eradication; success of the DNR management plan is highly contingent upon public acceptance and participation. The Program Review Panel recommended that the DNR clearly state to the public that CWD poses risks to Wisconsin's deer and those who appreciate them; that the lack of proven techniques to eradicate CWD does not justify inaction; that the management plan employs the best available techniques; and that the DNR is engaged in data collection and research to assess management actions and will continue to modify them to increase their efficiency and decrease negative impacts on the stakeholders when possible. The Program Review Panel concluded it is currently not possible to predict whether CWD will be eliminated from Wisconsin, although the consequences of inaction or inadequate response are clear: the prevalence and geographic distribution of CWD will increase.

Even if disease eradication ultimately proves not to be possible, many wildlife disease experts believe Wisconsin's current management efforts are appropriate because they should prevent or limit the spread of CWD. Population reduction decreases the concentration of deer within areas known to be infected, thereby limiting opportunities to transmit the disease.

Results to Date

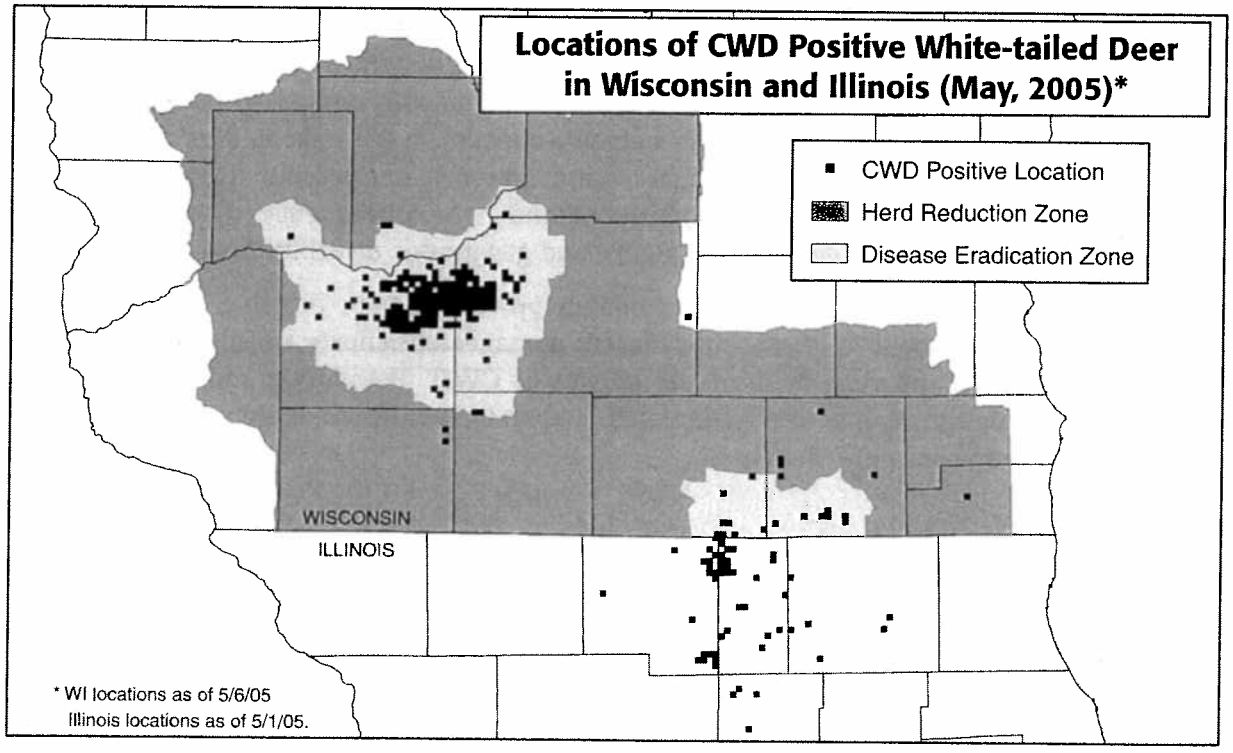
Surveillance

The DNR began active surveillance for CWD in 1999 following increased national awareness of interstate transport of elk from CWD-infected western farms. Through fall 2001 approximately 1,100 hunter-harvested deer had been sampled from across the state. In February 2002 the DNR was notified that 3 deer harvested from Deer Management Unit 70A in western Dane County tested positive for CWD. During March and April 2002, 516 deer were collected from a 12-mile radius surveillance area around the 3 initial cases. Fifteen of these deer tested positive for CWD.

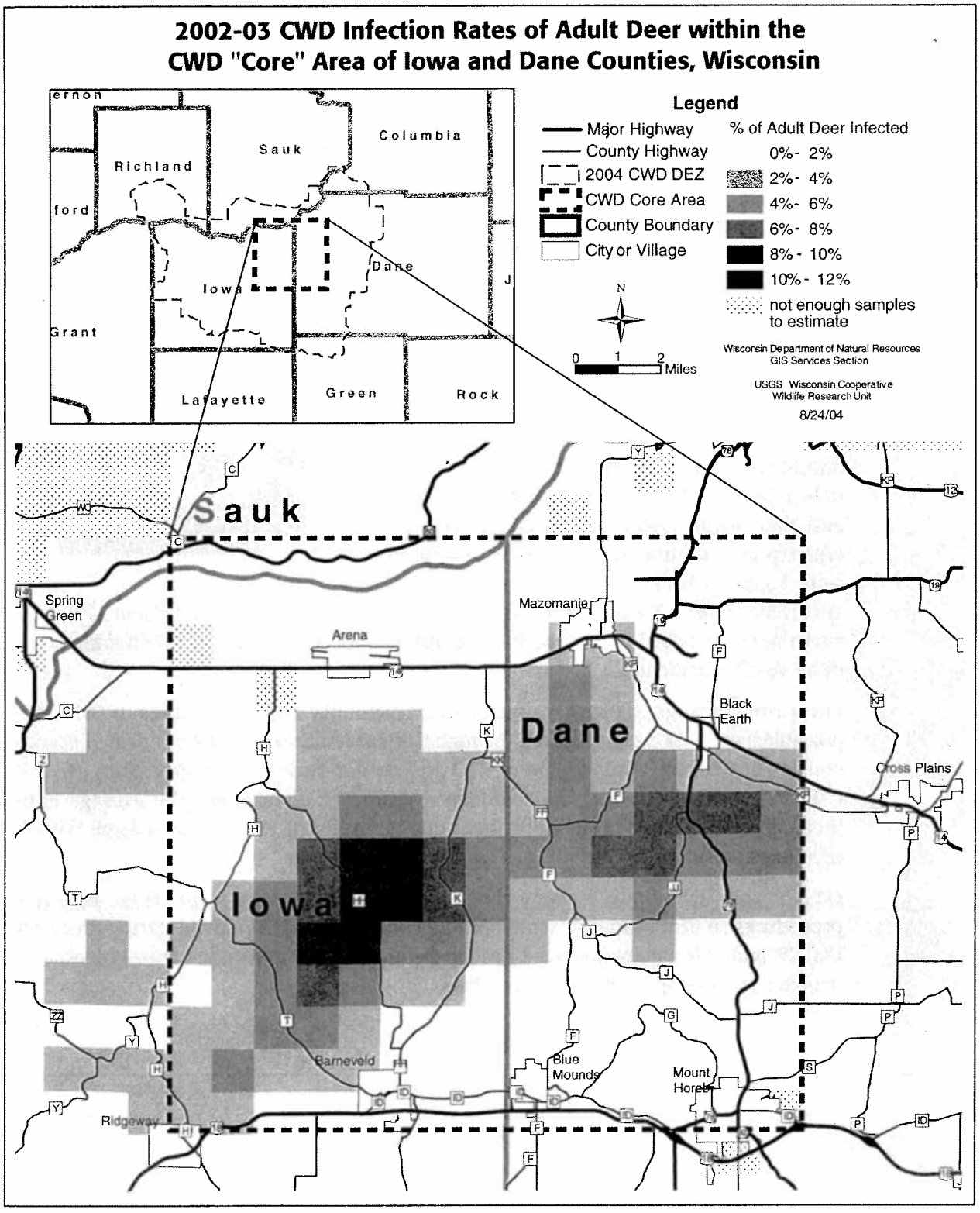
An extensive CWD surveillance program has been conducted starting in fall 2002. Through April 2005, over 75,000 deer have been tested from across the state. Sample intensity has been sufficient in the majority of the state to have a high degree of confidence that CWD would have been detected if it exists at 1% prevalence.

As of April 2005, a total of 470 free-ranging deer have tested positive for CWD, 445 in southwestern Wisconsin, 24 in 3 southeastern counties along the Illinois border, and 1 in eastern Dane County between the 2 outbreaks. The distance between the southwest and southeast outbreak areas and the intensive surveillance that has been conducted in the intervening area suggests that these areas may represent separate introductions. The southeast cases are adjacent to an outbreak in northeastern Illinois where 96 CWD positive deer have been found since 2002.

Analysis of the geographic distribution of the southwest Wisconsin outbreak showed that the pattern of positives is not random, but is tightly clustered. Although the total affected area is more than 1,300 mi^2, more than 80% of the positive deer are in a 126-



mi² area bounded by Spring Green, Mazomanie, Black Earth, Mount Horeb, and Ridgeway. The geographic distribution of positives within the southwest cluster has been similar the last three years. Within the cluster's core, high-prevalence area, prevalence among adult deer was similar in 2002, 2003, and 2004, approximately 5%. Within the center of the core area a few sections had prevalence of 8-12%.



Analysis of the sex and age composition of positive deer has shown that very few fawns are infected; only 10 out of more than 7,500 tested. Disease prevalence increases with age and the rate of increase is faster in males than in females. Only 2-3% of yearling females and males from the core area have tested positive for CWD. This increased to 4% of females and 10% of males for deer 3 years old or older.

Disease surveillance activities in 2004 focused on 1) the known affected areas in southwest and southeast Wisconsin, 2) the area surrounding the known affected areas, i.e., the herd reduction zone, and 3) selected areas of higher risk in proximity to infected cervid farms. In addition, suspect deer matching the clinical profile for CWD were tested throughout the state. A second round of statewide testing is currently planned to begin in 2005 and may take several years to complete. Additional surveillance activities around the eastern Dane County positive will be needed in 2005 to determine the significance of this case.

Human Health Issues

Although there is no evidence that CWD has ever caused illness in people, because BSE has been linked to the new variant form of Creutzfeldt-Jakob disease in humans, uncertainty remains about the health risk 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 accumulate. The Department of Health and Family Services has been conducting surveillance for CJD to assess potential relationships between CJD and CWD. This surveillance is based on reports from health care providers as well as ongoing reviews of all death certificates.

From 1997 through 2003, there have been 17 autopsy-confirmed cases of CJD and 20 possible/probable cases reported through this surveillance. All the confirmed cases are consistent with the classic form of CJD and do not have the characteristics of variant CJD. When both possible and confirmed cases are considered, the average annual incidence of CJD in Wisconsin is about one per million, which is consistent with CJD incidence worldwide.

DATCP and DNR have worked closely with meat processors to revise butchering procedures so that tissues in which prions concentrate are removed during processing. DATCP and UW Extension have provided hunters with common-sense guidelines for venison processing to minimize any risk.

Hunters who hunt in the CWD affected areas can request to have their deer tested free of charge. Hunters whose deer test positive for CWD are notified by telephone while those whose deer test negative are mailed a postcard. Hunters can also check the test results for their deer on the DNR's CWD web site. Elsewhere in the state a Hunter Service Testing Program has been developed to provide hunters the opportunity to have their deer tested for CWD. This program is a cooperative effort between the DNR, DATCP, Wisconsin Veterinary Medical Association, Wisconsin Veterinary Diagnostic Laboratory, and the U.S. Department of Agriculture. The program is built upon a network of private veterinary practitioners who are trained and approved to extract samples for CWD testing.

Carcass Disposal

The Interagency CWD Health and Science Team extensively evaluated available methods for disposal of deer carcasses and butcher waste to minimize the risk to human and animal health. Based on this evaluation, the DNR concluded engineered sanitary landfills provided a safe and effective means to control the CWD disease agent. However, because of concerns by local governments, landfill operators, and municipal waste water treatment facilities more intensive disposal procedures have been implemented during the past 3 years.

In 2002 we used a "frost and toast" option where carcasses were sampled and held in refrigerated semi-trailers until test results allowed for sorting of positive and negative animals. All negative animals were land filled. All CWD positive animals, butchered waste, heads and car-killed deer were incinerated. The 2002 season generated over 1.1 million pounds of waste with hunters keeping 43% of the deer that were shot.

The 2003 season was similar to the first with the "frost and toast" option selected as the preferred alternative with carcasses stored in refrigerated semis and sorting after test results were made available. Positive animals were either incinerated or chemically digested. The amount of waste handled through incineration and chemical digestion amounted to 633,000 pounds with hunters keeping 78% of the deer harvested.

In 2004 a food pantry program was initiated so hunters could donate negative tested animals from the DEZ. Positive animals, butchered waste, heads, and car-killed deer were principally disposed of through chemical digestion with incineration as a back-up. To date 382,000 pounds of waste were disposed of through chemical digestion and incineration. Hunters kept 85% of the deer that were harvested and over 2,200 additional deer were donated through the food pantry program.

Research

A comprehensive interagency CWD research plan was developed in 2002 to determine what was currently known about CWD and CWD control strategies and what key information was needed to manage CWD in Wisconsin. Compared to many other diseases, relatively little was known about CWD and effectiveness of control strategies. Research priorities were identified in 5 broad areas: disease ecology, deer ecology, human ecology, diagnostics, and human health implications of CWD.

Because of the need to implement the disease control program quickly, an adaptive management approach integrating research and management activities was identified as a key component of the CWD control strategy. This facilitates learning about the disease as we manage. Long-term disease and deer population monitoring programs were identified as critical for assessing the effectiveness of the proposed disease control strategies.

There are 34 CWD research studies currently underway in Wisconsin. Another 12 studies are underway in other states with which we are collaborating by providing data and/or tissue samples. These studies are being conducted and funded by many partners such as University of Wisconsin and the USGS National Wildlife Health Center. Coordination of these studies is being done by an interagency team to insure research is focused on high priority needs for managing CWD in Wisconsin, to promote collaboration among scientists, to facilitate data sharing, and to promote joint problem solving.

These research studies include topics such as:

- Deer dispersal, social behavior, and mortality;
- Disease ecology, including genetic resistance of deer to the disease;
- Comparing Wisconsin CWD strains to those found on other parts of the continent;
- Spatial patterns and prevalence of CWD in SW and SE Wisconsin;
- Transmission mechanisms, including the effects of baiting and feeding and between does and fawns before they are born;
- Dynamics of CWD prions in the soil;
- Susceptibility of other species, such as cattle and scavengers, to CWD;
- Possible risks to human health, including primate studies and comparison of deer and human prion genetic and molecular structures;
- Attitudes, behavior, and desires of hunters and landowners in relation to CWD;
- Analysis of deer removal efforts in SW WI and changes in deer population size;
- Computer modeling to evaluate alternate management strategies;
- Better diagnostic tools for detecting the disease;
- Development of techniques to detect CWD prions in the environment.

Information from these projects is being used to evaluate the effectiveness of disease control activities and in making management decisions about future control strategies.

Some of the initial findings from these research studies can be found throughout this document. Additional findings include:

- Virtually all white-tailed deer in Wisconsin are genetically susceptible to CWD;
- Bucks and does have small annual home ranges in the southwest Wisconsin affected area and bucks did not move long distances during the rut or during the gun deer hunting season;
- Sixty-five percent of yearling bucks dispersed an average of 4.3 miles, but most were killed before establishing a new home range;
- Deer removals in the SW DEZ were higher in areas of higher deer densities, from areas where there was more landowner interest in the CWD management program, and from areas in proximity to the area of highest CWD prevalence;
- Hunters in the DEZ expressed strong support for the bans on feeding and baiting in the CWD affected areas;
- Deer activity was higher at feeding sites than in natural winter browse areas and there was more close contact among deer at bait piles than when bait was broadcast.

Research on diagnostic tests for CWD has already resulted in the adoption of screening tests that significantly shorten the time required to notify most hunters of the status of their deer.

Communication

Providing the public with timely, complete, and accurate information about CWD is a key part of the CWD control plan. Public support for the control plan is heavily dependent on the public's perception of the legitimacy of the information provided by the state. During the past three years public outreach was accomplished through statewide public meetings, personal communications, local government meetings, web pages, special publications, and news releases. One-on-one communications between department staff and landowners in the affected area was a primary focus of communication efforts during summer and fall 2003 and 2004. Significant publications include *Understanding Chronic Wasting Disease in Wisconsin: the First Step to Disease Control*, two issues of *Chronic Wasting Disease Update*, "Ask Scott" columns in local newspapers, and newsletters to landowners in the affected areas. In addition, a toll-free CWD information line 1-877-WISC CWD (1-877-947-2293) has been implemented to provide hunters, landowners, and the general public with CWD information.

A recent review of state agency CWD web sites found that Wisconsin's site provided more press releases and maps than other states and only Wisconsin included information on public opinion research related to CWD. Wisconsin was one of only 2 states to include independent reviews of their management strategies on their web sites. Wisconsin's system for management of CWD test results and interactive web mapping tools are recognized as national models for the management and display of CWD data.

A statewide survey of deer hunters in 2002 found that a clear majority of hunters agreed that the information about CWD provided by the DNR was believable and that the agency provided enough information for hunters to make sound decisions on actions to take regarding CWD. Additionally, 63% of hunters in CWD affected counties and 57% of hunters in the rest of the state agreed that the DNR provided adequate opportunities to listen to their concerns and opinions about CWD. One measure of the effectiveness of the CWD communication strategy is that more than 90% of hunters in the CWD eradication zone who responding to a survey in 2003 were aware of the rewards offered for shooting CWD positive deer.

Disease Prevention and Control

Options for control of CWD are limited because no vaccine or proven preventive strategy is available to prevent infection of susceptible animals and there are no proven treatments for infected individuals. The long incubation period, possible environmental contamination with a persistent pathogen, and an incomplete understanding of the routes of transmission further limits options for control of CWD. Because of the difficulty in eradicating CWD from wild populations once it is established, a high priority is preventing establishment of new disease foci.

The National CWD Management Plan recognizes reduction of host populations as the disease control method most likely to be effective in eliminating CWD in the wild. Additionally, the expert scientific panel who recently reviewed CWD in Canada recommended substantial deer population reductions to control and eliminate CWD. Removing as many deer as possible, each year, from infected areas provides the best opportunity for controlling the disease by 1) removing infectious individuals from the population, 2) reducing the number of susceptible animals below the threshold needed for the disease to persist, and 3) limiting the accumulation of infectious CWD prions in the environment. By increasing the number of deer removed from the population each year, the remaining population will be predominantly young, with few older age-class animals in the population to transmit the disease. Older aged animals (3 years old and older) have been shown to have the highest levels of infection. In addition, the remaining population will have a lower density, so contact between individual animals or groups of animals will be reduced. This is expected to reduce the rate of disease transmission, as well as the number of deer that disperse from the population. Annual removal of infected animals should be greater than the number of deer that are newly infected with the disease each year, and over time this should result in reduced prevalence of the disease and eventually in its elimination.

Wisconsin has implemented an aggressive disease management program in an effort to control the spread of CWD and attempt to eradicate it from both the wild and farm-raised deer and elk in the state. To help prevent the establishment of new disease foci, the DNR revised wildlife rehabilitation policies to prohibit the rehabilitation of sick or injured adult deer and rearing of "orphaned" fawns from counties affected by CWD. In addition, because movement of infected carcasses is a possible mechanism for spread

of CWD, legislation was introduced in 2004 to regulate the in-state and interstate movement of deer and elk carcasses from CWD affected areas. However, the legislation was not passed during the legislative session. Hunters have been advised of risks associated with carcass transportation and safe disposal procedures for potentially infectious tissues such as brain and spinal cords.

The primary CWD control strategies used for wild deer include: 1) substantial deer population reduction in the know affected areas, 2) reducing deer populations around the affected area to establish a buffer zone to limit the spread of CWD, and 3) banning baiting and feeding of deer in the affected area and the buffer zone to limit the transmission of the disease. In addition, a CWD monitoring and control program has been developed to identify and eliminate CWD from farm-raised deer in Wisconsin.

Disease Eradication Zone

The DNR has established a disease eradication zone (DEZ) in southwestern Wisconsin that has expanded from 411 mi^2 to approximately 1,300 mi^2 as surveillance activities detected additional positive deer. In addition, a smaller eradication zone (approximately 300 mi^2) has been established in Rock and Walworth counties in southeastern Wisconsin. Population goals in the DEZs are less than 5 deer/mi^2 of habitat.

Deer population reduction methods in the DEZs have included 1) extended hunting seasons with liberal bag limits, 2) out-of-season shooting permits issued to landowners, and 3) government agency sharpshooters. An unlimited number of "earn-a-buck" permits were issued to hunters, requiring them to take an antlerless deer before they were allowed to harvest a buck. Earn-a-buck permits were used to focus the harvest on the antlerless (doe and fawn) component of the population because harvesting of antlerless deer has the greatest effect on reduction of deer populations.

Out-of-season landowner permits and agency sharpshooters were used in summer 2002 and winter 2002-03 in the southwest DEZ. Agency sharp-shooting activity and landowner permits during winter 2003-04 were concentrated in the southeast counties. Government sharpshooters were used in fall and winter 2004-05 to target areas of high prevalence and high deer density within the DEZs. Government sharpshooters were also used in selected areas around outlying positive cases to facilitate collections of larger surveillance samples to better understand the distribution and intensity of the disease on the periphery of the DEZs. In all cases, government shooters worked with landowner permission on both public and private lands.

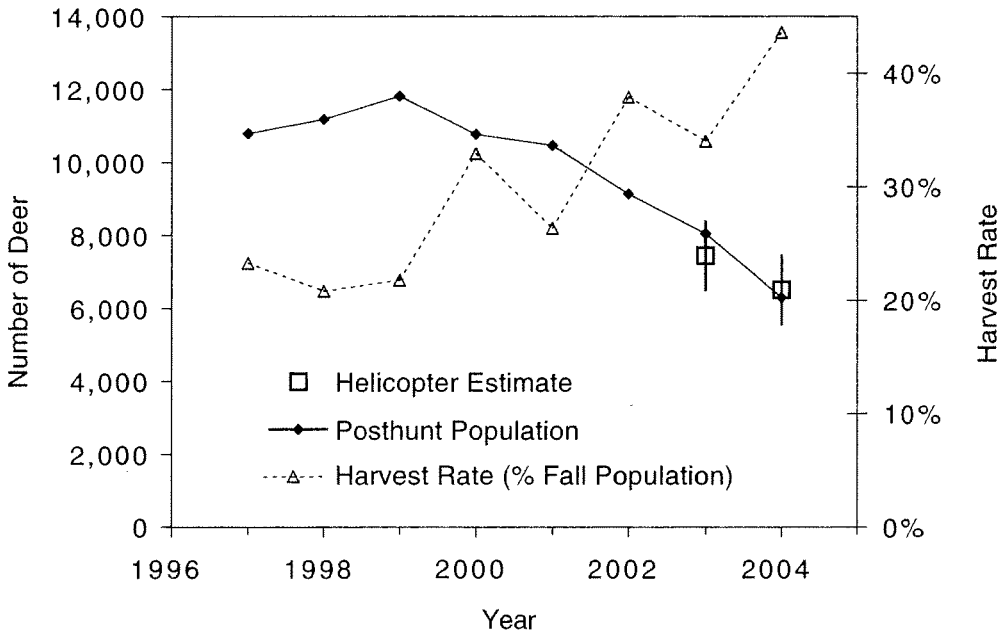
Whitetails Unlimited, in partnership with the DNR, offered a 2-part reward program in 2003 and 2004 for hunters and landowners that harvested deer in the CWD affected area. The *Focus on Positives* part of the program paid $400 for each CWD positive deer, split evenly between the landowner and the hunter. The *Every Deer Helps* part entered each hunter who registered a deer in the DEZ into a lottery, potentially eligible for $20 payment for each deer registered. A total of $250,000 was available for the reward program. In 2003, after payment for the positives, sufficient funds were remaining to pay for more than 10,000 deer shot under the *Every Deer Helps* program.

Over 9,200 deer were removed from the eradication zones in 2002-03, nearly 13,700 deer were removed in 2003-04 and approximately 16,000 were removed in 2004-05. More than 70% of the deer shot in the 2002-03 season were antlerless, 64% were

antlerless in 2003-04, and approximately 69% were antlerless in 2004-05. A survey of hunters in the southwest DEZ in 2003 found that they hunted 4 days longer and harvested about twice as many deer compared to hunters outside of the CWD management zones.

Aerial surveys have been conducted in late winter 2003, 2004, and 2005 to monitor deer population changes in the southwest DEZ. Average density in winter 2005 was estimated to be 28 deer/mi^2 of habitat. A 35% population reduction between winter 2003 and 2005 was estimated for the core area of the DEZ where disease prevalence is highest. Cumulative population reduction since 2001 for deer management unit 70A which is entirely within the DEZ is estimated to be 40%, from 48 to 29 deer/mi^2. Antlerless harvest rates during 2002-2004 for 70A were estimated to average 39% of the fall population, compared to an average of 25% during the previous 5 years.

Antlerless Harvest Rates and Posthunt Population Estimates
DMU 70A



Herd Reduction Zone

Deer management units surrounding the areas known to be affected by CWD have been included in a Herd Reduction Zone (HRZ). The HRZ extends out to approximately 40 miles from the disease eradication zone. Deer population goals for units in the HRZ are 10 deer/mi^2 of habitat, establishing a buffer zone to limit the spread of CWD. Extended hunting seasons and liberal bag limits are the primary tools being used to reduce deer populations in the HRZ. Similar to the DEZ, hunters were issued an unlimited number of earn-a-buck permits. More than 41,500 deer were taken (75% were antlerless) in the HRZ in 2002-03, approximately 53,500 deer (73% antlerless) were harvested 2003-04, and approximately 54,800 deer (74% antlerless) were killed in 2004-05.

Baiting and Feeding

Baiting and feeding artificially concentrates deer and facilitates increased animal-to-animal contact and exposure to CWD-containing excreta. A consequence of increased contacts is an increased risk of disease transmission among deer. Wildlife disease experts have repeatedly emphasized the critical importance of preventing the feeding and baiting of deer and elk. The national CWD management plan recommends the elimination of baiting and feeding of deer as a control strategy for containing and eradicating CWD.

In 2002 the DNR enacted an emergency rule to ban statewide the use of bait for deer hunting and the artificial feeding of deer to minimize the probability of CWD transmission. Compromise legislation restricting baiting and feeding passed the legislature and was signed into law in 2004. Baiting and feeding are banned in counties entirely or partially located within CWD management zones or within 10 miles of a captive or free-ranging animal that has tested positive for CWD or TB. Currently 26 counties are included within the ban. Elsewhere, baiting and feeding is restricted to 2 gallons per site and the placement of bait and feeding sites is regulated.

Captive Cervids

There are approximately 720 registered deer and elk farms in Wisconsin containing about 30,500 animals. The majority of animals on the farms are white-tailed deer and elk but other species include mule deer, red deer, sika deer, fallow deer, muntjac, reindeer, and Chinese water deer. The discovery of CWD in Wisconsin has led to major changes in the regulation of farmed deer and elk. It is no longer legal to accept orphaned or injured deer from the wild into farms or to fence in property and capture wild deer. Cervid farms must be enrolled in the CWD monitoring program to sell live animals. The CWD monitoring program requires an initial herd census with official individual animal identification and annual reports accounting for where every animal on the farm came from or went in the past year.

Currently 544 herds are enrolled in the monitoring program. Those farms that have not enrolled are mostly hobby farms or hunting preserves, neither of which ships live animals. All farms, whether enrolled in the monitoring program or not must CWD test every deer or elk that is 16 months old or older that dies or goes to slaughter. As of February 2005, over 10,850 farm-raised deer and elk had been tested. Importation of deer and elk into Wisconsin requires a permit from the State Veterinarian, a certificate of veterinary inspection, proof that they are free of TB and brucellosis, official identification numbers on the animals, and documentation that they come from a herd with no evidence of CWD in the past five years. This last requirement amounts to a temporary moratorium on many deer and elk imports because most states did not begin surveillance until recently. Deer and elk farms are required to meet fencing standards. Producers are required to report escapes within 48 hours. The DNR has authority to kill escaped farm-raised animals if they are not immediately recaptured.

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) published a proposed rule to establish a herd certification program with the goal of eliminating CWD from captive cervids in the U.S. Participating producers would have to follow program requirements for animal identification, testing, herd management, and movements of animals into and from herds. APHIS is providing indemnity and funds for testing and carcass disposal for voluntary depopulation of positive and exposed captive herds and trace animals.

As of February 2005, 29 farm-raised white-tailed deer and 1 elk have tested positive for CWD on 7 farms in Wisconsin: 17 white-tailed deer on a Portage County hunting preserve, six white-tailed deer from a Walworth County farm, 3 white-tailed deer on a second Walworth County Farm, one white-tailed deer each on a farm in Crawford County, Sauk County and in Racine County, and one elk in a Manitowoc County herd. Five of the seven herds had been depopulated and the owners were indemnified. The destruction of the Portage County herd has been delayed for 2 years because the owner is contesting the order and the animals remain under quarantine.

As of February 2005, 2 herds are quarantined because CWD positive deer have been found on their farms. Ten herds are quarantined because they are located within a DEZ, and four herds are quarantined as exposed or source herds.

The DNR conducted an extensive audit of captive white-tailed deer farms in 2002 prior to the transfer of authority over these farms to DATCP. DNR wardens visited 550 farms. The audit found the majority of farms were in compliance with existing state laws; however, 77 farms were found to be in violation of fence specifications. White-tailed deer farms contained more than 16,000 deer. More than 400 unrecovered escaped deer were reported from 182 farms during the lifetime of their operation. The quality of record keeping was variable and tracking of individual deer without individual identification was almost impossible. During the prior 3 years at least 1,200 deer died on deer farms due to various reasons. Disease testing was not required nor performed for a majority of these deer.

From April 7, 2003 to early February, 2005 DNR law enforcement has reported 82 additional deer farm escapes involving a total of 314 animals.

Deer Farm Escapes by DNR Region – April 7, 2003 to early February, 2005

DNR Region	# of Reported Escapes	# of Counties Involved	Total # of Animals
Northeast	34	12	117
Northern	7	3	37
West Central	22	10	85
South Central	14	7	61
Southeast	5	3	14
Totals	82	35	314

Public Reaction and Support

The Department has assessed public support for our CWD management efforts by conducting or participating in a number of surveys. Below is a brief summary from different surveys asking two similar questions of Wisconsin hunters and landowners during the past three years. The results are fairly consistent across all the studies.

Effort should be taken to eliminate CWD from the wild deer population.

	% Agree	% Disagree	% Unsure
Hunter Effort (UW-Stevens Point, 2003)			
DEZ	79	13	8
Non-DEZ	86	8	5
LE Statewide Gun Deer Hunter Study (2004)			
CWD area hunter	68	15	17
Outstate hunter	81	10	10
SW Landowner Study (2004)			
Hunter	65	25	9
Non-hunter	70	19	11
WAFWA (Colorado State University, 2004)			
Resident hunters	80	12	8
Non-resident hunters	86	7	7

Taking everything into consideration, what letter grade would you assign for the job the DNR has been doing handling CWD?

	% A – B	% B- – C-	% D – F
First CWD Gun Hunter Study (2002)			
CWD counties	49	37	14
Outstate	49	39	12
Hunter Effort (UW-Stevens Point, 2003)			
DEZ	56	31	14
Non-DEZ	53	39	8
LE Statewide Gun Deer Hunter Study (2004)			
CWD area hunter	55	35	9
Outstate hunter	63	36	2
SW Landowner Study (2004)			
Hunter	47	41	11
Non-hunter	31	60	10
WAFWA (Colorado State University, 2004)			
Resident hunters	49	42	10
Non-resident hunters	64	33	4

It is clear from these data that a strong majority of hunters want CWD eliminated from Wisconsin and do not want CWD to spread to the area where they hunt. Support for Department actions to achieve this goal is not as strong, but most hunters give the Department a good grade for our efforts to date. It is important to continue to ask these same questions in future surveys to assess changes in attitudes toward disease management.

Budget

The DNR has spent over $20 million since 2002 in its CWD surveillance, management, and eradication efforts. Funding has come primarily from hunting license revenue, with minimal outside funding. This has required the Department to redirect wildlife program staff and program dollars to maintain the emphasis on CWD management and control. However the Department feels spending $5 million annually toward CWD management is a good investment in light of the importance of deer hunting to Wisconsin and deer hunting's nearly $1 billion impact on the state's economy each year. The funds to manage CWD have come from the following funding sources:

FY05 – *Projected* to spend $5.6 million on CWD

Sources of Funds:

Wildlife Damage Account - $1.46 million

Pittman Robertson - $0.5 million

USDA - $1.2 million

Reallocated DNR funds – generally Conservation Seg - $2.5 million

FY04 – Spent $4.7 million on CWD

Sources of Funds:

Wildlife Damage Account - $1.2 million

Pittman Robertson - $0.6 million

USDA - $240,000

DNR indirect funds - $360,000

Reallocated DNR funds – generally Conservation Seg - $2.3 million

FY03 – Spent $12.6 million on CWD

Sources of Funds:

Wildlife Damage Account - $3.3 million

Pittman Robertson unobligated funds - $0.5 million

State recycling fund - $1 million

Reallocated DNR funds – various DNR funding sources - $7.8 million

FY02 – Spent $1.5 million from Conservation Seg

What Does the Future Hold?

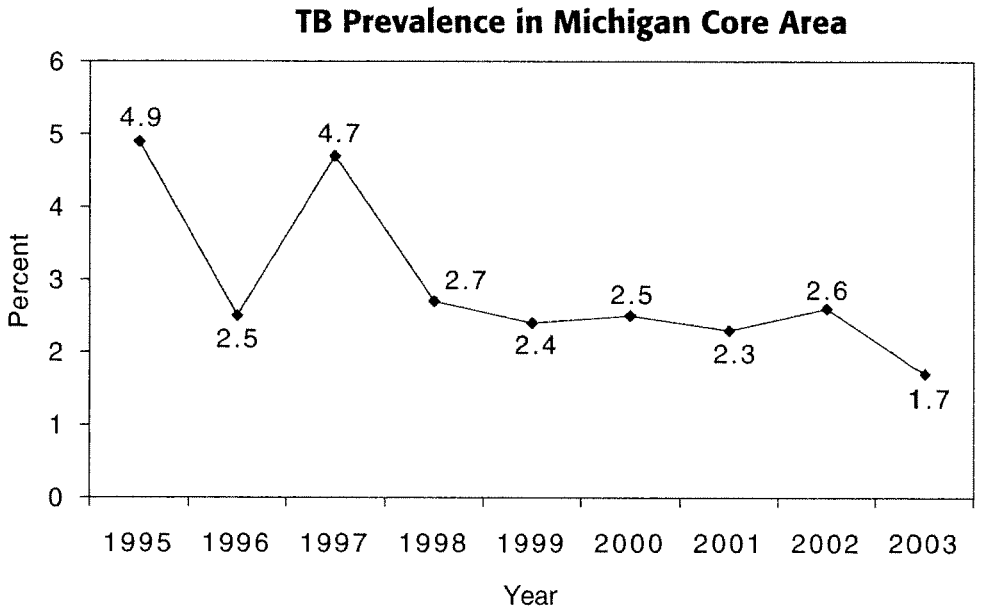
During the first 3 years of Wisconsin's CWD control program we have conducted extensive testing across the state to investigate the distribution and prevalence of the disease. We have made significant progress toward reducing the free-ranging deer population in the affected areas, banned the baiting and feeding of deer in these areas to reduce transmission, and have started tracking and controlling CWD in Wisconsin's farmed cervids.

It is currently not possible to predict whether Wisconsin's CWD management program will be successful in eradicating CWD from the state. However, the consequences of not attempting to control the disease or an inadequate response are clear: the prevalence and geographic distribution of CWD will increase as will the impacts on the deer hunting culture of Wisconsin and related industries and businesses.

It is also not possible to predict with certainty how long it will take to know whether the disease control program is effective. The results of ongoing research studies are needed to better understand the dynamics of the disease, its potential for increase and spread, the role of environmental transmission, and the expected response to management actions. It may require an additional 4-6 years before enough information is available that we can reliably determine if the CWD control program is effectively reducing prevalence and size of the affected area.

Management programs to combat CWD should be regarded as long-term commitments of personnel and funding. Computer simulations suggest that successful CWD management programs may require 15-40 years. Possible parallels can be drawn from other animal disease control programs in livestock and wildlife. The US cattle brucellosis eradication program began in 1934. The infection level in the national beef herd was reduced from 11% in the 1930s to 5% in the 1940s, to less than 1% in the 1970s. The Australian bovine tuberculosis and brucellosis eradication programs required over 20 years.

Michigan initiated a program in the mid-1990s to eradicate bovine tuberculosis from its free-ranging deer population. Primary strategies to reduce TB transmission in deer were population reduction through hunting and a ban on baiting and feeding of deer. During the first 7 years of their TB program the deer population in the affected area was reduced nearly 40%. During the same period, TB prevalence in the core area declined from nearly 5% to less than 2%. The decline in prevalence was sufficiently large for the Michigan DNR to declare that that they were "winning the war." However, they cautioned that "it's no time to back off" and urged "staying the course." They warned that successful eradication of TB might require another 10-20 years.



Successfully eradicating CWD from Wisconsin will require a sustained effort over many years, necessitating cooperation and communication among natural resource and agricultural agencies, hunters, landowners, and captive cervid producers. Although this will be a long-term effort, aggressive management early in the program is important to contain the spread of CWD, to minimize the size of the affected area and shorten the time required to eradicate the disease.

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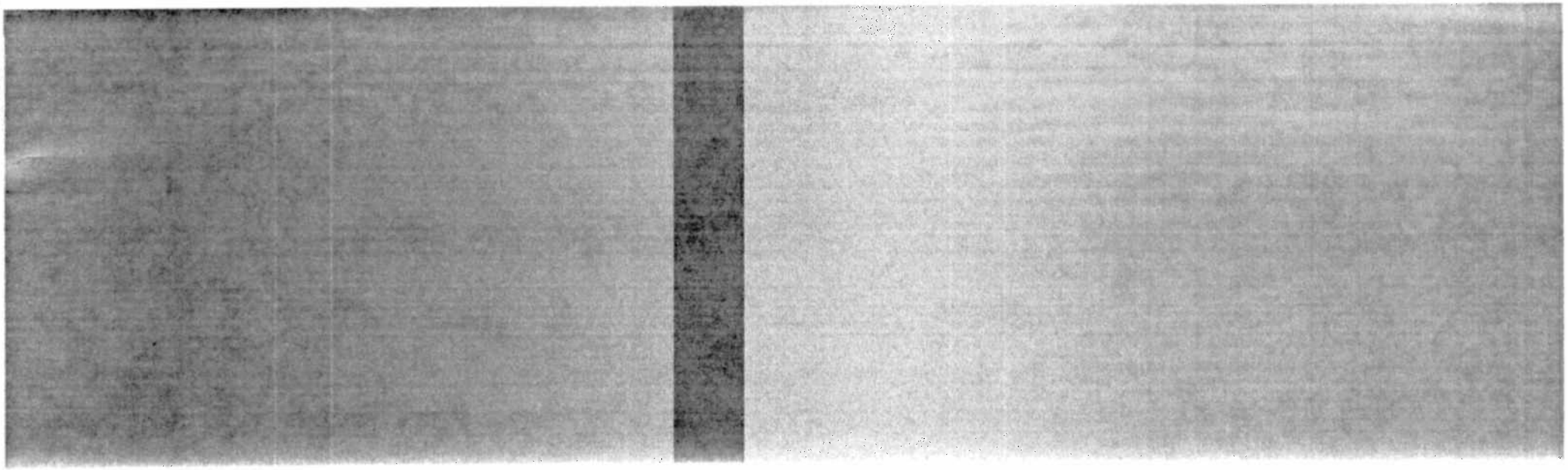
Additional Information Can be Found at:

http://dnr.wi.gov/org/land/wildlife/whealth/issues/CWD/index.htm

http://www.cwd-info.org/



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