Board of Animal Health's Oversight of Deer and Elk Farms

2018
EVALUATION REPORT

Program Evaluation Division

OFFICE OF THE LEGISLATIVE AUDITOR
STATE OF MINNESOTA

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OFFICE OF THE LEGISLATIVE AUDITOR
STATE OF MINNESOTA • James Nobles, Legislative Auditor

April 2018

Members of the Legislative Audit Commission:

The Board of Animal Health is responsible for protecting the health of Minnesota's domestic animals, which includes enforcing state laws related to deer and elk farms. Our review focused on how well the board has enforced these laws, as well as its response to chronic wasting disease discovered among farmed deer or elk.

We found that the Board of Animal Health has failed to enforce some laws relating to deer and elk farms. The board has not established clear expectations for deer and elk farm inventories, nor has it systematically analyzed compliance with state laws requiring chronic wasting disease testing. We make several recommendations for the board related to recordkeeping and enforcement.

We also found that the board has a strained relationship with the Department of Natural Resources, which is responsible for managing Minnesota's wild deer and elk. We recommend that the board and the department draft a memorandum of understanding to facilitate communication and data sharing between the two agencies.

Our evaluation was conducted by Sarah Delacueva. The Board of Animal Health and the Department of Natural Resources cooperated fully with our evaluation, and we thank them for their assistance.

Sincerely,

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THE GREAT SEAL OF THE STATE OF MINNESOTA
L'ETOILE DU NORD
1858

Summary

Key Facts and Findings:

- The Board of Animal Health (BAH) is responsible for protecting the health of Minnesota's domestic animals, including deer and elk. (p. 3)
- The board has five members, but not one who represents the general public. (pp. 11, 12-13)
- As of April 2018, Minnesota had 398 registered herds, consisting of about 9,300 deer, elk, and other similar species. (p. 4)
- Minnesota law does not require that deer and elk identification tags be read and recorded when completing an animal inventory. (pp. 21-22)
- Chronic wasting disease (CWD) is an always fatal, neurodegenerative disease found in both farmed and wild deer and elk. (p. 6)
- Since 2002, CWD has been identified on eight Minnesota deer and elk farms and in wild deer in two Minnesota counties. (pp. 40-41)
- BAH staff do not systematically analyze whether deer and elk producers submit tissue samples for CWD testing for all deceased animals. (p. 25)
- From 2014 to 2017, about one-third of producers that reported dead deer or elk failed to submit tissues from at least one of those animals for CWD testing. (p. 26)
- BAH has, in some instances, failed to enforce deer and elk regulations. However, the board has improved its deer and elk program over the past several months. (pp. 30-34)
- BAH and the Department of Natural Resources (DNR) have struggled to appropriately share the information they both require to respond to CWD outbreaks. (p. 47)
- While Minnesota's CWD regulations are among the most rigorous in the nation, there are some areas where other states' policies better protect deer and elk against the disease. (pp. 49-50)

Key Recommendations:

- The Legislature should consider expanding the number of board members and adding at least one member of the general public. (p. 14)
- BAH should clarify expectations of whether and how often producers must verify their herd inventory on an animal-by-animal basis. (pp. 23-24)
- BAH should (1) systematically analyze CWD-testing compliance, and (2) appropriately penalize those producers who fail to submit CWD-testing samples. (p. 27)
- BAH should develop an approval program for deer and elk producers who wish to collect their own CWD test samples. (p. 30)
- BAH should (1) ensure producers follow Minnesota deer and elk laws, (2) strengthen consequences for producers, and (3) monitor field staff performance. (p. 33)
- BAH and DNR should draft a memorandum of understanding outlining each agencies' responsibilities with respect to data sharing. (pp. 47-48)
- The Legislature should convene an advisory task force to evaluate the state's regulations related to deer feeding and live-animal imports. (p. 51)

The Board of Animal Health has failed to enforce some deer and elk regulations.

BAH is smaller than other states' animal health boards and does not include a public member.

Report Summary

Minnesota statutes charge the Board of Animal Health (BAH) with protecting the health of Minnesota's domestic animals, including members of the family *cervidae*.[1] The *cervidae* family includes deer, elk, and similar species, which may be collectively referred to as "cervids." As of April 2018, Minnesota producers were raising more than 9,300 cervids in 398 registered herds.

Deer and elk health is threatened by chronic wasting disease (CWD), an always fatal, neurodegenerative disease found among wild and farmed cervids. CWD is difficult to manage because there is no live-animal diagnostic test approved for routine herd monitoring. Further, infected animals may not show clinical signs until the disease is quite advanced. The only way to definitively diagnose CWD is to analyze specific tissues from a *dead* deer or elk. CWD has been found on eight Minnesota deer and elk farms since 2002. It has also been detected in wild deer in two Minnesota counties.

BAH is smaller than other states' animal health boards.

The board is made up of three livestock producers and two veterinarians practicing in Minnesota. Members are appointed by the governor. BAH's day-to-day work is performed by 41 staff members.

Minnesota's structure for overseeing farmed deer and elk is unlike those in most other states. Only six states give the responsibility to an entity like BAH. In most states, farmed deer and elk oversight falls to a natural resources department, an agriculture department, or a combination of the two.

BAH is smaller than other state's animal health boards, which range in size from 7 to 16 members. BAH is also smaller than other Minnesota boards that license, permit, or register professions or entities. While BAH's composition (three livestock producers and two veterinarians) is similar to other states' boards, BAH is unlike most *Minnesota* boards in that it lacks a public member. We recommend expanding the size of the board and adding a member of the general public, in order to diversify the perspectives represented.

The law does not require that deer and elk identification tags be read regularly, calling into question the accuracy of cervid farm inventories.

Annual inventories are an important tool for BAH. In the event that CWD is detected on a deer or elk farm, BAH uses the inventories that producers submit to track animal locations and movements and determine which other farms to investigate for possible CWD exposure.

By law, producers must submit annually to the board inventories that are verified by an accredited veterinarian.[2] However, the law does not require that the producers or their veterinarians physically read the tags on their deer and elk in order to complete these inventories. As such, the inventories producers submit may not accurately reflect the animals on the farm, which could complicate the investigation that BAH must conduct if CWD is discovered among farmed cervids.

We recommend that BAH clarify its expectations for how often deer and elk identification tags are read. For example, the United States Department of Agriculture requires that deer and elk producers who move animals to other

[1] *Minnesota Statutes* 2017, 35.03.

[2] *Minnesota Statutes* 2017, 35.155, subd. 11(a).

states read and record identification tags once every three years.

BAH does not systematically analyze whether producers submit CWD testing samples for all deer and elk that they report as deceased, and many do not.

Deer and elk producers are required by law to submit specific tissues for CWD testing for all deer and elk that die at age 12 months or older.[3] BAH staff do not currently analyze CWD-testing compliance, unless they have a specific reason to manually evaluate the records associated with a particular herd. We analyzed BAH data and found that an estimated one-third of deer and elk producers failed to submit tissue samples for CWD testing from 2014 to 2017. We recommend that BAH create a report that identifies producers that have missed CWD tests. Further, we recommend that BAH penalize producers who do not submit the required samples.

Another issue with respect to CWD sample submission is sample quality. If producers submit the wrong type of tissue or a sample that is otherwise unreadable, the deer or elk in question will not be tested for CWD. From 2014 to 2017, the percentage of unreadable samples increased from 2 percent to 11 percent. In 2017, BAH began retraining producers who had submitted poor-quality samples. As a result, sample quality began to improve during the latter half of 2017. We recommend that BAH develop a standardized training and approval program for deer and elk producers who wish to collect their own CWD test samples.

While BAH has had some issues enforcing cervid regulations in the past, its deer and elk program has improved over the past several months.

It was recently reported that a Winona County cervid farm that tested positive for CWD also had fences in poor repair.[4] Despite the fact that the fences (by the owner's own admission) had been sagging for years, BAH had never mentioned fence issues on the farm's annual inspection reports.

We do not know the degree to which this type of apparent enforcement error has occurred, and this lapse in oversight is concerning. However, the new director of the deer and elk program has made numerous changes over the past several months that will hopefully improve BAH's enforcement of deer and elk regulations going forward.

Recent BAH changes include improved communication, through the development of a cervid-farming handbook and a CWD-testing guide. The new director has also placed a renewed emphasis on enforcement, putting in place the expectation that the field staff inspecting cervid farms give warnings and reinspect farms when they note violations. We recommend that the board fully enforce Minnesota cervid laws and that they consider strengthening the penalties for producers who fail to comply. Further, the board should monitor the performance of field staff conducting inspections.

The strained relationship between BAH and DNR has led to problems with data sharing.

BAH responds when CWD is detected on deer or elk farms; DNR leads the

Tension between BAH and DNR has led to problems with data sharing.

[3] *Minnesota Rules,* 1721.0420, subp. 1(D), published electronically April 4, 2013. Producers must submit part of the brainstem and lymph nodes from the head of a dead deer or elk.

[4] Tony Kennedy, "'Hunters should be…afraid,'" *Star Tribune*, March 7, 2018.

There are some areas in which Minnesota's deer and elk policies are less rigorous than those in other states.

response when the disease is found in the wild. Both agencies, however, take certain actions when CWD is detected in the other agency's jurisdiction, which means that the two must coordinate to a certain extent.

In order to respond to CWD outbreaks, each agency, at a minimum, must know the precise location where the infected animal was found. The tension between the two agencies, however, has resulted in poor communication and complaints from both sides with respect to sharing information.

DNR staff have complained that BAH refuses to share information about infected farms in a timely fashion. BAH staff allege that DNR has not adequately protected producer contact information, which is classified by law as not public data.[5] We recommend that the two agencies draft a memorandum of understanding making clear what information should be shared between agencies in the event of CWD outbreak, in what timeframe, and the measures the receiving agency should take to protect the data. BAH and DNR finalized an agreement on April 10, 2018, which focuses on protecting not public data. We think this is a good first step.

There are some states with policies for managing farmed deer and elk that may better protect their animals from CWD.

We compared several of Minnesota's cervid regulations to those from other U.S. states. We found that some Minnesota policies—such as its statewide deer-baiting ban, whole-carcass importation ban, and mandatory CWD testing of farmed cervids—are among the most rigorous in the nation.

In other areas, however, Minnesota policies were less rigorous than those of other states. Deer feeding encourages animals to congregate artificially, facilitating disease transmission. Minnesota currently allows deer feeding, unless DNR has banned feeding in a particular area as part of its CWD response. Thirty-two percent of states also ban deer feeding only in certain parts of the state, but 18 percent of states ban deer feeding statewide.

The movement of live deer and elk from one place to another may facilitate the spread of CWD if one of the animals being moved happens to be infected. Minnesota bans live-cervid imports from counties in other states where CWD has been found in the wild. Half the states, however, have stricter standards for live-cervid imports. Forty percent of states do not allow the importation of any live deer or elk. An additional 10 percent of states ban imports from entire states in which CWD has been detected.

We recommend that the Legislature establish an advisory task force to evaluate Minnesota's policies related to deer feeding and live-cervid imports.

[5] *Minnesota Statutes* 2017, 13.643, subd. 6.

Table of Contents


THE GREAT SEAL OF THE STATE OF MINNESOTA
L'ETOILE DU NORD
1858

List of Exhibits


THE GREAT SEAL OF THE STATE OF MINNESOTA
L'ETOILE DU NORD
1858

Introduction

In April 2017, the Legislative Audit Commission directed the Office of the Legislative Auditor to evaluate the Board of Animal Health's oversight of Minnesota's 398 deer and elk farms. The Board of Animal Health (BAH) is responsible for protecting the health of Minnesota's domestic animals, including farmed deer and elk.

Recently, the health of Minnesota's deer and elk has been threatened by chronic wasting disease (CWD)—a fatal, neurodegenerative disease affecting deer and similar animals—which has been found both on deer and elk farms and in wild deer over the past two years. BAH must work with the Department of Natural Resources (DNR)—which manages Minnesota's wild deer population—to respond to and prevent the spread of CWD in the state. In Fiscal Year 2017, the two agencies spent nearly $1.5 million on CWD prevention and response.[1]

In our evaluation, we addressed the following questions:

- **How well has the Board of Animal Health carried out its duties related to the oversight of deer and elk farms?**

- **How has the Board of Animal Health responded to the recent outbreak of chronic wasting disease, and how effective have these efforts been?**

- **To what extent have the Board of Animal Health and the Department of Natural Resources successfully coordinated their efforts to contain the spread of chronic wasting disease?**

We interviewed BAH leadership and staff to understand the board's policies and practices related to deer and elk farm oversight. We attended quarterly board meetings and interviewed board members. We also observed a number of board activities related to deer and elk farms, including an inspection and an inventory reconciliation. We analyzed data related to BAH's deer and elk program, and reviewed state laws establishing requirements for deer and elk farms.

To learn more about CWD and BAH's responsibilities related to the disease, we reviewed literature and federal guidelines for CWD management. We interviewed DNR staff to learn about the actions they take to respond to CWD outbreaks, as well as the relationship between DNR and the board. Finally, we analyzed other state's regulations related to CWD and the management of farmed deer and elk.

Throughout our evaluation, we also spoke with numerous stakeholders, including deer and elk farmers, hunters, staff of the United States Department of Agriculture's Animal and

[1] From July 2016 through March 2017, DNR spent about $950,000 testing wild deer for CWD. This accounted for nearly two-thirds of the state's Fiscal Year 2017 spending related to CWD. BAH does not specifically track CWD spending. However, most of the board's deer and elk oversight activities contribute to the board's ability to identify and investigate CWD outbreaks in farmed deer and elk. In Fiscal Year 2017, BAH spent nearly $549,000 on its deer and elk program.

Plant Health Inspection Service, and staff of the University of Minnesota's Veterinary Diagnostic Laboratory.

This report is organized into three chapters. Chapter 1 provides a brief overview of BAH, deer and elk farms in Minnesota, and CWD. Chapter 2 examines the board in more depth, including the board composition and staffing structure, as well as BAH's efforts to enforce Minnesota statutes related to deer and elk farms. Chapter 3 focuses on CWD. We discuss what BAH and DNR have done to respond to CWD outbreaks in Minnesota and how Minnesota's CWD-related regulations compare with those in other states.

Chapter 1: Background

Minnesotans take great pride in the state's natural resources, including its wild deer herd, estimated to include about 1 million animals. Some may not realize, however, that Minnesota also has one of the nation's largest populations of *farmed* deer, elk, and similar species. In this chapter, we introduce the agency that oversees deer and elk farms, the Board of Animal Health. We also provide background information on these farms and the deer and elk industry. Finally, we discuss chronic wasting disease, which poses a serious threat to the state's deer and elk populations, both farmed and wild.

Overview of the Board of Animal Health

The Board of Animal Health (BAH) enforces certain laws related to animal health.[1] By law, the board consists of five members, including three Minnesota livestock producers and two veterinarians practicing in the state.[2] Members are appointed by the governor with the advice and consent of the Senate.[3] BAH's day-to-day work is carried out by 41 staff members. We discuss the board's staffing and composition further in Chapter 2.

Minnesota statutes charge the board with protecting the health of Minnesota's domestic animals and give BAH broad authority to act to prevent and contain the spread of animal diseases.[4] The domestic animals that BAH regulates include animals commonly known as livestock, such as cattle, swine, poultry, horses, sheep, and goats; farmed deer and elk; and pets, such as dogs, cats, and ferrets.

> The mission of the Minnesota Board of Animal Health is to protect the health of the state's domestic animals through education and cooperation with veterinarians, producers, owners, and communities.
>
> **—Board of Animal Health website**

[1] *Minnesota Statutes* 2017, Chapter 35.

[2] *Minnesota Statutes* 2017, 35.02, subd. 1.

[3] *Ibid.*

[4] *Minnesota Statutes* 2017, 35.03-35.05. Domestic animals are animals that humans have tamed to keep as pets, food sources, or work animals.

Overview of Deer and Elk Farms

Within the system of scientific nomenclature, deer and elk, as well as other similar species such as moose and caribou, belong to the *cervidae* family.[5] Deer and elk exist both in captivity and in the wild, and the state of Minnesota divides cervid-oversight responsibility "at the fence." BAH staff oversee the state's deer and elk farms, while the Department of Natural Resources (DNR) manages the state's wild cervids.[6]

Minnesota law allows people to raise farmed deer and elk as long as they register both their herds and their individual animals with BAH.[7] People choose to keep deer and elk for a variety of reasons. Some of the smaller producers keep one or a few deer as pets or on a hobby farm. Other deer and elk producers operate businesses in which they sell animals for meat, breeding stock, or trophy hunts, among other things.[8]

As of April 2018, Minnesota had 398 registered herds, consisting of about 9,300 deer, elk, and other cervid species.

The bulk of the cervids being raised in Minnesota in early 2018 were white-tailed deer (4,757) and elk (3,878). Minnesota producers also raised smaller numbers of caribou, fallow deer, moose, mule deer, muntjac, Pere David's deer, red deer, reindeer, and sika. As of April 2018, cervid farms were located in 75 of Minnesota's 87 counties. Exhibit 1.1 shows the counties in which Minnesota's deer and elk farms are located.[9]

[5] In this report, we refer to these animals collectively using the less formal term "cervids," or simply as "deer and elk," which make up the bulk of the farmed cervids found in Minnesota. We focused our evaluation efforts on the oversight of deer and elk producers, rather than moose, caribou, or reindeer producers, which make up less than 3 percent of Minnesota cervid operations. All cervid producers must follow the same regulations regardless of the species they raise.

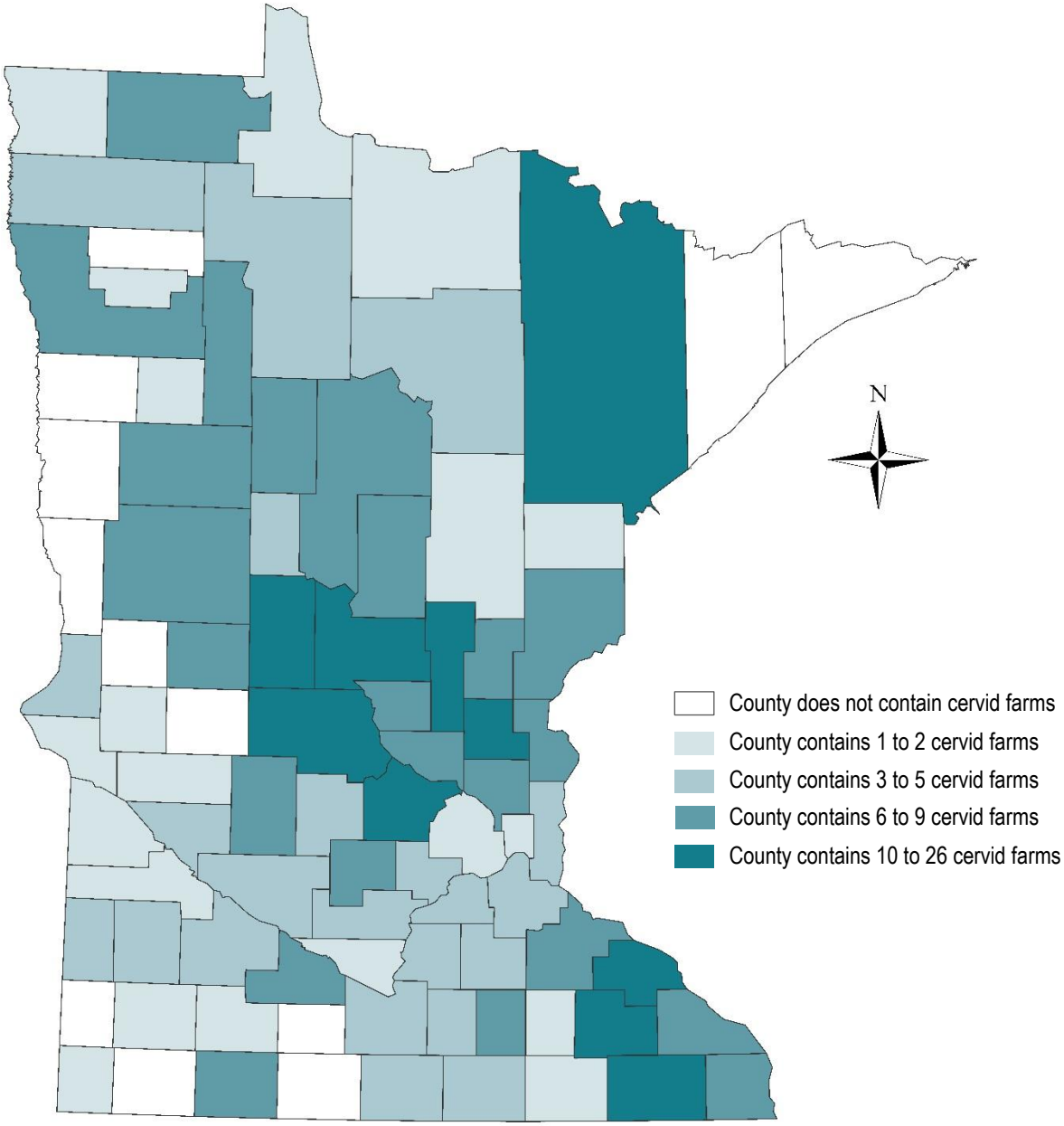
[6] We did not evaluate DNR's deer management for this report. For more information on this topic, see Office of the Legislative Auditor, Program Evaluation Division, *Department of Natural Resources: Deer Population Management* (St. Paul, 2016). BAH and DNR collaborate to a certain extent in order to protect the health of Minnesota's farmed and wild cervids; we discuss their relationship in Chapter 3.

[7] *Minnesota Statutes* 2017, 35.155, subds. 6(b) and 10. While most cervid producers raise deer and elk on farms, there are also several zoos and parks that feature captive cervids. These facilities are subject to the same regulations as deer and elk farms. For simplicity's sake, we refer to all facilities in which deer and elk are raised as "farms" or "herds" throughout this report.

[8] Deer and elk products include hard antler, which is used to make dog chews, and velvet antler, which is used to make nutritional supplements. Trophy hunts, in which people pay for the opportunity to hunt a curated selection of bucks with large antlers, take place on certain Minnesota cervid farms that operate as hunting preserves; Minnesota deer and elk producers may also sell trophy bucks to hunting preserves in other states. A recent study estimated that the economic impact of deer and elk farms in Minnesota was about $24 million in 2016. John Keckhaver Consulting, *Minnesota Cervid Farming and its Economic Impact,* December 2017.

[9] Our count of registered herds includes all herds that reportedly had live animals as of April 2018. According to BAH staff, some registered herds have animals at more than one location; the 398 registered herds have animals on 423 farms.

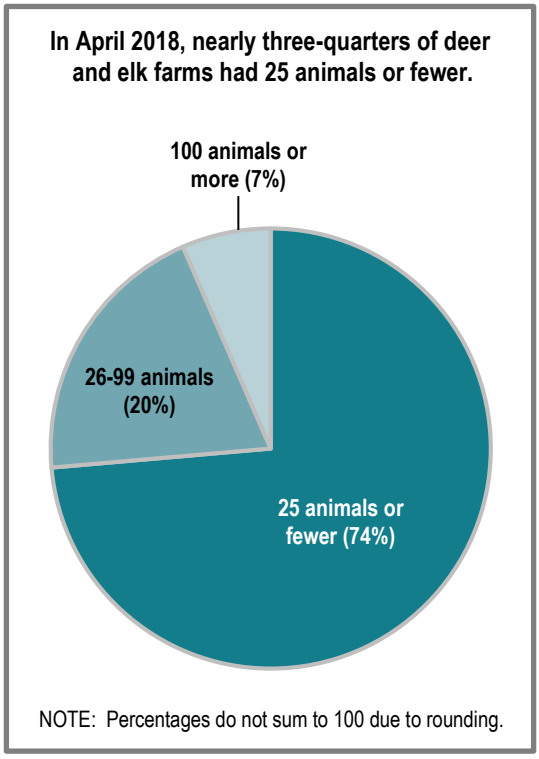
Exhibit 1.1: In April 2018, deer and elk farms were located in 75 of Minnesota's 87 counties.



NOTES: The shading reflects the number of farm sites in each county that were registered with the Board of Animal Health as of April 2018. At that time, there were 398 registered herds spread across 423 farms.

SOURCE: Office of the Legislative Auditor, analysis of Board of Animal Health data, April 5, 2018.

Most of Minnesota's 398 cervid farms were dedicated to one particular species; for example, 242 producers raised only white-tailed deer and 90 raised only elk. Forty-two producers, however, raised multiple species. Several producers raised both white-tailed deer and elk. Some raised more unusual combinations, such as white-tailed deer, fallow deer, sika, and muntjac. The largest registered farm, as of April 2018, had both white-tailed deer and elk, for a total of 265 animals. Most cervid farms, however, were much smaller. As shown at right, nearly three-quarters of registered producers had 25 animals or fewer in April 2018. Thirteen percent (53 cervid producers) had only one animal.



Minnesota ranks high among U.S. states with respect to volume of deer and elk production. According to agricultural census data compiled by the United States Department of Agriculture, in 2012, Minnesota ranked sixth in terms of the number of farmed deer raised and fifth for the number of deer farms.[10] In 2012, Minnesota raised more farmed elk than any other state and only Texas had a greater number of elk farms.

Overview of Chronic Wasting Disease

Foremost among health concerns for deer and elk is chronic wasting disease (CWD), a neurodegenerative disease found in both farmed and wild cervids.[11] The disease is highly transmissible among cervids and always fatal. Controlling CWD is challenging, in part because the only reliable way to diagnose CWD is to test specific tissues from a *dead* animal. Deer and elk can be infected with CWD and appear outwardly healthy, which means the disease can spread between animals before anyone realizes that a herd is infected. We discuss CWD transmission in greater detail in Chapter 3.

CWD threatens deer and elk herds (both farmed and wild) and could result in significant population reductions if not contained. To date, there have been no known instances of humans contracting CWD from eating deer or elk meat. However, it is believed that similar diseases, such as bovine spongiform encephalopathy (also known as mad-cow disease), can

[10] United States Department of Agriculture, *Census of Agriculture, United States Summary and State Data*, Volume 1, Geographic Area Series, Part 51 (Washington, DC, 2014), 399-400. Florida, Michigan, Pennsylvania, Texas, and Wisconsin placed above Minnesota in terms of number of deer; Michigan, Ohio, Pennsylvania, and Texas had a greater number of deer farms.

[11] Deer and elk may also contract a number of different diseases, but the only other diseases that states routinely regulate are bovine tuberculosis and brucellosis, possibly due to their potential impact on humans. However, these diseases have occurred very rarely in farmed deer and elk populations in the United States.

be transmitted to humans.[12] Further, a recent study showed that some primates (macaques) are susceptible to CWD when orally exposed to diseased tissue.[13] The Centers for Disease Control and Prevention urges hunters to take precautions when handling harvested deer or elk; it also recommends that hunters test their deer or elk before consuming them if they harvested the animals in an area where CWD is known to be present.[14]

Many of the cervid-management regulations in place at both the federal and state levels are designed to prevent the spread of CWD. Federal law frames farmed deer and elk regulations entirely in terms of disease management, with CWD among the regulated diseases.[15] The federal Chronic Wasting Disease Herd Certification Program establishes requirements for participating herds related to: fencing (which keeps farmed and wild cervid populations separated), individual animal identification and herd inventories (both of which help make animals traceable in the event of a CWD outbreak), and CWD testing. Producers whose herds meet all program requirements may be certified to export animals to other states. The goal of the federal CWD Herd Certification Program is to provide a consistent, national approach to control the incidence of CWD in farmed deer and elk and to prevent the spread of CWD between states.[16] The United States Department of Agriculture administers this program by (1) approving state-level Herd Certification Programs and (2) certifying individual herds from states that do not have an approved program.

As we discuss further in Chapter 2, Minnesota law imposes a number of requirements on deer and elk owners. To a large extent, these requirements mirror federal requirements for certified herds. Minnesota rules establish the requirements for the state's CWD Herd Certification Program, and require Minnesota deer and elk producers to participate.[17] A key requirement of both the Minnesota and federal Herd Certification programs is "continuous CWD surveillance," meaning that producers must test all deceased deer and elk (over one year of age) for chronic wasting disease. BAH staff assign each herd a status (Level 1 to 6), depending on the amount of time that the herd has been enrolled in the Herd Certification Program without any evidence of CWD exposure. Exhibit 1.2 shows the status levels of the Herd Certification Program.

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[12] According to the World Health Organization, it is generally accepted that the human disease "variant Creutzfeldt-Jakob disease" is caused by exposure to food contaminated with bovine spongiform encephalopathy. World Health Organization, *Prion Diseases,* http://www,who.int/zoonoses/diseases/prion_diseases/en/, accessed February 1, 2018.

[13] Stephanie Czub, "First evidence of intracranial and peroral transmission of Chronic Wasting Disease (CWD) into Cynomolgus macaques: *a work in progress*," webinar hosted by the Council of State and Territorial Epidemiologists and the National Association of State Public Health Veterinarians, July 10, 2017.

[14] CWD is typically found in the brain, spinal column, and lymph nodes of an infected animal. According to the Centers for Disease Control and Prevention, hunters and others who handle deer and elk carcasses should wear gloves and avoid contact with these tissues to the extent possible. Centers for Disease Control and Prevention, [Chronic Wasting Disease] *Prevention*, https://www.cdc.gov/prions/cwd/prevention.html, accessed February 17, 2018.

[15] 9 *CFR*, parts 55 and 81 (2016). There are also federal regulations or guidance related to bovine tuberculosis and brucellosis in farmed cervids. 9 *CFR*, part 77, subp. B (2000); and United States Department of Agriculture, *Brucellosis in Cervidae: Uniform Methods and Rules, Effective September 30, 2003* (Washington, DC, 2003).

[16] *Memorandum of Understanding Between Minnesota Board of Animal Health and the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) Chronic Wasting Disease Herd Certification Program* (2017), 1.

[17] *Minnesota Rules,* 1721.0420, published electronically April 4, 2013. The United States Department of Agriculture has approved Minnesota's CWD Herd Certification Program.

Exhibit 1.2: Most Minnesota deer and elk farms have achieved Level 6 in the state's Chronic Wasting Disease Herd Certification Program.

Herd Status	Surveillance Period[a]	Eligibility for Animal Movement	Number of Herds
Level 1	Less than 1 year	None	10
Level 2	1-2 years	None	0
Level 3	2-3 years	None	2
Level 4	3-4 years	Within Minnesota	9
Level 5	4-5 years	Within Minnesota	5
Level 6[b]	5 years or more	Within Minnesota	215
Level 6 (Certified)[b]	5 years or more and meets all federal requirements	Interstate	154
			395[c]

[a] "Surveillance period" is the amount of time that a deer or elk herd has been enrolled in the Chronic Wasting Disease (CWD) Herd Certification Program without evidence that the herd has been exposed to CWD. Assuming that an enrolled herd continues to meet all of the requirements of the Herd Certification Program, it advances one status level each year.

[b] There are certain federal requirements that a herd must meet in order to move deer or elk to other states. Of Minnesota's 369 Level 6 deer and elk herds, 154 herds had met the requirements to be certified for interstate movement. If a producer does not intend to move animals interstate, the producer's herd need not become certified.

[c] The number of herds above add up to 395, rather than 398 (the number of registered herds with live deer or elk that existed in April 2018). Status levels for two herds are currently pending. The remaining herd currently has a status of CWD "infected" and is under quarantine.

SOURCES: Office of the Legislative Auditor, analysis of Board of Animal Health data, April 5, 2018; and *Minnesota Rules,* 1721.0420, subp. 1(F), published electronically April 4, 2013.

Herd status is important for those deer and elk producers who operate their herds as businesses and wish to sell animals to other producers. As shown in the table above, a herd must achieve at least a Level 4 status (three years without CWD exposure) before the owner can move animals to another Minnesota farm. Similarly, a herd must achieve at least a Level 4 status in order to accept new deer or elk from other Minnesota herds. As the exhibit shows, the vast majority of Minnesota deer and elk farms have achieved levels 4, 5, or 6 and are eligible to move animals within Minnesota. We analyzed BAH data and found that, in 2017, 112 producers moved at least one animal to a different Minnesota farm; more than 850 deer and elk moved intrastate over the course of the year.[18]

[18] Those deer and elk were received by 112 Minnesota producers, though not necessarily the same 112 producers who sent the animals. Only 46 producers were on both the sending and receiving end of intrastate movement.

A herd must achieve status Level 6 (five years without CWD exposure) and meet all federal requirements in order to move animals to other states.[19] While 93 percent of Minnesota's deer and elk farms have achieved a Level 6 status, only 39 percent of herds are certified to move animals to other states. In 2017, 80 producers exported at least one animal to another state, which resulted in more than 950 animals leaving Minnesota. Only eight producers *received* deer or elk from other states in 2017, for a total of 23 imported animals.

[19] While Minnesota deer and elk producers are required to enroll in Minnesota's CWD Herd Certification Program, they are not required to seek federal certification. Certain federal requirements, such as applying two identification tags to each animal, are required only for certified herds. A herd that does not meet all federal requirements can still achieve a Level 6 status based on five years of continuous CWD surveillance, but would not be certified for interstate movement.


THE GREAT SEAL OF THE STATE OF MINNESOTA
L'ETOILE DU NORD
1858

Chapter 2: Board of Animal Health

As we discussed briefly in Chapter 1, the Board of Animal Health (BAH) is the state board responsible for protecting the health of Minnesota's domestic animals, including farmed deer and elk. However, some of the stakeholders we interviewed expressed concerns regarding BAH's oversight of deer and elk farms. For example, they alleged problems with (1) inaccurate herd inventories and otherwise poor recordkeeping, (2) producers' chronic wasting disease testing compliance and sample quality, and (3) BAH staff's enforcement of deer and elk regulations.

We begin this chapter by discussing the composition, staffing, and activities of the board. We then go on to discuss the statutory requirements that govern deer and elk farms and the work that BAH staff do to enforce them. While we found that BAH's deer and elk program policies meet most of the requirements outlined in statute, we recommend that the board improve recordkeeping, oversight of CWD testing, and enforcement.

Board Composition and Staffing

As we established in Chapter 1, the Board of Animal Health has 5 members and 41 staff positions. In this section, we discuss board composition in greater depth, comparing the board to other Minnesota boards as well as similar boards in other states. We also explain the board's staffing, its budget, and its general duties, both broadly and with respect to deer and elk in particular.

Board Composition

Minnesota statutes require that the five-member Board of Animal Health consist of three livestock producers and two practicing veterinarians licensed in Minnesota.[1] Board members are appointed by the governor with the advice and consent of the Senate.[2] While statutes do not provide further guidance on member qualifications, the board has traditionally filled producer seats with one representative from each of Minnesota's three largest livestock industries: swine, cattle, and poultry. Minnesota statutes go on to say that "the commissioners of agriculture, natural resources, and health, the dean of the [University of Minnesota's] College of Veterinary Medicine, and the director of the Veterinary Diagnostic Laboratory of the University of Minnesota may serve as consultants to the board without vote."[3] We analyzed the extent to which BAH resembles similar boards from other states, as well as other Minnesota boards.

Minnesota's governance structure for overseeing farmed deer and elk is unlike those in most other states.

Only six states—Minnesota, Indiana, Mississippi, North Dakota, South Dakota, and Texas—assign farmed-cervid oversight responsibilities to an entity similar to BAH. Most states give authority over farmed deer and elk to one or more agencies equivalent to Minnesota's departments of Natural Resources or Agriculture. Thirty-one states divide

[1] *Minnesota Statutes* 2017, 35.02, subd. 1.

[2] *Ibid.*

[3] *Ibid.*

farmed-cervid oversight responsibilities between two or more agencies. Agencies dedicated to natural resources, fish and wildlife, or conservation play at least a partial role in 39 states, while departments of agriculture are involved in 35 states.

The Board of Animal Health is smaller than animal health boards in other states, and smaller than similar Minnesota boards.

Minnesota's is the smallest of the six animal health boards nationwide. Other states' boards range in size from 7 to 16 members, whereas Minnesota's board has only 5 members. BAH is also smaller than most other *Minnesota* boards that license, permit, or register entities or individual members of certain professions. There are only seven other Minnesota boards that register or permit entities (such as beauty salons); most of these boards have 7 members, though they range in size from 5 to 16 members.[4] There are 24 Minnesota boards that license individuals (such as accountants or dentists); while a couple of these boards have 5 members and some are much larger (up to 21), 7 members is, once again, the most common size.

The professions represented on Minnesota's Board of Animal Health are similar to those that make up animal health boards in other states.

The six animal health boards we reviewed (Minnesota included) are similar in composition. The specific composition of five of the six boards is defined in state law; each must include veterinarians and livestock producers, with producers having more representation.[5] Like Minnesota, the North Dakota board is made up of only livestock producers and veterinarians. Other states, however, require members with additional types of expertise. Indiana, Mississippi, and Texas, for example, require representatives of related industries, such as meatpacking and livestock marketing. Texas is the only state to require members of the general public. Exhibit 2.1 shows the composition of the animal health boards we reviewed.

The Board of Animal Health is unlike most Minnesota boards in that it does not have a public member.

In contrast to BAH, two-thirds of all Minnesota boards (not just those that license, permit, or register entities or individuals) are required by law to include at least one public or citizen member. For an additional 22 percent of Minnesota boards, the authorizing language does not explicitly mention public members, but allows instead for some member positions that are not restricted to a particular profession. For all intents and purposes, public members could fill these positions.[6]

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[4] The Board of Barber Examiners registers barber shops and is the same size as BAH with five members. The permitting boards with seven members are the Board of Cosmetologist Examiners, the Board of Podiatric Medicine, the Gambling Control Board, the Minnesota Board of Veterinary Medicine, and the Minnesota Insurance Marketplace Board. The Minnesota Board of Nursing also permits entities, but is larger, with 16 members.

[5] South Dakota law does not prescribe a specific board make-up, but allows "any interested farm, commodity, livestock auction or livestock commission, or veterinary organization" to submit nominations for board seats. *South Dakota Statutes* 2013, 40-3-2.

[6] *Minnesota Statutes* 2017, 214.02, defines a public member as "a person [or spouse] who is not, or never was, a member of the profession or occupation being licensed or regulated…or a person who does not have or has never had, a material financial interest in either the providing of the professional service being licensed or regulated or an activity directly related to the profession or occupation being licensed or regulated."

Exhibit 2.1: Some other states' boards of animal health are similar in composition to Minnesota's.

	Producers	Veterinarians	Representatives of Related Industries[a]	University Faculty or Staff[b]	Agency Commissioners	Public Members	Total Members
Indiana Board of Animal Health	6	3	1	1	–	–	11
Minnesota Board of Animal Health	3	2	–	–	–	–	5
Mississippi Board of Animal Health	7	1	3	4	1[c]	–	16
North Dakota Board of Animal Health	7	2	–	–	–	–	9
South Dakota Animal Industry Board[d]	–	–	–	–	–	–	7
Texas Animal Health Commission	7	1	2	–	–	3	13

NOTES: The exhibit shows entities in other states that are similar to Minnesota's Board of Animal Health and that have at least partial jurisdiction over farmed deer and elk. Additional states may have animal health boards that we did not identify because they do not regulate farmed cervids.

[a] "Related industries" include the general farming, milk processing, meatpacking, feedlot, livestock auction, and livestock marketing industries.

[b] Indiana requires that one board member be from the School of Veterinary Medicine at Purdue University. Mississippi requires that members include one land grant staff from Alcorn State University, as well as the heads of the College of Veterinary Medicine, the Department of Animal and Dairy Science, and the Department of Poultry Science at Mississippi State University of Agriculture and Applied Science.

[c] Mississippi requires that the state's commissioner of agriculture and commerce sit on the board.

[d] The composition of South Dakota's board is not specified in law. Any interested farm, commodity, livestock auction, livestock commission, or veterinary organization may submit nominations to the governor.

SOURCES: *Minnesota Statutes* 2017, 35.02, subd. 1; *Indiana Code* 2017, 15-17-3-2; *Mississippi Statutes* 2017, 69-15-2; *North Dakota Century Code* 2017, 36-01-01; *South Dakota Statutes* 2013, 40-3-2; and *Texas Statutes* 2017, Agricultural Code 6, sec. 161.021.

The authorizing language for 83 percent of Minnesota boards requires that at least some members represent specific professions or types of organizations. Additionally, the law places geographic restrictions on the members of 35 percent of Minnesota boards. These restrictions vary. For example, the authorizing language for some boards requires that at least one member of the board reside outside the Twin Cities metropolitan area or that members represent each of the Minnesota congressional districts.

RECOMMENDATION

The Legislature should consider expanding the size of the Board of Animal Health and adding at least one member of the general public.

The Legislature should consider increasing the number of BAH members to seven to align it with similar Minnesota boards, as well as similar boards from other states. The Legislature should require that at least one of the new board positions be filled by a member of the general public who is not a livestock producer or veterinarian. We do not make this recommendation because we found problems suggesting that the current board composition is inappropriate. Rather, we believe that having a public member on the board is good governance. A public member would broaden the perspectives represented on the board by providing the viewpoint of someone who does not have a vested interest in the outcomes of the board's decisions.

Beyond adding a public member, we do not make specific recommendations regarding member qualifications. In evaluating the board's deer and elk program, we examined only a small portion of BAH's responsibilities; thus we are not in a position to determine what expertise would best serve the board as a whole. The Legislature may wish to consider models used for other states' boards of animal health, summarized in Exhibit 2.1. In addition to livestock producers and veterinarians, some states reserve board seats for the state's commissioner of agriculture, the heads of specific academic programs, or representatives of related industries, such as meatpacking.

Board Staffing and Budget

The work of the board is carried out by 41 staff members led by an executive director elected by board members.[7] The executive director and six program directors—all of whom are veterinarians by training—oversee board programs related to specific animal species, disease testing, and emergency planning, among other things. They supervise field staff—veterinarians and agricultural specialists who, for example, conduct inspections of various livestock operations—as well as office staff who administer BAH's programs.[8] BAH's business and communications directors also oversee a small number of office staff. Exhibit 2.2 shows the organization of the board's staff.

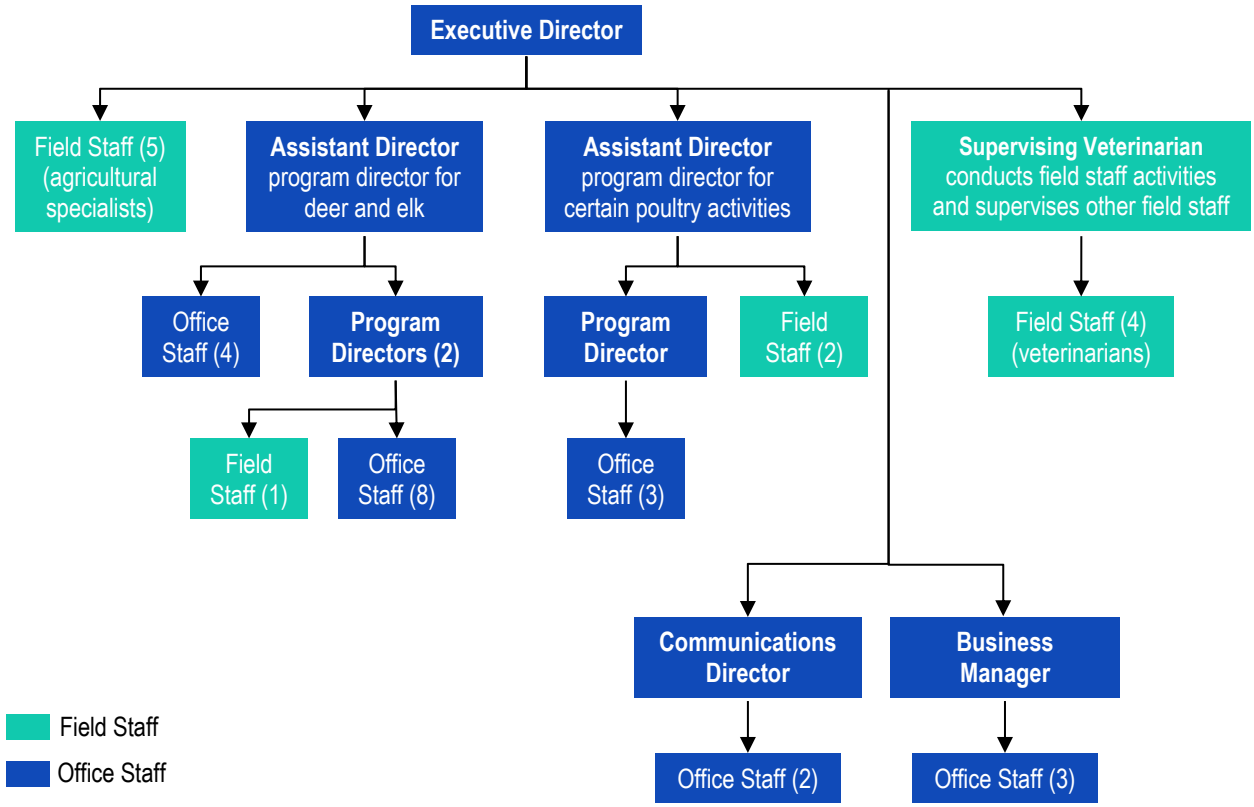
The vast majority of the board's funding comes from Minnesota's General Fund; the 2015 Legislature appropriated to BAH $5,384,000 from the state's General Fund for Fiscal Year 2017.[9] The board received small amounts (less than $500,000 total) in federal funds and inspection fees paid by the owners of deer and elk farms and dog and cat breeding facilities. BAH's total revenues for Fiscal Year 2017 were nearly $5.9 million. During that fiscal year, the board expended almost $5.8 million.

[7] The executive director of BAH is also known as the "state veterinarian."

[8] BAH also receives support from the United States Department of Agriculture's Animal and Plant Health Inspection Service division, which employs 13 field staff who do much of the same work as BAH field staff.

[9] *Laws of Minnesota* 2015, First Special Session, chapter 4, art. 1, sec. 3.

Exhibit 2.2: The Board of Animal Health staff is made up of field staff and office staff, many of whom have responsibilities related to deer and elk oversight.



NOTES: Most program directors are responsible for numerous program areas. All of the field staff (13, including the supervising veterinarian) have responsibilities related to the oversight of deer and elk farms. In addition, the executive director, an assistant director, and two office staff have cervid-related responsibilities.

SOURCE: Office of the Legislative Auditor.

BAH uses its resources to conduct a number of activities—many of which we list in Exhibit 2.3—in an effort to prevent the spread of disease among Minnesota's domestic animals. For example, BAH staff regulate locations where animals congregate, as such places provide convenient venues for disease transmission. For example, BAH staff regulate community sales, such as livestock auctions, which includes inspecting the facilities to ensure that they are sanitary and in good repair, and requiring that a veterinarian representing the board be present for auction events. The veterinarian signs off on animals available for sale, affirming that they are free of disease, properly identified, and have had any required medical tests. When BAH staff identify a diseased animal (whether through its inspection activities, reporting by a member of the public, or other methods), the board is authorized to (1) quarantine or kill that animal and other animals that may have been exposed to the disease, and (2) declare disease control zones and restrict the movement of livestock in those areas.[10]

[10] *Minnesota Statutes* 2017, 35.05, (a); and *Minnesota Rules*, 1721.0020, subp. 6, published electronically April 4, 2013.

Exhibit 2.3: The Board of Animal Health conducts various activities to protect the health of Minnesota's domestic animals.

- Regulates livestock concentration points (exhibitions, sales venues, and slaughtering facilities)
- Registers and inspects facilities where certain domestic animals reside (for example, deer and elk farms and dog and cat breeders)
- Establishes importation requirements for domestic animals entering the state
- Requires official identification (for example, through ear tagging) of certain domestic animals
- Requires vaccination or disease testing for certain livestock
- Quarantines and kills disease-infected or -exposed animals
- Declares disease control zones and restricts the movements of domestic animals in those zones

SOURCES: *Minnesota Statutes* 2017, 35.05, 35.155, and 347.33; and Minnesota Rules, 1721.0020 and 1721.0080-1721.0110, published electronically April 4, 2013

Deer and Elk Program Staffing and Budget

In Fiscal Year 2017, BAH spent 9 percent of its budget (approximately $549,000 of $5.8 million) on its deer and elk program. Of BAH's 41 staff members, none were fully dedicated to the deer and elk program during that fiscal year. However, 18 staff members spent at least some portion of their time working on deer and elk oversight during Fiscal Year 2017.[11] This included some time spent by the executive director, the assistant director who serves as program director for the deer and elk program, and some office staff, as well as all 13 field staff. In total, BAH staff spent more than 7,600 hours on deer and elk related responsibilities in Fiscal Year 2017. As mentioned previously, 13 additional field staff employed by the United States Department of Agriculture (USDA) assist with many board activities, including deer and elk farm inspections. In Fiscal Year 2017, USDA staff spent nearly 2,700 hours on deer and elk oversight activities in Minnesota.

Oversight of deer and elk farms makes up a disproportionately large portion of the Board of Animal Health's budget.

BAH spends 9 percent of its budget on oversight of Minnesota's deer and elk farms, yet these farms constitute only about 1 percent of the state's livestock operations based on number of farms. According to the most recent available agricultural census (2012), there were roughly 50,000 farms raising livestock in the state; for comparison, at that time there were about 500 deer and elk farms.[12] For further context, near the end of 2017, almost 10,000 deer and elk lived on Minnesota farms. In comparison, there were roughly

[11] An additional four staff members (including the former deer and elk program director) spent some time working on deer and elk oversight, but have since left BAH.

[12] United States Department of Agriculture, *2012 Census of Agriculture*, *Minnesota State and County Data*, Volume 1, Geographic Area Series, Part 23 (Washington, DC, 2014), 19, 21, 23-26.

8.5 million hogs, 2.4 million cows, 42.5 million turkeys, and 168,000 sheep and goats being raised on Minnesota farms as of January 1, 2018.[13]

The reason that BAH dedicates so many resources to deer and elk related activities is that Minnesota statutes require more oversight of cervids than of other types of livestock. Statutes require deer and elk producers to register their herds with BAH.[14] While not a statutory requirement, Minnesota rules require poultry breeders and dealers to obtain permits from the board; similarly, anyone buying or selling sheep or goats must register with the board.[15] However, neither statutes nor rules require cattle and swine producers to register their farms. Cervids are the only class of livestock for which producers must register and apply identification tags to *each individual animal*.[16] Deer and elk producers must submit to BAH annual inventories listing all cervids.[17] In contrast, producers raising cattle, hogs, poultry, and other species do not have to account for the locations of individual animals on a regular basis.[18] In addition to the aforementioned recordkeeping requirements, farmed deer and elk are the only group of livestock for which statute requires and defines appropriate fencing. We discuss statutory requirements related to farmed deer and elk in greater detail in the next section.

Board Oversight of Farmed Deer and Elk

In the rest of this chapter, we explore several aspects of BAH's deer and elk program. First, we analyze Minnesota statutes related to deer and elk farming and evaluate the extent to which board policies satisfy these statutory requirements. We go on to discuss the board's oversight of CWD testing. Finally, we discuss the board's enforcement of cervid laws and recent changes BAH staff have made with respect to its oversight of deer and elk.

Board Compliance with Minnesota Cervid Statute

BAH's purpose is to protect the health of Minnesota's domestic animals, including farmed deer and elk. Exhibit 2.4 lists the key statutory requirements related to farmed deer and elk. These requirements include, for example, that producers register their herds and animals with the board, maintain eight-foot fences around their deer and elk enclosures, and test all adult animals that die for chronic wasting disease (CWD).[19] We reviewed Minnesota's "Farmed Cervidae" statute and determined whether BAH's policies met statutory requirements.

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[13] United States Department of Agriculture, *2017 State Agriculture Overview, Minnesota*, https://nass.usda.gov /Quick_Stats/Ag_Overview/stateOverview.php?state=MINNESOTA, accessed March 16, 2018. Though they are reported differently from the other livestock listed above, Minnesota also had more than 11 million egg-laying chickens as of January 2018.

[14] *Minnesota Statutes* 2017, 35.155, subd. 10.

[15] *Minnesota Rules*, 1721.0290, subp. 1; 1721.0320, subp. 1; and 1721.0440, published electronically April 4, 2013.

[16] *Minnesota Statutes* 2017, 35.155, subd. 6.

[17] *Minnesota Statutes* 2017, 35.155, subd. 11(a).

[18] Minnesota rules require certain animals to be tagged when they move out of the herd or flock for specified reasons. For example, *Minnesota Rules,* 1721.0140, subp. 1, requires that breeding or rodeo cattle be officially identified when moving to another Minnesota location. However, they need not be individually tagged when moving directly to a slaughtering facility.

[19] *Minnesota Statutes* 2017, 35.155.

Exhibit 2.4: Minnesota statutes establish requirements for deer and elk ownership.

- People possessing live deer or elk must register their premises with the Board of Animal Health (BAH) and follow all of the statutory requirements for cervid ownership.
- BAH shall register farmed deer and elk. Producers must submit their registration requests on forms provided by BAH. The forms must include sales receipts or other documentation of the origin of the animals.
- Farmed deer and elk must be identified with tags approved by BAH.
- An inventory for each farmed deer and elk herd must be verified by an accredited veterinarian and filed with BAH every 12 months.
- All farmed deer and elk (over age 16 months) that die must be tested for chronic wasting disease (CWD).
- Deer and elk farms must have perimeter fences that are at least 96 inches tall.
- BAH may inspect deer and elk farms but is not statutorily required to do so.
- Deer and elk producers may not import farmed cervids from out-of-state herds that have been infected with or exposed to CWD or are located in a CWD-endemic area as determined by the board.[a]
- Deer and elk producers must report to BAH any movement of animals within the state of Minnesota within 14 days.
- Deer and elk producers must report escaped animals to the Department of Natural Resources (DNR) if the animals are not returned or captured within 24 hours.

[a] The Board of Animal Health has defined "CWD-endemic area" as any county in another state where chronic wasting disease has been found in the wild.

SOURCE: *Minnesota Statutes* 2017, 35.155.

While the Board of Animal Health's rules and policies related to deer and elk oversight met most statutory requirements, we had some concerns about the board's enforcement efforts.

Through comparison of statutes and rules, discussions with board administrators, and review of internal BAH policies, we found that BAH's policies reinforce the cervid requirements outlined in statute. For example, Minnesota statutes require that farmed deer and elk be identified with tags approved by the board.[20] BAH staff have approved two acceptable styles of ear tags. Additionally, statutes prohibit the importation of farmed deer and elk from herds in other states that have been exposed to CWD or are located in a CWD "endemic area," as determined by the board.[21] BAH staff have defined as endemic any county in which CWD has been detected in wild cervids.[22] Board staff regulate live-cervid importation and deny permits for animals originating from herds located in CWD-endemic

[20] *Minnesota Statutes* 2017, 35.155, subd. 6.

[21] *Minnesota Statutes* 2017, 35.155, subd. 12.

[22] In the past, when CWD was discovered in a wild cervid outside of Minnesota, BAH staff defined the resulting endemic area as the county where CWD was discovered, as well as some adjacent counties. A BAH administrator told us, however, that the inclusion of adjacent counties was not applied consistently and that BAH has recently revised its approach. BAH administrators also told us that they do not declare an out-of-state county endemic if CWD is identified only in *farmed* deer or elk. Animals from an infected farm, however, are ineligible for import into Minnesota according to statute. *Minnesota Statutes* 2017, 35.155, subd. 12.

areas. We discuss other statutory requirements and BAH's manner of enforcing them in subsequent sections.

Annual Inspections

Annual inspections are BAH's primary tool for enforcing many of the statutory requirements for deer and elk farms. Minnesota statutes allow BAH staff to inspect deer and elk farms, but do not require that they do so.[23] BAH rules, however, require annual inspections.[24] We observed one of these inspections and spoke to BAH administrators (the executive director and the assistant director in charge of the deer and elk program) about their expectations for the field staff that conduct deer and elk farm inspections.[25] During inspections, BAH field staff are expected to examine fencing to ensure that it is undamaged and meets the statutory height requirement of eight feet.[26] They should observe all deer and elk enclosures, counting the number of deer on the farm and verifying that each adult animal has visible identification tags, as required by statute.[27] Inspectors must also review producers' inventory reports and reconcile any differences between the report and the count on the farm that day. We analyzed BAH data for the 423 deer and elk farm sites where animals resided as of April 2018.[28] We found that for the years 2014 to 2017, field staff conducted required annual inspections of virtually all of those farms.[29]

The cervid-inspection requirements in rules are more rigorous than those in statutes.

Minnesota Statutes, 35.155, subd. 7	"The Board of Animal Health may inspect farmed Cervidae, farmed Cervidae facilities, and farmed Cervidae records."
Minnesota Rules, 1721.0380, subp. 3	"Each herd and all premises where the herd is located must be inspected by a representative of the board at least once every 12 months...."

[23] *Minnesota Statutes* 2017, 35.155, subd 7.

[24] *Minnesota Rules*, 1721.0380, subp. 3, published electronically April 4, 2013.

[25] Inspections may be conducted by field staff employed either by BAH or USDA. When USDA field staff conduct deer and elk related work on behalf of the board, they are considered agents of the state and their responsibilities and authority are identical to those of BAH field staff. For simplicity's sake, we use the terms "field staff" or "inspectors" to refer to the employees of both agencies throughout this chapter.

[26] *Minnesota Statutes* 2017, 35.155, subd. 4.

[27] *Minnesota Statutes* 2017, 35.155, subd. 6(a), requires that all farmed deer and elk have identification that is visible (though not necessarily readable) to the naked eye at a distance of 50 yards. Fawns, which are typically born in May or June, must be identified and tagged before December 31 of the year they were born, meaning that it is acceptable for fawns to be untagged during inspections occurring in the summer or fall.

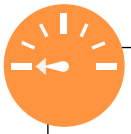
[28] As we explained in Chapter 1, there are 398 registered herds, but some of them reside at multiple locations. BAH field staff must inspect all *locations* where deer and elk reside.

[29] We found that BAH field staff failed to inspect three deer and elk farm sites in 2017. In addition, there was one herd for which it was unclear whether inspections had taken place in 2014 and 2016. While we can say that most inspections occurred, we cannot comment on the overall quality of the inspections performed by field staff.

Incomplete Registration Forms

BAH's policies generally meet statutory requirements with one exception. Minnesota statutes state that "the Board of Animal Health shall register farmed Cervidae. The owner must submit the registration request on forms provided by the board. The forms must include sales receipts or other documentation of the origin of the Cervidae."[30] Maintaining accurate origin information for a herd is critical. If BAH staff cannot find the origin of a particular animal that has been exposed to CWD, it will not know which other herds should also be investigated for possible CWD exposure.

The Board of Animal Health's forms for herd registration do not meet statutory requirements.



Board of Animal Health registration forms do not meet statutory requirements.

Minnesota Statutes, 35.155, subd. 6(b)	"The Board of Animal Health shall register farmed Cervidae. The owner must submit the registration request on forms provided by the board. The forms must include sales receipts or other documentation of the origin of the Cervidae."
Board Practice	The board registers farmed deer and elk. Its registration forms do not collect (or require the submission of) information about animal origin.

BAH's herd registration form is a one-page document that collects information about the producer and farm location, along with assurances that the producer understands and will follow Minnesota's farmed cervid regulations. The form instructions require the producer to mail the form, along with an "inventory report," to BAH. This form, however, makes no mention of the sales receipts or other origin documentation required in law.

The inventory report requires the producer to list each individual animal in the herd and provide its identification numbers, sex, species, and birth year.[31] This form does not leave space to provide animal origin information (other than a check box for animals that were born on the farm). The inventory report form also fails to require producers to submit sales receipts or animal origin documentation for the animals making up the registered herd.

BAH administrators said that board staff collect and maintain information on the origin of registered deer and elk through different avenues. They pointed out that the origin of any animal that moves to a different herd is accounted for either with (1) a certificate of veterinary inspection (which must accompany all imports from other states) or (2) BAH's movement form (if the animal moves from one Minnesota herd to another). Both of these documents, however, are completed by the owner or veterinarian of the *sending herd.* BAH's current practice does not hold the current owner of a given animal accountable for proving the origin of his or her deer or elk, as required in statute.

[30] *Minnesota Statutes* 2017, 35.155, subd. 6(b). The section goes on to say that "the owner must keep written records of the acquisition and disposition of registered farmed Cervidae."

[31] Some deer and elk have more than one identification number. Producers that want to move deer or elk to other states must identify all animals in the herd with two forms of identification bearing different numbers. At least one must be an official form of identification as approved by the board.

RECOMMENDATION

The Board of Animal Health should update its inventory report form to collect statutorily required information regarding the origin of the deer and elk that make up registered herds.

BAH staff should add space for animal origin and date of acquisition to its herd inventory report form, which producers use to register their deer and elk. While BAH staff have other methods of capturing deer and elk movements, those methods depend on reporting by the *former* owners of the animals. This fails to meet the statutory requirement that producers provide origin information for the animals they register.

We do not have reason to believe that any of BAH's CWD investigations have been stymied due to a lack of origin information on the registration and inventory forms. However, collecting information about the origin of a given deer or elk from its current owner (via the inventory report form) will provide a safeguard ensuring that BAH has the information it needs in the event that a former owner fails to properly report an animal's movement.

Incomplete Inventory Requirement

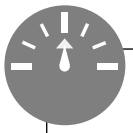
A deer or elk producer's inventory lists the individual animals residing on the producer's farm, as identified using numbered ear tags approved by BAH. Minnesota statutes require that deer and elk producers submit an inventory "verified by an accredited veterinarian" every 12 months.[32] Accurate recordkeeping is important if BAH staff need to know the locations of specific animals in order to investigate a CWD outbreak.

The law does not require that deer and elk identification tags be read and recorded on a regular basis.

In order to accurately complete an inventory form listing each animal's identification numbers, a producer or veterinarian may need to physically read and record the tag numbers of each deer or elk on the farm. We learned, however, that tag reading does not necessarily occur annually. While the federal guidelines require that producers have their animals' identification tags read and recorded once every three years (for herds certified for interstate movement), Minnesota law does not specify an interval at which tags must be read, either by the producer or a veterinarian.[33]

[32] *Minnesota Statutes* 2017, 35.155, subd. 11(a).

[33] United States Department of Agriculture, *Chronic Wasting Disease Program Standards* (Washington, DC, 2014), 14. The USDA published new CWD program standards in March 2018. In this report, we refer primarily to the 2014 version because the board actions we evaluated took place when the old standards were still in effect.



Minnesota law requires annual herd inventories, but not that tags are read on a regular basis.

Minnesota Statutes, 35.155, subd. 11(a)	"An inventory for each farmed Cervidae herd must be verified by an accredited veterinarian and filed with the Board of Animal Health every 12 months."
Minnesota Rules, 1721.0380, subp. 4	Board rules require a "complete animal inventory" (certified by an accredited veterinarian) every 12 months. Upon request, producers must allow a board representative to "conduct a physical animal by animal inventory."
Federal *Chronic Wasting Disease Program Standards*	For herds certified for interstate movement, physical inventories—including visually verifying at least one identification number—must be conducted "at least every 36 months."

The field staff we spoke with told us that, during annual inspections, they did not read animal ear tags or verify the accuracy of the inventory the producer had submitted. BAH administrators confirmed that the board's "inspection guidelines" require field staff to count the deer and elk on the farm and verify that the deer are visibly tagged. If the field staff's count matches the *number of animals* in BAH's database (based on the latest inventory report form and any intervening movement or death reports), then the field staff declares an "inventory match." In contrast, BAH staff explained that it is the responsibility of the producers and their veterinarians to record *animal-specific* information on the annual inventory report form. By law, the accredited veterinarians certify the results of annual inventories.[34]

Given the importance of knowing which specific deer and elk are on a farm, and knowing that field staff perform simple counts during inspections, we expected that the annual inventories conducted by accredited veterinarians would involve reading tags to verify the accuracy of the inventory. However, the responsibilities of the accredited veterinarian are not explicitly defined in state law. While Minnesota rules define what information an inventory must include (for example, animal type, age, sex, and identification numbers), neither statutes nor rules prescribe *how* the inventory must be conducted.[35] Minnesota rules state that a "complete animal inventory" must be completed every 12 months, and that upon request, owners must allow a representative of the board to conduct a "physical animal by animal inventory to reconcile animal identification numbers" with board records.[36] Given that the rules say that a "physical animal by animal inventory" is something that occurs by *request* and is conducted by the board (rather than the producer), it appears that the annual "complete animal inventory" may be something different.

When we discussed this issue with board administrators, they told us they had debated whether inventory should mean counting the number of animals or reading the individual tags. They told us that, at present, neither the law nor board policy explicitly requires identification tags be read on a regular basis (by producers, veterinarians, or board staff). The administrators told us, however, that after CWD was found on a central Minnesota farm in late 2016, the board increased its emphasis on inventory accuracy, requiring some

[34] *Minnesota Statutes* 2017, 3.155, subd. 11(a); and *Minnesota Rules,* 1721.0380, subp. 4, published electronically April 4, 2013.

[35] *Minnesota Statutes* 2017, 35.155; and *Minnesota Rules*, 1721.0380, subp. 10, published electronically April 4, 2013.

[36] *Minnesota Rules,* 1721.0380, subp. 4, published electronically April 4, 2013.

producers to present their animals to board staff for inventory reconciliation (as allowed by Minnesota rules).[37]

We observed as a Board of Animal Health (BAH) field staff member inspected a small farm (fewer than 20 deer), and saw that even just counting and viewing the identification tags is considerable work. On this particular farm, the producer had divided the deer into several pens, some of them heavily wooded.

The producer had withheld the animals' food until our arrival, hoping to lure the deer out into the open where the inspector could count them. Even so, we spent more than an hour watching the pens with binoculars, attempting to catch a glimpse of and count every deer.

The board administrators we spoke with explained that if an owner raises two deer as pets, it is easy enough to read their tags, but with a herd of even ten animals, it becomes much more difficult. They pointed out that producers that export animals to other states are subject to the federal requirement that certified (Level 6) deer and elk herds undergo physical inventories (including tag reading) every 36 months. While the board does not necessarily verify that this has occurred, the administrators explained most producers that move animals to other states have their entire herds tested for bovine tuberculosis every 36 months.[38] Producers must restrain or tranquilize their animals to allow a veterinarian to perform the tuberculosis test, which provides an opportunity to verify the accuracy of the identification numbers on the inventory.

RECOMMENDATION

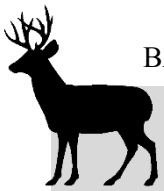
The Board of Animal Health should clarify expectations of whether and how often producers must verify their herd inventory on an animal-by-animal basis.

Creating an accurate inventory is important, but difficult. Many deer and elk are kept in large, vegetated enclosures and are unlikely to present themselves to strangers for convenient tag reading. For large herds, physical inventories may require tranquilizing animals or running them through a processing facility where a veterinarian or board representative can individually examine them while awake. Both experiences are stressful for the animals.[39]

[37] *Minnesota* Rules, 1721.0380, subp. 4, published electronically April 4, 2013.

[38] Bovine tuberculosis is an infectious disease that can affect many mammals, including deer and elk. Many other states—including Colorado, Iowa, Ohio, and Wisconsin to whom Minnesota producers regularly export deer and elk—require that animals entering the state under certain circumstances originate from herds that have conducted whole-herd tuberculosis testing. As of April 2018, about two-thirds (105 of 154) of deer and elk farms certified for interstate movement had been tested for tuberculosis within the past three years.

[39] BAH and USDA staff told us that white-tailed deer, in particular, are skittish and may throw themselves at walls and fences when stressed. They said that it is not unusual for deer to die while being handled.



We accompanied Board of Animal Health (BAH) staff on a farm visit for the purpose of conducting an inventory reconciliation. BAH staff chose to read tags on a day when the producer was already corralling some of his 60-plus deer and elk for other purposes.

The producer's processing facility was a large structure with multiple sets of sliding doors that divided the space into several tall-sided pens. The producer (and several helpers) herded 20 does into these pens and strategically shut the doors, separating them into small groups. The producer then herded one deer at a time through a series of narrow, single-occupancy pens, until it reached the "drop chute." The drop chute's padded sides move in to hold a deer in place as the floor drops away, leaving the deer suspended and unable to move. From this position, the field staff were able to read the ear tags on each doe while the producer administered hormones to prepare the doe for artificial insemination.

On this occasion, it took about four hours to wrangle and then process 20 deer, and there were no fatalities.

BAH should clarify its expectations for how often producers must conduct a physical inventory. At a minimum, the board should require, and verify, that producers certified for interstate movement meet federal standards by conducting a physical inventory with tag reading at least once every 36 months. The board should decide whether to apply this standard (or a more rigorous one) to all Minnesota herds. When establishing its expectations for the frequency of physical inventories, BAH must weigh the risks to the state (that inaccurate herd inventories may diminish the effectiveness of the state's CWD response) against the risks to producers (that processing animals leads to stress and potential fatalities).

Chronic Wasting Disease Testing

A critical step in managing CWD is identifying its presence in the deer and elk populations. CWD-infected deer or elk may not show visible symptoms of illness, making testing the only way to know whether CWD exists in a given deer or elk herd.

There are live-animal tests for CWD, but USDA has approved them for limited use only—not for routine herd surveillance.[40] To definitively diagnose CWD, one must collect specific tissues from the brain of a *dead* deer or elk. When farmed deer or elk die, regardless of the cause of death, Minnesota producers must submit the required tissues to the University of Minnesota Veterinary Diagnostic Laboratory for CWD testing.[41]

[40] In March 2018, USDA published new CWD program standards in which it approved the use of rectal and lymph node biopsies performed on live animals *under certain circumstances*. It approved the tests for use on white-tailed deer with a specific genetic makeup, and only as a means of assessing the health of herds or individual animals under investigation for possible CWD exposure. While such tests can show that an animal is infected with CWD, they cannot definitively prove the absence of the disease. United States Department of Agriculture, *Chronic Wasting Disease Program Standards* (Washington, DC, 2018), 30.

[41] The Veterinary Diagnostic Laboratory is one of 24 laboratories nationwide that USDA has approved to conduct CWD testing.

Testing Compliance

As demonstrated in Exhibit 2.4, Minnesota statutes require that producers submit samples for CWD testing whenever a farmed deer or elk over 16 months of age dies.[42] Minnesota rules set an even more rigorous standard (which aligns with federal program requirements) that producers sample all deceased deer or elk age 12 months or older.[43]

Minnesota rules require a stricter standard for chronic wasting disease testing than do Minnesota statutes.

Minnesota Statutes, 35.155, subd. 11(c)	"All animals from farmed Cervidae herds that are over 16 months of age that die or are slaughtered must be tested for chronic wasting disease."
Minnesota Rules, 1721.0420, subp. 1(D)	"Animals from farmed cervidae herds that are 12 months of age and over that die or are slaughtered must be tested for CWD with an official CWD test."

BAH staff can penalize producers who fail to submit samples by revising their Herd Certification Program enrollment dates. As explained in Chapter 1, a herd's status level in this program depends on the length of time the herd has been under continuous surveillance with no evidence of CWD. When BAH staff revise a herd's enrollment date, it shortens the herd's surveillance period, which either causes a drop in status level or delays advancement to the next status level. A producer who sells deer as a business must maintain a herd status of at least Level 4 (to move animals within Minnesota) or Level 6 (to move animals to other states).[44] Thus, producers who fail to submit CWD samples may find their herds' status downgraded, making it illegal to move their deer or elk.

Board of Animal Health staff have not systematically analyzed whether deer and elk producers submit tissue samples for chronic wasting disease testing for all deceased cervids.

BAH staff reported that 1,376 cervids tested negative for CWD in 2016. This figure represents 13 percent of all farmed deer and elk registered in Minnesota that year. BAH's analysis, however, reflects only samples that *were* submitted, not how many samples *should have been* submitted. As of late 2017, BAH staff had not established a process for comparing the number of sample submissions to the number of deer and elk that died on Minnesota farms. In other words, board staff have not calculated the state's overall CWD-testing compliance rate or the compliance rates for individual producers.

From 2014 to 2017, about one-third of producers that reported dead deer or elk failed to submit tissues from at least some of those animals for chronic wasting disease testing.

Based on our review of the BAH data, we estimated that, each year from 2014 to 2017, between 31 and 38 percent of producers statewide failed to submit at least some of the

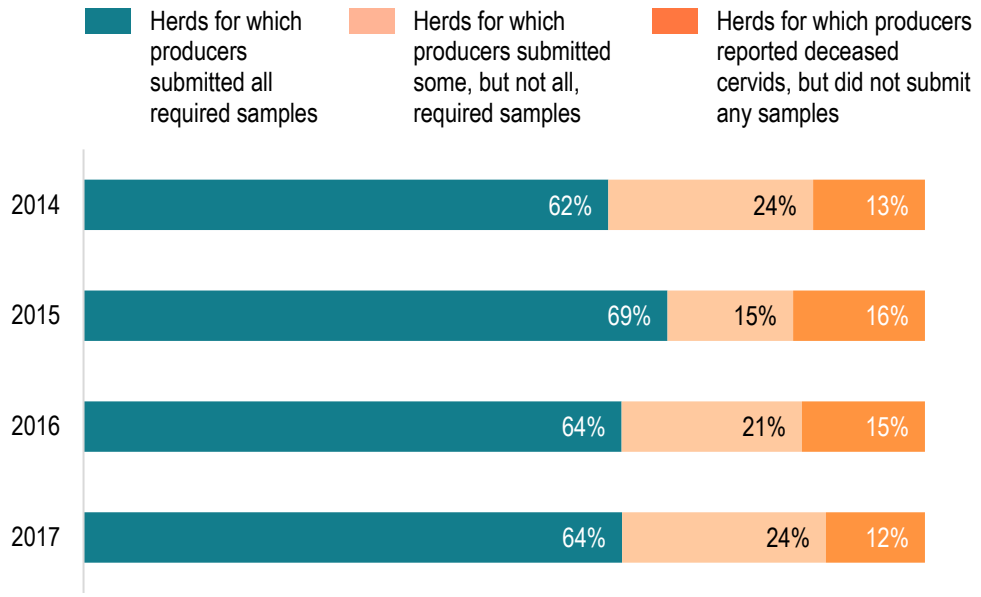
[42] *Minnesota Statutes* 2017, 35.155, subd. 11(c).

[43] *Minnesota Rules*, 1721.0420, subp. 1(D), published electronically April 4, 2013; and United States Department of Agriculture, *Chronic Wasting Disease Program Standards* (Washington, DC, 2014), 22.

[44] According to our analysis of BAH data, during calendar year 2017, 154 Minnesota deer and elk producers moved more than 1,800 animals, either out of state or to other Minnesota farms.

required CWD-testing samples for their herds.[45] Exhibit 2.5 shows the estimated proportions of deer and elk herds for which producers submitted all, some, or none of the required CWD-testing samples. Between 62 and 69 percent of deer and elk herds were fully compliant with CWD-testing requirements. We estimated the overall statewide compliance rate for CWD testing to be between 85 and 95 percent for the years 2014 through 2017.

Exhibit 2.5: An estimated one-third of Minnesota deer and elk producers failed to submit at least some of the required chronic wasting disease testing samples for their herds.



NOTES: The percentages in this exhibit should be considered estimates. We calculated sample-submission compliance rates by comparing the number of animals a producer reported dead from a given herd with the number of animals for which the producer submitted tissue samples for chronic wasting disease (CWD) testing in a given year. However, given that the CWD-testing data did not include animal identification numbers, we could not confidently match them with reported animal deaths.

SOURCE: Office of the Legislative Auditor, analysis of Board of Animal Health data, 2014-2017.

[45] In any given year, between 268 and 294 producers reported deer or elk fatalities to BAH. We estimated sample-submission compliance rates by comparing the number of animals a producer reported dead with the number of animals for which the producer submitted tissue samples in a given year. However, this analysis was limited by the fact that, prior to mid-2017, BAH's CWD-testing data did not include animal identification numbers. Therefore, we could not confidently match specific CWD test results with reported animal deaths.

RECOMMENDATION

The Board of Animal Health should (1) systematically analyze whether producers submit tissue samples from all deceased deer and elk to test for chronic wasting disease and, (2) appropriately penalize those producers who fail to submit samples.

State rules require that producers test 100 percent of deceased deer and elk age 12 months and older for CWD. Testing is important because it is the only way to know whether animals are infected. While most of Minnesota's deer and elk herds have never had a positive CWD test result, BAH's data show that many deer and elk were not tested as required. We may never know whether those animals were infected and, by extension, whether their herds have been exposed to the disease.

Board staff should design a report that matches reported deer and elk deaths with the corresponding CWD-testing results and highlights any animals that died, but were not tested. This would allow BAH staff to follow up with producers—to either educate or penalize them—as appropriate.[46] Tracking CWD-testing compliance on an ongoing basis will also allow BAH staff to determine with greater confidence whether Minnesota deer and elk herds are free of CWD. When we raised this issue with a BAH administrator in late 2017, she said that BAH staff have discussed this issue and intend to design a report to track CWD-testing compliance.

The recommended report would help BAH staff identify producers with CWD-testing compliance issues going forward. As the report brings to light producers who currently have poor CWD-testing compliance rates, BAH staff should closely review their historical records to determine whether they have had CWD-testing issues over time. The board should appropriately penalize producers who have habitually failed to submit CWD-testing samples.

Sample Quality

BAH staff must be concerned not just with *whether* producers submit tissue samples for CWD testing, but whether they submit *suitable* samples. If a producer submits an undamaged sample of the correct tissues from a deceased deer or elk, then the Veterinary Diagnostic Laboratory is typically able to reach a conclusion of either CWD "not detected" or "suspected" CWD positive.[47] Some tissue samples the laboratory receives, however, cannot be analyzed. One of the most common problems the laboratory encounters is what is known as a "location" error—the producer submitted the wrong type of tissue.[48] Producers may also submit samples that are degraded or unreadable for other reasons. When a tissue sample submitted for CWD-testing is unreadable, the deer or elk it came from cannot be tested and the producer and BAH staff cannot know whether the animal had CWD.

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[46] There are certain circumstances under which the board could excuse a missed test. For example, a deer that dies in a vegetated area in the heat of summer may be too decomposed for testing by the time the producer locates the body.

[47] The Veterinary Diagnostic Laboratory sends all tissue samples that it suspects to be CWD-positive to the National Veterinary Services Laboratory in Ames, Iowa. This USDA laboratory performs confirmatory testing before issuing a final CWD-positive result.

[48] The evidence of CWD is found in the obex (brainstem), as well as the medial retropharyngeal lymph nodes (one of the sets of lymph nodes in the head). These two tissues are required for CWD testing. Veterinary Diagnostic Laboratory staff said that some producers accidentally submit similar looking organs that are also found in heads of deer, such as salivary glands or thyroids.

Until recently, the quality of the tissue samples submitted for chronic wasting disease testing was declining; however, the percentage of readable samples improved over the latter half of 2017.

Veterinary Diagnostic Laboratory representatives told us that, over the past few years, the quality of CWD-testing samples has declined significantly, with producers submitting an increasing number of unreadable samples. Laboratory representatives met with BAH administrators in September 2017 to discuss CWD testing. According to Veterinary Diagnostic Laboratory representatives, all parties agreed that sample quality and consistency needed to improve. Laboratory representatives told us that, as a result of board staff retraining certain producers, CWD-sample quality began to improve over the latter half of 2017. We analyzed BAH data and found that the percentage of animals that could not be tested due to unreadable samples increased from 2 percent in 2014 to 11 percent in 2017.[49] Our analysis, however, supports the Veterinary Diagnostic Laboratory's assessment that sample quality improved recently. Exhibit 2.6 shows that 16 percent of animals with samples submitted during the first half of 2017 could not be tested due to sample quality. By comparison, 8 percent of animals for which samples were submitted in the latter half of the year could not be tested due to unreadable samples.

We accompanied a Board of Animal Health (BAH) field staff member on a farm visit for the purposes of retraining a producer who had recently submitted a number of poor-quality tissue samples for chronic wasting disease testing.

Using the head (provided by the producer) of a recently harvested deer, the field staff person explained the proper way to decapitate a deer for testing purposes. She then showed the producer how to locate the appropriate tissues, as well as how to extract them in a manner that does not damage the samples. The field staff person and producer also discussed how the samples should be stored and packaged for delivery to the Veterinary Diagnostic Laboratory.

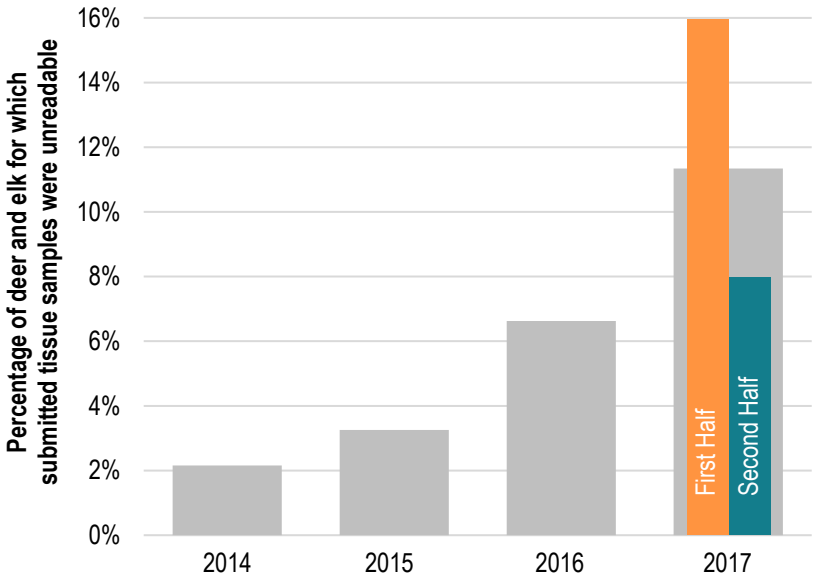
When farmed deer or elk die, producers may choose to collect the sample tissues themselves, or they may enlist the help of a veterinarian or the Veterinary Diagnostic Laboratory.[50] Board administrators told us that in small herds, where an animal dies only once every several years, it may not make sense for producers to attempt to master the delicate and technical skill of removing specific brain tissues for CWD testing. Producers with a large number of animals, however, may wish to avoid the expense of repeated veterinarian visits by collecting samples themselves.[51] Staff from the Veterinary Diagnostic Laboratory told us that, in general, veterinarians do a better job collecting readable CWD-testing samples than producers.

[49] Veterinary Diagnostic Laboratory staff pointed out that the large increase in unreadable samples in 2017 may be at least partially attributable to the fact that in fall of 2016, the National Veterinary Services Laboratory changed its standards for interpreting brainstem samples.

[50] Veterinary Diagnostic Laboratory staff will, for a $34 fee, extract CWD-testing sample tissues from a whole deer or elk head delivered to the laboratory. Board administrators said that while board field staff assist with sample collection when they are able (available and nearby when a producer finds a deceased animal), BAH does not have the resources to conduct all CWD sample collection for the state's deer and elk producers.

[51] Board staff told us that the cost of having a veterinarian collect CWD sample tissues varies, but could be as much as $80 or more per animal.

Exhibit 2.6: The percentage of unreadable chronic wasting disease testing samples increased over time, but improved somewhat during the latter half of 2017.



NOTES: Deer and elk producers submit sample tissues from dead animals to the University of Minnesota's Veterinary Diagnostic Laboratory for chronic wasting disease (CWD) testing. An unreadable result means that all of the tissues submitted for a given animal were not suitable for analysis by laboratory staff. Samples may be unreadable for a variety of reasons; we categorized as unreadable all samples for which laboratory staff could not reach a determination of (1) CWD not detected or (2) CWD suspected. Animals with unreadable samples cannot be tested for CWD.

SOURCE: Office of the Legislative Auditor, analysis of Board of Animal Health data, 2014-2017.

It is noteworthy that producers in Minnesota are allowed to collect their own tissue samples for CWD testing. The federal *Chronic Wasting Disease Program Standards* require (for herds certified for interstate movement) that samples be collected by "state officials, [USDA Animal and Plant Health Inspection Service] employees, accredited veterinarians, or state-certified or -designated CWD sample collectors."[52] In other words, the owners of certified herds are not supposed to collect their own samples unless they are approved by the state. While board staff have retrained producers as needed, they do not have an official mechanism for approving producers as designated CWD-sample collectors.

[52] United States Department of Agriculture, *Chronic Wasting Disease Program Standards* (Washington, DC, 2014), 25.

RECOMMENDATION

The Board of Animal Health should develop an approval program for deer and elk producers who wish to collect their own chronic wasting disease testing samples.

BAH staff need to ensure that deer and elk producers receive consistent and effective instruction on the proper way to collect CWD samples from dead deer and elk. Board staff should develop a standardized training and approval program for producers who wish to collect their own samples. BAH staff should also establish an appropriate interval for producer reauthorization, to ensure that producers keep their sample-collection skills fresh. Formalizing a training and approval process for producers who collect their own samples for CWD testing should improve sample quality and give BAH staff and Minnesota at large a better understanding of the extent of CWD among farmed deer and elk in Minnesota.

While livestock testing most for other species is typically performed by accredited veterinarians, the poultry industry provides an example in which BAH has approved producers to conduct disease testing. Minnesota rules establish a training program for "authorized poultry testing agents."[53] Individuals complete a one-day classroom-training course and one-on-one field training with a board representative to learn how to conduct blood tests used to diagnose a number of poultry diseases. Poultry-testing agents must apply for reauthorization every four years and complete updated training if applicable.

In the previous section, we recommended that BAH develop a report to match deer and elk that were reported dead with their CWD test results, flagging animals that were not tested. As part of this effort, BAH should also systematically analyze the number and types of unreadable CWD samples submitted. Not only would this help the board enforce CWD-testing laws, but it would allow BAH to identify systematic sampling problems and tailor training opportunities to producers' needs.

Enforcement

The fact that BAH's policies generally align with statutory requirements for deer and elk farm oversight, does not necessarily mean that the board has adequately enforced those requirements.

In some instances, the Board of Animal Health has failed to enforce the state's deer and elk regulations.

While we did not find evidence of a systematic failure to enforce deer and elk regulations, a recent situation raises questions about the thoroughness of field staffs' inspections of deer and elk farms. In November 2017, CWD was found on a deer farm in Winona County. The remainder of the herd was depopulated in February 2018, and all seven of the depopulated deer tested positive for CWD.[54] The *Star Tribune* reported that many portions of the farm's fence had sagged to a height lower than the eight feet required by law and (by the owner's

[53] *Minnesota Rules*, 1721.0330, subp. 4, published electronically April 4, 2013.

[54] Prior to the depopulation of the Winona County farm, four deer died and were tested for CWD; two deer were found to be CWD-positive while CWD was not detected in the other two deer. Including the depopulated deer, 9 of 11 deer tested since November 2017 were infected.

own admission) it had been that way for years.[55] The farm, however, had passed all of its inspections (going back at least as far as 2007), including its most recent inspection in October 2017. In each instance, BAH field staff checked the box indicating that the fence was in compliance, and the inspection reports showed no additional comments related to fence condition.

BAH's deer and elk program director said that she did not know why the Winona farm passed inspection with allegedly noncompliant fencing. She said that perhaps inspectors had received mixed messages regarding how to enforce fence-height requirements. Regardless of the cause, the situation calls into question the accuracy of the inspection reports in BAH's database and the integrity of its inspection process in general.[56]

While the Winona fencing situation suggests a failure to act on the part of board staff, there are other regulations that are difficult to enforce, even if staff are fulfilling expectations. Many of the deer and elk requirements in law are producer responsibilities. BAH's enforcement of certain requirements depends on deer and elk producers being forthcoming. Board staff cannot watch all 398 herds on a continuous basis, and board staff cannot know every time a deer or elk dies, escapes, or moves to another farm. BAH staff depend on deer and elk producers to provide information to them in a timely fashion.

If, for example, a producer does not report that a deer or elk has escaped, died, or moved to another farm, board staff may not find out about it until the next annual inspection, when the field staff conducting the inspection find that the number of animals present on the farm does not match the board's inventory. In some cases, the board has learned about escapes only after a hunter shot a deer with identification tags.

BAH administrators admitted that in the past, field staff were inconsistent with regards to penalizing producers who did not comply with Minnesota law. Historically, for example, when a field inspector found a violation on a farm, he or she might have created a plan for the farmer to address the violation, but still closed the inspection with a designation of "passed." Similarly, an administrator told us that BAH staff have not consistently applied penalties for failure to submit tissues for CWD testing.[57]

The structure of BAH's data does not allow for easy analysis of violations or compliance issues. We reviewed comments entered into the board's database by BAH staff to get a sense of the types of compliance issues that field staff encounter when inspecting deer and elk farms. From 2014 to 2017, the most commonly reported violation was an escaped animal, with more than 100 mentions, spread fairly evenly over the four-year period. The comments also indicate that, during this four-year time period, there were between 30 and 90 mentions each of inventory problems, inadequate official identification, fencing issues, and CWD-testing issues.

There were many more compliance issues mentioned in 2017 as compared with other years (in all categories except for escapes and CWD testing). We also noted an increase in 2017

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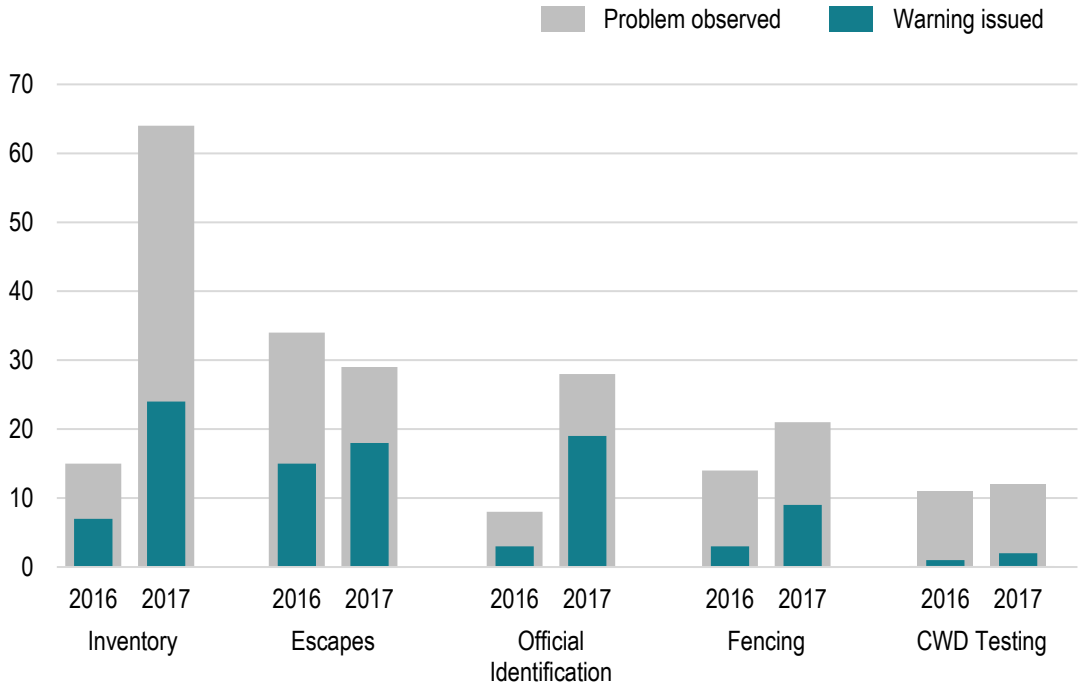
[55] Tony Kennedy, "'Hunters should be…afraid,'" *Star Tribune*, March 7, 2018.

[56] The deer and elk program director told us that she has ordered field staff to reinspect the fences of every cervid farm in Winona County and Fillmore County (where CWD has recently been found in the wild) by mid-April 2018. This will ensure that the fences in the area are fully compliant with state law and help prevent the comingling of farmed and wild cervids in the area.

[57] As we mentioned previously, the penalty for missing a CWD test is an adjustment to the herd's CWD Herd Certification Program enrollment date.

in the number of comments that explicitly mention that a verbal warning had been given or a written citation issued to a producer. Exhibit 2.7 shows the numbers of problems observed and warnings issued for various types of compliance issues. The increases in the number of violations described and the number of warnings given in 2017 suggest that BAH field staff stepped up their enforcement efforts during that year.

Exhibit 2.7: The number of compliance issues recorded by Board of Animal Health field staff increased in 2017.



NOTES: "CWD" is chronic wasting disease. The numbers of violations and warnings reflected in the exhibit are based on our review of comments recorded by Board of Animal Health (BAH) field staff during the course of deer and elk farm inspections and other board activities. It may not reflect the full extent of compliance issues observed or warnings issued by BAH staff. A "warning issued" could be a verbal warning or a formal written citation left with the producer.

SOURCE: Office of the Legislative Auditor, analysis of Board of Animal Health data, 2016-2017.

The board is authorized by statute to issue a civil penalty when producers fail to comply with Minnesota laws related to cervid ownership.[58] According to board administrators, BAH staff have historically issued penalties of $250 per violation. As with compliance issues, BAH data do not clearly indicate when field staff issued penalties. We rarely found mention of penalties in the comments. Since 2014, BAH has issued approximately 35 penalties in response to escapes and 5 for CWD-testing issues. Board staff recorded evidence of only two penalties each for failure to properly identify (tag) animals and inventory problems. There was no record of BAH penalizing producers for fencing issues.

[58] *Minnesota Statutes* 2017, 35.95, subd. 1.

RECOMMENDATION

The Board of Animal Health should (1) fully enforce Minnesota deer and elk laws, (2) strengthen consequences for failure to comply, and (3) develop methods of monitoring field staff performance.

As we have discussed throughout this chapter, deer and elk oversight requirements are designed to help BAH staff detect and contain CWD in the farmed deer and elk population. In order to protect Minnesota's domestic cervid population, BAH must fully enforce state requirements related to inventory and identification, fencing, and CWD testing, among other things. Given the lack of enforcement with respect to fencing on the CWD-positive farm in Winona County, BAH administrators may wish to retrain field staff or otherwise clarify expectations regarding enforcement. The board should also develop ways to routinely monitor field staff performance.

BAH staff should consider whether the amount they fine producers who do not comply with state law is appropriate. One BAH administrator told us that a penalty of $250 may not be enough to deter certain producers from violating farmed-cervid laws. BAH should also consider using reductions in Herd Certification Program status level or registration cancellation as penalties when the violations are sufficiently severe or habitual. Minnesota rules give BAH the right to "cancel herd status [in the Herd Certification Program]" of any producer who fails to comply with the board's rules on deer and elk farming.[59] The board should develop internal guidelines regarding appropriate penalties for various situations in an effort to make penalties more meaningful and to apply them consistently.

Recent Program Changes

The former assistant director responsible for the deer and elk program ran the program from the early 2000s until he retired in June 2017. The new assistant director with responsibility for the program has implemented a number of changes to the board's oversight of deer and elk farms since assuming her position.

The Board of Animal Health has improved its deer and elk program over the past several months.

While the board has had some enforcement issues, several people we spoke with indicated that the new director of BAH's deer and elk program was working to improve the board's oversight of farmed deer and elk. One board member said that "the program is starting to look the way it was intended to look." The USDA assistant director for Minnesota told us that if we had asked her a year ago, she would have had a list of concerns about BAH's deer and elk oversight, but that the new director had "taken a fine-toothed comb" to the program. As we studied BAH's deer and elk program, we found that board staff have made improvements in areas such as communication and enforcement.

Early in her tenure, the new deer and elk program director created the *Minnesota Farmed Cervidae Handbook*, at the suggestion of field staff. The handbook, which outlines

[59] *Minnesota Rules*, 1721.0420, subp. 1(K), published electronically April 4, 2013. Further, *Minnesota Statutes* 2017, 35.155, subd. 10, states that if a producer does not meet all requirements of the farmed cervidae statute, his or her animals "may be seized and destroyed by the commissioner of natural resources."

expectations for deer and elk producers, was initially published during the summer of 2017 and later distributed to all producers. The deer and elk program director told us that she is currently working to more effectively communicate the ways in which expectations differ for producers that do and do not engage in interstate movement of animals.

Under its new deer and elk program director, BAH staff are also making efforts to improve enforcement of deer and elk regulations. While field staff may have prematurely closed inspections in the past, BAH administrators explained that they now expect field staff to write up violations and revisit farms (usually within 30 days) to verify that the producers have remedied the problems. As discussed in the previous section and shown in Exhibit 2.7, BAH staff appear to have noted more violations and issued more warnings in 2017 than in 2016.

Additionally, administrators told us that BAH staff are now implementing the rule that allows the board to adjust Herd Certification Program dates for producers who fail to submit CWD test samples when a deer or elk dies. They told us that they are developing a policy to make consequences more meaningful and to apply them consistently.[60] As we discussed previously, BAH staff have begun retraining some producers in an effort to improve the quality of CWD-testing samples. In addition, board and Veterinary Diagnostic Laboratory staff worked together to develop a new guide to help deer and elk producers successfully collect their own CWD tissue samples.[61] For a list of recent changes to BAH's cervid program, see Exhibit 2.8.

Exhibit 2.8: Since mid-2017, the Board of Animal Health has made many changes to its deer and elk program.

- Published and distributed the Minnesota Farmed Cervidae Handbook
- Published and distributed Chronic Wasting Disease Sampling: A Step-by-Step Guide
- Reduced the number of forms that a producer must fill out when an animal dies
- Required producers to submit ear tags and an ear tissue sample along with chronic wasting disease (CWD) tissue samples collected from dead deer or elk, for the purpose of:
  - Researching cervid genotypes
  - Preventing producers from reusing identification tags
- Began retraining producers who submitted poor-quality sample tissues for CWD testing of dead deer and elk
- Revised guidelines for identification tags (only two types of ear-tagging systems are accepted for official identification as of January 1, 2018)
- Replaced the Farmed Cervidae Advisory Committee with a Farmed Cervidae Advisory Task Force that is charged with specific objectives[a]
- Finished scanning all paper files into new data system (for existing herds)

[a] Board members approved the creation of the Farmed Cervidae Advisory Task Force at the Board of Animal Health's December 2017 meeting. The objectives of the task force are to (1) help develop guidelines for exclusionary fencing that fully prevents the comingling of farmed and wild cervids, and (2) discuss ways to help deer and elk farms in the state's CWD-endemic area (the area where CWD has been found in wild deer) remain commercially viable while subject to movement restrictions.

SOURCE: Office of the Legislative Auditor.

[60] The enrollment date adjustment (which is currently 90 days per violation) may be a meaningful consequence for a producer whose herd is at a low level and whose advancement will be delayed by the penalty. However, for a producer who has been at status Level 6 for a long time, a 90-day adjustment in enrollment date would have no impact; it would take numerous missed samples before BAH staff would downgrade the herd's status under this penalty structure.

[61] Board of Animal Health, *Chronic Wasting Disease Sampling: A Step-by-Step Guide* (St. Paul, 2018).

Chapter 3: Chronic Wasting Disease

Chronic wasting disease (CWD) is an always fatal, neurodegenerative disease found in both wild and farmed deer and elk. It belongs to a group of related diseases, which includes bovine spongiform encephalopathy (also known as mad cow disease), scrapie in sheep, and Creutzfeldt-Jakob disease in humans. Deer and elk infected with CWD do not show visible symptoms right away. As the disease progresses, infected animals lose weight and body condition, exhibit depression and disorientation, lose their fear of humans, and begin salivating excessively. CWD progresses slowly; it often takes longer than a year for an infected deer or elk to develop clinical signs. At the point at which the disease can be clinically diagnosed, the infected deer or elk likely has only weeks or months left to live.

While the previous chapter focused specifically on the Board of Animal Health's (BAH) activities related to *farmed* deer and elk, the threat of CWD is not limited to farmed cervids. In this chapter, we widen our lens to include the role of the Department of Natural Resources (DNR) and the Legislature in protecting Minnesota's cervid populations (both farmed and wild). First, we offer background information on the nature of CWD and how academic literature suggests managing the disease. We discuss the history of CWD detections in Minnesota, and how the state has responded to those outbreaks. We go on to discuss the relationship between the two state agencies responsible for CWD management—BAH and DNR—and make recommendations for improving their coordination. Finally, we explain how Minnesota's CWD-management strategies compare to those used nationwide.

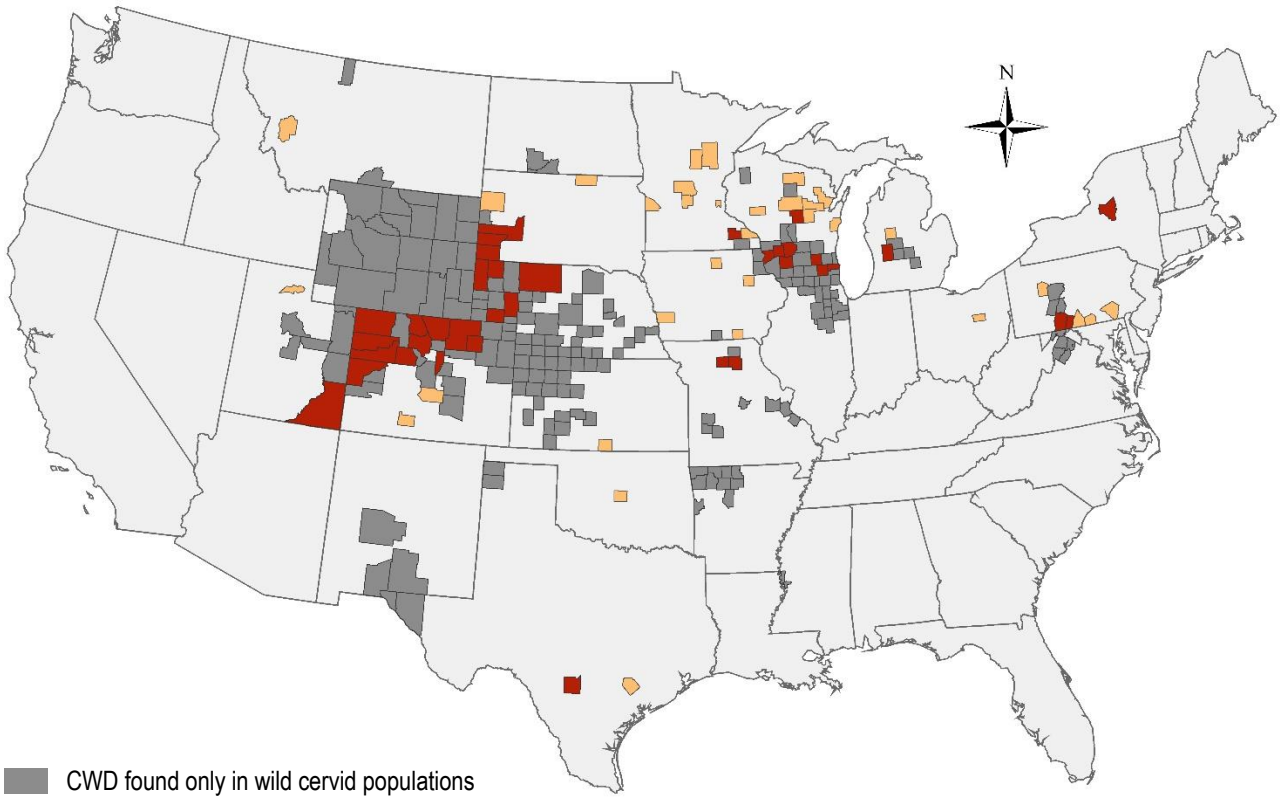
Background and Management

CWD has been found in 25 U.S. states, including Minnesota, Iowa, North Dakota, South Dakota, and Wisconsin. The disease has also been found in deer and elk in two Canadian provinces, South Korea, and—most recently—in wild reindeer and moose in Norway. Exhibit 3.1 shows the U.S. states in which CWD has been found in farmed and wild cervid populations.

Chronic wasting disease is not well understood, which makes it difficult to develop effective management strategies.

We reviewed academic literature on CWD and found that there is much uncertainty among CWD researchers regarding the nature of the disease. Areas of incomplete understanding are (1) disease transmission, (2) incubation period, and (3) diagnosis and detection. These factors, which we discuss in the following sections, make it difficult to study CWD and develop effective management strategies.

Exhibit 3.1: Chronic wasting disease has been confirmed in 25 states.



NOTE: "CWD" is chronic wasting disease.

SOURCE: United States Geological Survey, National Wildlife Health Center data, March 2018.

Disease Transmission

Biologists first observed CWD in captive mule deer in a Colorado research facility in the late 1960s.[1] Researchers are unsure how the disease originated.[2] Some speculate that the earliest cases occurred spontaneously.[3] Others believe that scrapie, a relative of CWD

[1] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," *EFSA Journal* 15, no. 1 (2017): 10; and Nicholas J. Haley and Edward A. Hoover, "Chronic Wasting Disease of Cervids: Current Knowledge and Future Perspectives," *Annual Review of Animal Biosciences* 3 (2015): 306.

[2] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," 19; Mark Zabel and Aimee Ortega, "The Ecology of Prions," *Microbiology and Molecular Biology Reviews* 81, no. 3 (2017): 2; Samuel E. Saunders, Shannon L. Bartelt-Hunt, and Jason C. Bartz, "Occurrence, Transmission, and Zoonotic Potential of Chronic Wasting Disease," *Emerging Infections Diseases* 18, no. 3 (2012): 374; and Emily S. Almberg, Paul C. Cross, Christopher J. Johnson, Dennis M. Heisey, and Bryan J. Richards, "Modeling Routes of Chronic Wasting Disease Transmission: Environmental Prion Persistence Promotes Deer Population Decline and Extinction," *PLoS ONE* 6, no. 5 (2011): 1.

[3] Zabel and Ortega, "The Ecology of Prions," 2; and Saunders, Bartelt-Hunt, and Bartz, "Occurrence, Transmission, and Zoonotic Potential of Chronic Wasting Disease," 374.

occurring in sheep, jumped the species barrier when sheep and deer were housed in the same research facility.[4]

Transmission is the passing of a disease from one infected individual to another—previously uninfected—individual. CWD and its related diseases are caused by a unique infectious agent called a "prion," which is essentially a mutated protein in the infected host.[5] The exact mechanisms of CWD transmission remain unclear, but researchers believe that prions (and thus CWD) can be passed from one animal to another in multiple ways. Infected deer and elk shed prions through their saliva, urine, and feces.[6] The infected deer and elk may pass these prions to other animals directly (through physical contact) or indirectly (through environmental contamination).[7] Decomposing carcasses of infected animals also release prions into the environment.[8] It is unclear how long prions may persist in soil or plant matter, but there have been instances of animals becoming infected when moved to previously contaminated environments that had been unoccupied for as long as two years; scrapie prions have been shown to remain infectious for up to 16 years.[9] It is unknown how many prions a deer or elk must encounter before contracting CWD.[10]

CWD has spread far from its presumed point of origin in Colorado. It is believed that the disease spreads primarily through (1) the relocation, by humans, of deer and elk (including both farmed cervid transport and the relocation of wild cervid herds); (2) the movement of whole hunter-harvested carcasses from one place to another; and (3) the natural movements of wild deer and elk. It is not known exactly how far wild deer and elk travel over a lifetime and how far CWD might spread through these natural movements.[11]

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[4] Zabel and Ortega, "The Ecology of Prions," 2.

[5] *Ibid.*, 1.

[6] Zabel and Ortega, "The Ecology of Prions," 2; Almberg, Cross, Johnson, Heisey, and Richards, "Modeling Routes of Chronic Wasting Disease Transmission," 1; F. D. Uehlinger, A. C. Johnston, T. K. Bollinger, and C. L. Waldner, "Systematic review of management strategies to control chronic wasting disease in wild deer populations in North America," BMC Veterinary Research 12, art. 173 (2016): 1; and Alex Potapov, Evelyn Merrill, Margo Pybus, David Coltman, and Mark A. Lewis, "Chronic wasting disease: Possible transmission mechanisms in deer," *Ecological Modelling* 250 (2013): 244. To date, there is no evidence that prions persist in semen or embryos. United States Department of Agriculture, *Chronic Wasting Disease Program Standards* (Washington, DC, 2018), 18.

[7] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," 19; Zabel and Ortega, "The Ecology of Prions," 2; and Almberg, Cross, Johnson, Heisey, and Richards, "Modeling Routes of Chronic Wasting Disease Transmission," 1.

[8] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," 19; Zabel and Ortega, "The Ecology of Prions," 5; Almberg, Cross, Johnson, Heisey, and Richards, "Modeling Routes of Chronic Wasting Disease Transmission," 1; and Clarissa J. Booth, Christopher J. Johnson, Joel A. Pedersen, "Microbial and enzymatic inactivation of prions in soil environments," *Soil Biology & Biochemistry* 59 (2013): 2.

[9] Almberg, Cross, Johnson, Heisey, and Richards, "Modeling Routes of Chronic Wasting Disease Transmission," 2; Uehlinger, Johnston, Bollinger, and Waldner, "Systematic review of management strategies to control chronic wasting disease," 2; and Sandra Pritzkow, Rodrigo Morales, Edward Hoover, and Claudio Soto, "Grass Plants Bind, Retain, Uptake, and Transport Infectious Prions," *Cell Reports* 11, no. 8 (2015): 1172.

[10] Potapov, Merrill, Pybus, Coltman, and Lewis, "Chronic wasting disease: Possible transmission mechanisms in deer," 244.

[11] At the time of report publication, the states of Michigan, Minnesota, and Wisconsin were in the process of conducting deer-movement studies. Wildlife officials in these states captured (or planned to capture) deer and fit them with collars embedded with tracking devices. They hope that learning more about the movements of wild deer in CWD-impacted areas will help inform better CWD-containment strategies.

Disease Incubation Period and Detection

CWD's incubation period—the amount of time between infection and the confirmable presence of prions—has been characterized as "long and variable."[12] Studies have shown differing incubation periods for different species and under different circumstances, ranging from one to five years.[13]

The term "incubation period" is often used to mean the time from exposure to the appearance of clinical signs of a disease. This definition is less useful in the case of CWD because many deer or elk that test positive for CWD appear outwardly healthy at the time of their death. (As we discussed in Chapter 2, CWD can only be diagnosed by testing specific tissues from the brain or lymph nodes of a *dead* deer or elk. There is no reliable way to diagnose CWD in a live animal.[14]) The long incubation period and the fact that cervids do not exhibit clinical signs until late in the disease's progression mean that CWD-infected deer and elk could shed prions and infect other animals long before they die and are found to be CWD-positive.[15]

Management Strategies

Because of the difficulty detecting CWD and the uncertainty regarding its transmission, it is hard for states to know how to best fight the spread of the disease. Researchers are generally pessimistic regarding the possibility of eradicating CWD once established.[16] While no management techniques have been demonstrated to definitively prevent or reduce the prevalence of CWD in a deer or elk population, the literature presents several approaches that may help contain the disease. Though we focused our evaluation on farmed deer and elk, we include some strategies related to wild cervids in our discussion below. As we discuss later in this chapter, the presence of CWD on farms can impact disease management for wild herds and vice versa.

To prevent the introduction of CWD or contain its spread once it has been found in an area, the literature suggests several strategies to either (1) limit the movements of deer and elk, or

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[12] Uehlinger, Johnston, Bollinger, and Waldner, "Systematic review of management strategies to control chronic wasting disease," 12.

[13] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," 19; Zabel and Ortega, "The Ecology of Prions," 2; Uehlinger, Johnston, Bollinger, and Waldner, "Systematic review of management strategies to control chronic wasting disease," 12; and Samia Hannaoui, Hermann M. Schatzl, and Sabine Gilch, "Chronic wasting disease: Emerging prions and their potential risk," *PLOS Pathogens* 13, no. 11 (2017): 1.

[14] Rectal and lymph node biopsies can be performed on live cervids, and were recently approved by USDA for use under limited circumstances. United States Department of Agriculture, *Chronic Wasting Disease Program Standards* (Washington, DC, 2018), 31. However, these tests cannot prove that an individual deer or elk is healthy. It is unclear exactly how the disease progresses through the lymphatic system and how long it takes; a negative rectal biopsy, for example, would show only that the tested animal did not have prions in the rectum at the time of the test.

[15] Almberg, Cross, Johnson, Heisey, and Richards, "Modeling Routes of Chronic Wasting Disease Transmission," 1; Potapov, Merrill, Pybus, Coltman, and Lewis, "Chronic wasting disease: Possible transmission mechanisms in deer," 244; Amy V. Nalls, Erin McNulty, Jenny Powers, Savis M. Seelig, Clare Hoover, Nicholas J. Haley, Jeanette Hayes-Klug, Kelly Anderson, Paula Stewart, Wilfred Goldmann, Edward A. Hoover, Candace K. Mathiason, "Mother to Offspring Transmission of Chronic Wasting Disease in Reeves' Muntjac Deer," *PLoS One* 8, no. 8 (2013): 2; and Richard Garhold and Graham Hickling, "Diseases Associated with Translocation of Captive Cervids in North America," *Wildlife Society Bulletin* 40, no. 1 (2016): 27.

[16] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," 31; Hannaoui, Schatzl, and Gilch, "Chronic wasting disease: Emerging prions and their potential risk," 3; Garhold and Hickling, "Diseases Associated with Translocation of Captive Cervids," 26-27; and David G. Hewitt, ed., *Biology and Management of White-tailed Deer* (Boca Raton, FL: CRC Press, 2011), 233.

(2) prevent them from congregating. For example, the literature suggests limiting deer and elk movements by restricting the importation of farmed cervids.[17] Similarly, the literature suggests imposing restrictions on the movement of deer and elk carcasses across state lines.[18]

To prevent wild deer and elk from congregating, literature suggests imposing regulations on feeding and baiting.[19] Some articles also suggest that deer or elk producers use double fencing or electric fencing to prevent farmed deer and elk from coming in contact with their wild counterparts.[20] We discuss many of these CWD-management techniques later in this chapter, when we compare Minnesota's CWD regulations with those of others states.

When CWD is found on a farm, the farm is typically either quarantined or "depopulated" (in which all of the cervids on the infected farm are killed and tested for CWD). When CWD has been confirmed in the wild, states may respond by attempting to reduce the population of deer and elk in the area. This has the dual benefits of reducing population density (thus reducing contact and possible transmission between animals), and providing additional deceased deer and elk for CWD testing. States may attempt to lower the deer and elk population through increased hunting opportunities or using government-sponsored sharpshooters. The persistence of prions in the environment, however, complicates CWD management; even if all of the infected animals are removed from the landscape, leftover prions remain infectious and put future populations in the area at risk.[21]

State Response and History

While some western states have been plagued by CWD for several decades, the disease is relatively new to Minnesota. The state's first case was discovered in a farmed elk in 2002.

Since 2002, chronic wasting disease has been identified on eight Minnesota cervid farms and in wild deer in two Minnesota counties.

Exhibit 3.2 shows the chronology of CWD discovery in Minnesota, both on deer and elk farms and in the wild. As explained briefly in Chapter 1, two state agencies share responsibility for cervid management, and thus for responding to CWD. BAH oversees farmed cervids and led the response in the eight instances in which CWD was detected on deer and elk farms. DNR is responsible for wild deer management and the bulk of the

[17] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," 31, 48; and Uehlinger, Johnston, Bollinger, and Waldner, "Systematic review of management strategies to control chronic wasting disease," 2.

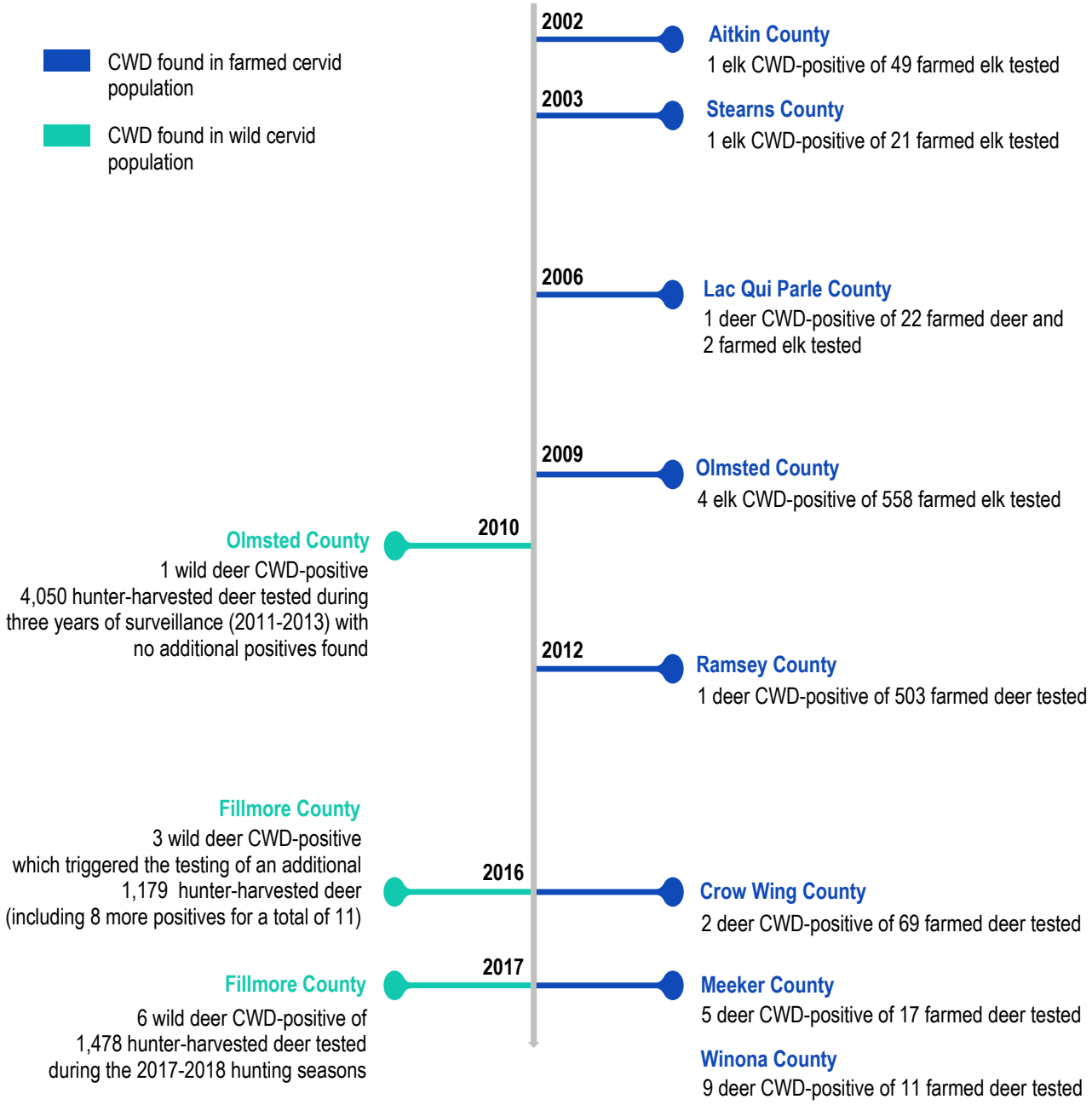
[18] *Ibid.*

[19] EFSA Panel on Biological Hazards, "Chronic wasting disease (CWD) in cervids," 48; Uehlinger, Johnston, Bollinger, and Waldner, "Systematic review of management strategies to control chronic wasting disease," 2; and Haley and Hoover, "Chronic Wasting Disease of Cervids," 316.

[20] Kurt C. VerCauteren, Michael J. Lavelle, Nathan W. Seward, Justin W. Fischer, Gregory E. Phillips, "Fence-Line Contact Between Wild and Farmed Cervids in Colorado: Potential for Disease Transmission," *The Journal of Wildlife Management* 71, no. 5 (2007): 1601.

[21] Almberg, Cross, Johnson, Heisey, and Richards, "Modeling Routes of Chronic Wasting Disease Transmission," 7; Haley and Hoover, "Chronic Wasting Disease of Cervids," 316; and Hannaoui, Schatzl, and Gilch, "Chronic wasting disease: Emerging prions and their potential risk," 3.

Exhibit 3.2: Since 2002, Minnesota has had eleven chronic wasting disease events.



NOTES: "CWD" is chronic wasting disease. For farmed deer and elk, the numbers of animals tested include the animal initially found to be infected with chronic wasting disease (CWD), plus all animals from that farm that died and were tested thereafter. It does not include animals that were killed and tested as part of investigations into related farms that did not turn out to be CWD-positive. For wild deer, the number of CWD-positive animals includes all of the positive animals identified in a specific deer permit area during that hunting season, including late hunts. For example, in Fillmore County in 2016, 3 of the 11 positive deer were harvested in fall 2016, while the remaining 8 were harvested during the extended hunting season in winter 2017.

SOURCE: Office of the Legislative Auditor.

response when CWD is found in the wild, as it has been in two counties over three years.[22] Despite these primary responsibilities, each agency plays a role in CWD response, regardless of whether the infected animal was found on a farm or in the wild.

Board of Animal Health Response

The manner in which board staff respond to CWD outbreaks depends on whether the disease is detected on a deer or elk farm, or among the wild cervid population. When CWD is found on a farm, board staff investigate the origin of the outbreak and identify other farms that could be infected. When CWD is found in the wild, board staff focus on restricting the movement of animals on nearby farms so as to stop the spread of CWD in the event that they have already had contact with infected wild deer in the area.

Chronic Wasting Disease among Farmed Deer and Elk

Minnesota's first case of CWD was found on an elk farm in 2002, as a result of voluntary CWD testing on the part of the producer. After the first CWD-positive farmed elk was discovered in Aitkin County, the 2003 Legislature required mandatory CWD testing for farmed deer and elk beginning in January 2004.[23] While some farmed deer and elk regulations were already in effect, the Legislature also added inventory and movement reporting requirements at that time.[24]

Virtually all of BAH's deer and elk oversight activities—the inspections, tagging requirements, and inventory reconciliations we discussed in Chapter 2—are meant to prepare Minnesota to respond to a disease outbreak among farmed deer or elk. The steps BAH staff take once CWD is detected, however, are determined largely by Minnesota's agreement with USDA as an approved state Herd Certification Program.[25] Exhibit 3.3 summarizes the actions BAH must take in response to the discovery of a farmed CWD-positive deer or elk.

BAH staff take several steps to address instances in which CWD is found on farms. According to a board official, BAH staff quarantine a farm as soon as it receives news of a "suspected" CWD-positive test result.[26] BAH and USDA staff visit the infected farm together to meet the owners, learn about the herd's history and recent movements, and discuss how the herd should be managed going forward. The owner of a CWD-positive herd can choose to depopulate the herd in exchange for some amount of federally funded

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[22] It is worth noting that Minnesota laws requiring mandatory CWD-testing of all deceased farmed deer and elk make it likely that CWD-positive animals in captive settings will be found. Wild deer, on the other hand, are not universally tested, either when harvested by hunters or when they die of natural causes in the wild. Given the number of deer in Minnesota, it is impossible to know with certainty the extent to which CWD exists in the wild deer herd.

[23] *Laws of Minnesota* 2003, chapter 128, art. 3, sec. 13, codified as *Minnesota Statutes* 2003, 17.452, subd. 16(c), now *Minnesota Statutes* 2017, 35.155, subd. 11(c).

[24] *Laws of Minnesota* 2003, chapter 128, art. 3, sec 13, codified as *Minnesota Statutes* 2003, 17.452, subd. 16(a)-16(b), now *Minnesota Statutes* 2017, 35.155, subd. 11(a)-(b).

[25] *Memorandum of Understanding between Minnesota Board of Animal Health and the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) Chronic Wasting Disease Herd Certification Program*, 2017.

[26] As discussed in Chapter 2, the University of Minnesota's Veterinary Diagnostic Laboratory performs CWD testing for farmed deer and elk that die in Minnesota. If the laboratory suspects that an animal is CWD-positive, it sends the sample to the National Veterinary Services Laboratory for confirmatory testing.

reimbursement (if funds are available), or remain under quarantine for five years.[27] If a producer agrees to depopulate the herd, USDA appraises the herd and handles the logistical details associated with killing and testing the remaining deer and elk.

Exhibit 3.3: The Board of Animal Health must take certain actions when a farmed deer or elk tests positive for chronic wasting disease.

1. Designate herds as "CWD-positive" or "CWD-exposed"[a]
2. Promptly restrict movements of affected herds, allowing deer and elk from those herds to move only to recognized slaughter establishments
3. Complete a herd plan (within 60 days of CWD confirmation) for any CWD-positive and CWD-exposed herds, explaining the outcomes the producer has agreed to for his or her deer and elk (such as depopulation or quarantine), as well as any requirements for addressing environmental contamination
4. Conduct an epidemiological investigation of CWD-positive and CWD-exposed herds, tracing the movement of all CWD-positive deer and elk
5. Report instances of CWD-positive animals being traced to herds in other states to the United States Department of Agriculture (USDA) and the appropriate state representative in the affected state
6. Submit to USDA a preliminary report for a newly identified CWD-infected herd within seven business days of CWD confirmation; submit a final report for CWD-infected herds as part of the state's annual report to USDA
7. Remove herd movement restrictions only after completion of a herd plan as signed by the state, USDA, and the herd owner

NOTES: The United States Department of Agriculture approves Minnesota's Chronic Wasting Disease (CWD) Herd Certification program. As a condition of approval, Minnesota must take certain actions when farmed deer or elk in the state are found to be infected with CWD. The steps listed above are outlined in the Board of Animal Health's memorandum of understanding with the United States Department of Agriculture.

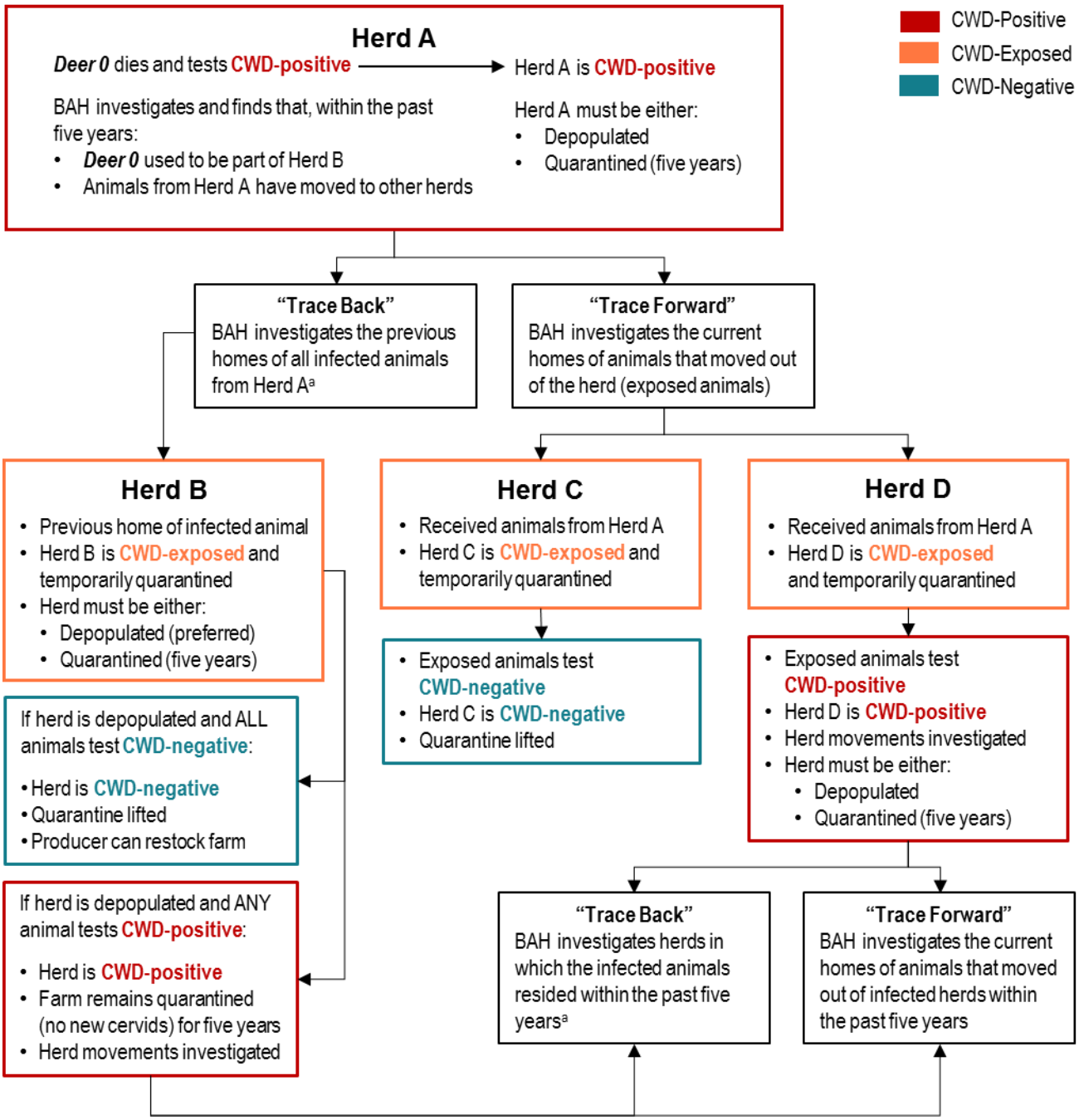
[a] A "CWD-positive" herd is the herd in which a CWD-positive deer or elk resided at the time its diagnosis was confirmed. A "CWD-exposed" herd is a herd in which a CWD-positive animal resided within five years before its positive CWD diagnosis.

SOURCES: United States Department of Agriculture, *Chronic Wasting Disease Program* Standards (Washington, DC, 2014); and *Memorandum of Understanding between Minnesota Board of Animal Health and the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) Chronic Wasting Disease Herd Certification Program*, 2017.

When BAH discovers a CWD-positive deer or elk herd, board staff begin investigating the herd and its movements. Exhibit 3.4 depicts a simplified example of a CWD investigation, beginning with an infected *Deer 0,* which was part of Herd A. Any animal that left the infected herd alive during the five years before the CWD-positive test result is considered exposed and must be traced to its subsequent home(s). In Exhibit 3.4, animals moved from Herd A, where they had been exposed to *Deer 0*, to Herds C and D. The exposed animals were killed and tested, leading to more herds being identified as CWD-positive and further investigations. If the CWD-positive animal from Herd A came from a different herd within five years, the originating herd would also be considered exposed and would become part of the investigation. In our example, *Deer 0* was previously a member of Herd B, meaning that Herd B is exposed and must be investigated as well.

[27] Of the eight Minnesota herds that have been identified as CWD-positive, seven were completely depopulated. One producer declined the offer to depopulate and his herd remains under quarantine.

Exhibit 3.4: The Board of Animal Health investigates the movements of all herds and animals infected with chronic wasting disease.



NOTES: "CWD" is chronic wasting disease. When investigating a new case of CWD, the Board of Animal Health uses animal inventories and movement forms to trace the movements of both the infected animal and the animals that were exposed to the infected animal in the herd(s) in which it lived.

[a] If the infected animal was born into the herd in which it died, then BAH must investigate the origins of all animals added to that herd within the past five years in order to identify possible sources of infection.

SOURCE: Office of the Legislative Auditor, analysis of United States Department of Agriculture, *Chronic Wasting Disease Program Standards* (Washington, DC, 2014), 36-40.

These "trace forwards" and "trace backs" help inform an epidemiology report, prepared cooperatively by USDA and BAH staff, which explains anything the agencies are able to surmise about the path CWD took to the infected farm and beyond. The agencies also prepare herd plans for any CWD-positive or -exposed herds. If a producer chooses to depopulate, the herd plan will explain details of the depopulation and subsequent CWD testing and carcass disposal. It will also outline any requirements for environmental decontamination of the premises.[28] If a producer decides to keep his animals under quarantine, the herd plan outlines requirements for the herd, which may include the installation of exclusionary fencing (double or electric fencing designed to provide additional protection against the comingling of farmed and wild cervids).

Chronic Wasting Disease in the Wild

The occurrence of CWD in wild deer is relevant to this evaluation because wild and farmed cervids may come in contact (despite the fact that the two populations should be separated by fences).[29] Damaged perimeter fencing or gates left open may allow farmed cervids to escape or wild deer to enter an enclosure. Deer and elk may also engage in nose-to-nose contact *through* fencing. When CWD is found in wild deer, BAH staff must act to protect the health of farmed deer and elk in the region and throughout the state.

When BAH staff learn of an infected wild deer, they establish a "CWD-endemic area," which encompasses the area within ten miles (at a minimum) of the location where the CWD-positive wild deer was found. Any deer or elk farms that fall within the CWD-endemic area are "restricted" and cannot move animals into or out of the farm. Minnesota rules allow BAH to lift the movement restriction on any farm that can demonstrate that it prevents the commingling of farmed and wild deer and elk, typically through exclusionary fencing (such as double or electric fencing).[30] Owners of deer or elk farms in endemic areas must demonstrate that they have satisfactory fencing, as determined by the board, within 180 days after the discovery of CWD in the wild.[31] Producers that do not have exclusionary fencing remain in "restricted" status, unable to move animals into or out of their herd, for three years from the date that the last CWD-positive wild deer was found in the area.

Department of Natural Resources Response

As previously mentioned, DNR is responsible for managing Minnesota's response to chronic wasting disease in the state's wild deer herd. The department initiated its first CWD-surveillance effort in 2002, triggered by (1) the discovery of CWD in an Aitkin County farmed elk herd, and (2) the discovery of CWD in wild white-tailed deer in Wisconsin. DNR tested nearly 28,000 wild deer (both those killed by hunters and by vehicles) statewide between 2002 and 2004, with no CWD-positive results. In 2005, DNR moved to a risk-based CWD-surveillance approach, in which it tested a sample of deer in

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[28] While prions can persist in the environment for a long time, USDA has established decontamination procedures which may help reduce the infectiousness of CWD in a given environment. This includes burning or burying all organic materials such as manure, feed, and bedding; removing the top two inches of soil in an enclosure; and washing and chemically disinfecting nonorganic structures and tools.

[29] When we discuss wild cervids, we typically refer to them as "deer" because white-tailed deer make up the bulk of Minnesota's wild cervid population. DNR estimates the size of the wild deer herd to be about 1 million animals. Meanwhile, there are estimated to be fewer than 250 wild elk in Minnesota (located in the northeastern part of the state).

[30] *Minnesota Rules*, 1721.0420, subp. 3, published electronically April 4, 2013.

[31] *Ibid*.

particular areas of the state as indicated by the following risk factors: (1) detection of CWD on deer or elk farms and (2) proximity to CWD-positive wild deer found in neighboring states. DNR also attempts to capture and test any individual deer throughout the state that people report as ill or behaving strangely.

In 2009, DNR wrote its *Chronic Wasting Disease Response Plan*, which guides the department's actions when a CWD-positive deer or elk is identified in Minnesota, whether farmed or wild.[32] We summarize the actions required after detection of CWD in the wild—which include establishing a CWD-management zone and harvesting and testing deer from within that zone—in Exhibit 3.5. DNR staff told us that they continue intensive surveillance efforts—including mandatory CWD testing of all hunter-harvested deer—in the management zone for three years, extending the timeframe if they identify additional infected deer. When DNR has gone three years without detecting additional CWD cases in the management zone, the agency returns the zone to normal management, but still revisits the zone occasionally for extra surveillance. DNR's response is similar when CWD is detected on a farm, though mandatory testing in the area may apply over a shorter timeframe (such as only during the opening weekend of the hunting season).

In the fall of 2010, DNR conducted risk-based surveillance in Olmsted County in response to the discovery of CWD-positive elk on a nearby farm. The surveillance resulted in the detection of one CWD-positive wild deer. During the three years of intensive monitoring that followed, the agency found no other infected wild deer. In the fall of 2016, DNR found three CWD-positive deer while conducting routine risk-based surveillance in Fillmore County. The agency added supplemental surveillance in the area and identified an additional 8 infected wild deer that hunting season, for a total of 11 CWD-positive wild, white-tailed deer. During the fall 2017 hunting season, DNR continued intensive monitoring of the CWD-management zone in Fillmore County, finding another six CWD-positive deer.

Meanwhile, DNR also conducted targeted surveillance during the fall 2017 hunting season around two CWD-positive deer and elk farms. The agency enforced mandatory testing of deer harvested during the hunting season opening weekend in specific deer permit areas near the farms in Crow Wing and Meeker counties. DNR surpassed its sampling goals and none of the deer harvested in these areas was found to be CWD-positive.[33]

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[32] Department of Natural Resources, *Chronic Wasting Disease Response Plan* (St. Paul, 2009).

[33] In the surveillance zone surrounding Crow Wing County, DNR's goal was to collect 3,600 CWD testing samples from hunter-harvested deer during the opening weekend of the 2017 hunting season; DNR staff collected nearly 8,000 samples. DNR's goal for the surveillance zone surrounding Meeker County was to collect 1,800 CWD-testing samples during opening weekend; it collected more than 2,600 samples.

Exhibit 3.5: The Department of Natural Resources takes certain steps when chronic wasting disease is found in wild deer.

- Completes an aerial survey of the immediate area surrounding the location where the wild deer that tested positive for chronic wasting disease (CWD) was found, in order to determine the density and distribution of the wild deer population in the area
- Creates a CWD-management zone with a radius of at least ten square miles around the location of the CWD-positive wild deer
- Implements a deer feeding ban throughout the CWD-management zone
- Tests deer killed by vehicles within the CWD-management zone
- Increases targeted surveillance (hunting additional deer and testing them for CWD) within the CWD-management zone.[a] Strategies include:
  - Providing additional hunting opportunities through increased: (1) length of hunting season, (2) number of hunting licenses issued, and/or (3) number of animals a single hunter can harvest
  - Conducting special hunts or agency-directed culling (sharpshooting) and issuing landowner shooting permits[b]

NOTES: The *Chronic Wasting Disease Response Plan* written by the Department of Natural Resources (DNR) specifies that agency staff undertake the above activities as quickly as possible, regardless of the time of year the chronic wasting disease (CWD) is discovered in wild deer. DNR's actions in the event of CWD detection on a deer and elk farm are similar; DNR establishes a surveillance zone based on deer permit areas near the farm and sets a goal for the number of samples to collect from hunter-harvested deer. In 2017, DNR made CWD testing of hunter-harvested deer in these surveillance zones mandatory during the opening weekend of the fall hunting season.

[a] DNR establishes its goals for how many deer to harvest and test using the results of its survey of deer density and distribution.

[b] DNR staff said these strategies are a last resort to be used only if hunters fail to harvest enough deer to test for CWD during the regular hunting season. If CWD is found when it is more than six-months away from the start of the next hunting season, DNR would start with these strategies and then follow up with increased hunting opportunities during the next hunting season. Landowner shooting permits allow landowners and their guests to harvest an unlimited number of deer from the landowner's property during a special hunting season established by DNR.

SOURCE: Department of Natural Resources, *Chronic Wasting Disease Response Plan* (St. Paul, 2009).

State Agency Coordination

Both BAH and DNR play important roles in managing CWD in Minnesota. The two agencies, however, have had a strained relationship. Media reports, stakeholders, and the agencies themselves have commented on this tension. The tension has led to poor communication, which has the potential to interfere with both agencies fulfilling their responsibilities related to CWD management.

The Board of Animal Health and the Department of Natural Resources have struggled to appropriately share the information they both require to fulfill their responsibilities related to chronic wasting disease.

State law classifies as not public the names and addresses of deer and elk producers, as well as farm locations and individual animal identification numbers.[34] While board staff may share these data when necessary to protect animal health, the receiving agency must take measures to protect the data as not public.[35] When CWD is discovered, whether on a farm or in the wild, the agency with *secondary* responsibility needs, at a minimum, the precise location of the infected deer or elk. The agencies use this information to establish a CWD-endemic area (in the case of BAH) or to target additional surveillance of wild deer (in the case of DNR). DNR staff have also asked to review full files (including herd inventories, movement reports, and CWD-test submissions, among other things) for deer and elk farms that have been designated CWD-positive, as well as for farms located near the sites where wild CWD-positive deer have been found.

DNR staff have complained that BAH staff refuse to share data about CWD-positive farms in a timely manner, which impedes its CWD response and endangers Minnesota's wild deer herd. Most recently, when CWD was discovered on a Winona County farm, the board provided DNR with the location of the farm the same day it received notification of the "suspect" positive test result. However, DNR also requested additional documents related to the farm, which BAH provided 20 days after it received the request. BAH staff assert that DNR has failed to protect not public data that it has shared with the agency. DNR staff have admitted to sharing premises data more widely than necessary in the past; staff claim they did not know the classification of the producer data.

RECOMMENDATION

The Board of Animal Health and the Department of Natural Resources should draft a memorandum of understanding outlining each agencies' responsibilities with respect to data sharing.

After several quiet years, Minnesota experienced a number of CWD events in 2016 and 2017. Given the likelihood of additional CWD outbreaks, it would be prudent for BAH and DNR to better coordinate their efforts. Clear expectations may help improve the working relationship between the two agencies.

On April 10, 2018, BAH and DNR finalized a data-sharing agreement outlining DNR's responsibilities with respect to the use and protection of not public data it receives from the board. This is an important first step, but we think the agencies should continue to work together to clarify expectations related to deer and elk data in particular. To that end, we suggest that BAH and DNR produce an additional memorandum of understanding outlining the responsibilities of each agency, including:

[34] *Minnesota Statutes* 2017, 13.643, subd. 6.

[35] *Minnesota Statutes* 2017, 13.03, subd. 4(c); and 13.05, subd. 5(a)(2).

- What information each agency should provide to the other, in the event of a CWD-positive deer or elk identified in its jurisdiction.
- Whether the information must be requested by the receiving agency (and how) or provided automatically as part of the sending agency's CWD response.
- The timeframe for providing the information.
- The classification of the data and how widely they can be shared.[36]
- Other situations (such as an escape from a deer or elk farm) that may necessitate information sharing between the two agencies, and what restrictions apply.

Beyond data sharing, the agencies may wish to address other points of coordination in their memorandum of understanding. For example, they could determine whether and to what extent DNR should be involved in developing herd plans for CWD-positive or CWD-exposed herds. BAH and DNR may also wish to formalize data-sharing arrangements in other areas where the two agencies have overlapping jurisdiction, such as avian influenza response.

RECOMMENDATIONS

- **Board of Animal Health staff should take greater care to properly label not public data that they distribute to other agencies.**
- **The Department of Natural Resources should protect the not public data it receives from other agencies.**

Even if BAH and DNR execute a memorandum of understanding as suggested above, BAH staff should not assume that anyone outside of the board knows or understands the classification of deer and elk-related data. Board staff should make clear the classification of any sensitive information it sends to outsiders, whether electronically or in hardcopy.

DNR staff should specifically ask about the classification of data when receiving documents from other agencies. When DNR receives not public data, the receiving staff person should ensure that the data are clearly labeled as not public. When distributing not public data to agency staff beyond the person who originally received the data, DNR staff should be explicit about the status of the data and how they may be used.

Chronic Wasting Disease Regulations in Other States

Earlier in this chapter, we discussed the fact that the uncertainties surrounding CWD make it difficult to develop successful management strategies. While we do not know how effective any given strategy may be, the literature has identified several approaches that states have used to try to prevent the spread of CWD. We discuss some of these strategies, and how widely they are used in the United States, below.

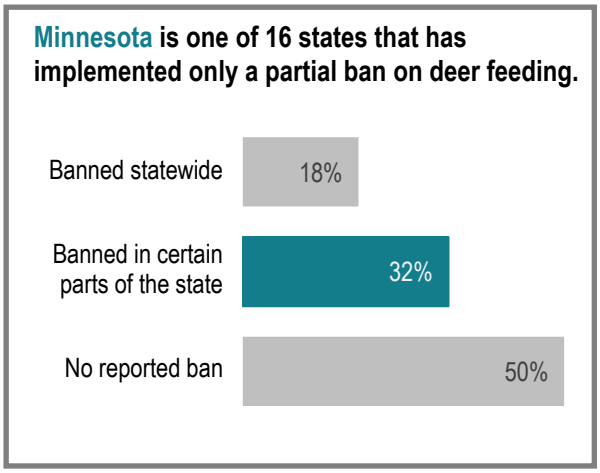
[36] For example, would access to deer and elk farm data be restricted to DNR program managers involved in the CWD-response, or should it also be distributed to conservation officers in the affected region?

While Minnesota's chronic wasting disease regulations are among the most rigorous in the nation, there are some areas where other states' policies better protect animals against the disease.

Michigan's Department of Natural Resources conducts a semi-annual survey of U.S. states and Canadian provinces to learn about their regulations related to deer and elk management and CWD.[37] We used this information to analyze state policies that may help slow the spread of CWD.

Baiting and Feeding

Many states have policies related to baiting—in which hunters use food to attract deer to a particular location—and more general feeding of wild cervids. Both practices raise concerns because they encourage wild cervids to congregate in ways they would not otherwise do, increasing the density of deer in certain areas and increasing the possibility of disease transmission. Statewide bans of both baiting and feeding would go the furthest to prevent the spread of CWD.[38] Minnesota's baiting policy is among the most rigorous; Minnesota bans baiting statewide, as do 21 other states.[39] Deer feeding, however, is allowed in Minnesota except in specified CWD-management zones determined by DNR. The box at right shows that 18 percent of states take a stricter position, banning deer feeding statewide.



Importation

Importation of both live and dead cervids is another area in which state policies could help to prevent the spread of CWD. Deer and elk carcasses, if infected and not disposed of properly, could contaminate the environment or transmit the disease to animals that come in contact with them as they decompose. As of 2016, DNR banned the importation of whole carcasses into Minnesota from other states.[40] Hunters who harvest deer elsewhere may only bring back certain parts, such as cut and wrapped meat and finished taxidermy mounts. The goal is to prevent brain and spinal materials, the parts of an animal most likely to harbor prions, from entering the state. Minnesota's current whole-carcass import policy is more rigorous than most other U.S. states; only 12 states have a whole-carcass ban. Twenty-eight

[37] Michigan Department of Natural Resources, *Chronic Wasting Disease and Cervidae Regulations in North America,* May 2017.

[38] It should be noted that feeding and baiting are not under BAH's purview. Decisions on these issues would fall to the Legislature and DNR.

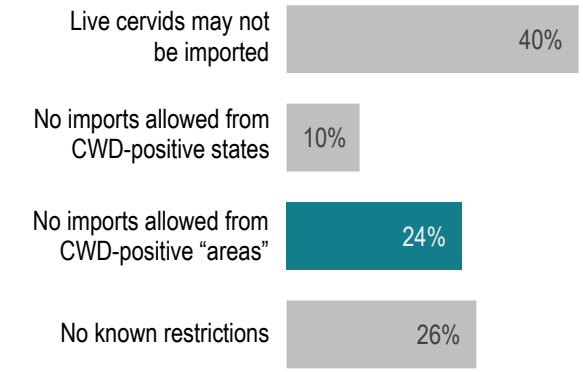
[39] *Minnesota Statutes* 2017, 97B.328, subd. 1.

[40] *Minnesota Rules* 6263.1990, adopted as an expedited emergency rule July 19, 2016; and Department of Natural Resources, *Minnesota Hunting and Trapping Regulations* (St. Paul, 2017), 65. Prior to the adoption of this rule, DNR banned whole-carcass import from CWD-endemic areas as defined by BAH.

states limit whole-carcass import from CWD-positive states or areas, and an additional ten states did not report any carcass-import restrictions.

A CWD-infected live deer or elk could also spread the disease if transported from one state to another. The importation of live deer and elk is under BAH's purview, and Minnesota does not allow live-cervid imports from CWD-positive "areas" (which BAH staff have defined as counties in which CWD has been found in the wild). We found, however, that Minnesota's policy is less rigorous than those of half of U.S. states. As shown at right, 20 states ban entirely the importation of live deer and elk for farm relocation, while an additional 5 ban imports from states (rather than "areas") where CWD has been detected.[41]

Minnesota's live-cervid import policy is less rigorous than half of the states.



From 2013 to 2017, Minnesota deer and elk producers imported 447 animals from 17 U.S. states and Canada. Fifty-six different producers received animals from other states, with the bulk of the animals originating from Wisconsin (145 animals), Pennsylvania (76), Iowa (70), and Ohio (55). Of the 17 states from which Minnesota producers imported live animals, only 4 (California, Indiana, Maine, and Washington) are currently free of CWD in both their wild and farmed deer and elk populations.[42]

Chronic Wasting Disease Testing

As we discussed in Chapter 2, BAH rules require that Minnesota producers test for CWD in 100 percent of farmed deer and elk that die at age 12 months or older. CWD testing is critical because it is the only means of learning whether a herd is infected. Among U.S. states, mandatory testing for all herds was the most rigorous and most common requirement. Twenty states, including Minnesota, require universal testing of deceased farmed deer and elk. An additional nine states require testing only for herds enrolled in the state's Herd Certification Program.

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[41] Some states—including Maryland, Nevada, and Virginia—do not allow cervid farming or have prohibited the establishment of new deer and elk farms. We have included them in this analysis, however, because they may still allow farmed cervids for exhibition purposes, such as zoos or temporary reindeer displays. Some of the states that ban the importation of deer and elk for permanent relocation on farms do allow importation for certain types of displays. None of Minnesota's neighboring states are among the most restrictive in terms of the regulation of live-cervid imports. Iowa, like Minnesota, bans importation from CWD-endemic areas. North Dakota, South Dakota, and Wisconsin did not report specific geographic restrictions.

[42] We do not know whether the other states were CWD-positive at the time they sent animals to Minnesota producers.

RECOMMENDATION

The Legislature should convene an advisory task force to evaluate the state's regulations related to deer feeding and live-cervid imports.

In the discussion above, we identified two areas—deer feeding and live-cervid imports—in which Minnesota's policies were less rigorous than those of some other states. We suggest that the Legislature convene a task force of diverse perspectives (including deer and elk producers, other state agencies, subject-matter experts, and representatives of other interests) to investigate whether changes in these policies are warranted.[43] A task force could evaluate existing information on the topic areas and determine what additional information, if any, is necessary before developing policy recommendations.

Minnesota currently restricts deer feeding only in specific CWD-management zones, established by DNR. At the time of publication, this included five southwestern counties (Fillmore County, where CWD was found in wild deer, and its neighbors), as well as all or part of the 11 counties surrounding the CWD-positive farms in central Minnesota. While deer feeding can be a controversial topic, DNR recommends not feeding deer in an effort to prevent the spread of disease and other problems that arise when food entices deer away from their natural habitats. While formulating DNR's forthcoming deer management plan, the agency's 19-member advisory group voted 15-4 to recommend a statewide ban on recreational deer feeding.[44]

The advisory task force should also explore whether there is scientific evidence to support further limiting live-cervid imports, as well as the impact that further restrictions would have on deer and elk producers and other stakeholders. Such a task force may ultimately recommend that BAH or the Legislature (1) maintain the state's current policy of banning imports from CWD-positive counties, (2) ban live-cervid imports from CWD-positive states, or (3) prohibit all live-cervid imports. If the task force recommends maintaining the status quo or banning imports from CWD-positive states, it may wish to discuss whether such bans should be permanent, or whether a CWD-endemic area should expire after five years (for example) of successful CWD surveillance. The task force should consider the impact an expanded ban would have on Minnesota deer and elk producers. As mentioned previously, 56 producers have imported live deer and elk from other states over the past four years; only 1 of those producers received animals exclusively from a state in which CWD has never been found.

Some other states have live-cervid import policies that may be worthy of consideration. For example, Michigan requires that imported deer and elk remain in the receiving herd for two years before moving to another facility; New Hampshire requires that imported animals remain on the receiving farm permanently. Illinois and Iowa both require that, before an animal moves, all of the animals in the exporting herd must have been there for at least one year (or were born into the herd).

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[43] In December 2017, BAH members voted to convene a Farmed Cervidae Advisory Task Force to address specific issues related to the challenges deer and elk producers face when located in a CWD-endemic area (an area where CWD has been found in the wild). Board administrators said that the membership of this task force would primarily consist of deer and elk producers, who may find it difficult to comment objectively on the issue of live-cervid imports. Thus, it would be appropriate to convene a second, more diverse, task force to discuss broader CWD and cervid-management policy issues.

[44] Minnesota Department of Natural Resources, *Minnesota White-tailed Deer Management Plan* (Draft) (St. Paul, 2018), C-1.


THE GREAT SEAL OF THE STATE OF MINNESOTA
L'ETOILE DU NORD
1858

List of Recommendations

- The Legislature should consider expanding the size of the Board of Animal Health and adding at least one member of the general public. (p. 14)
- The Board of Animal Health should update its inventory report form to collect statutorily required information regarding the origin of the deer and elk that make up registered herds. (p. 21)
- The Board of Animal Health should clarify expectations of whether and how often producers must verify their herd inventory on an animal-by-animal basis. (pp. 23-24)
- The Board of Animal Health should (1) systematically analyze whether producers submit tissue samples from all deceased deer and elk to test for chronic wasting disease and, (2) appropriately penalize those producers who fail to submit samples. (p. 27)
- The Board of Animal Health should develop an approval program for deer and elk producers who wish to collect their own chronic wasting disease testing samples. (p. 30)
- The Board of Animal Health should (1) fully enforce Minnesota deer and elk laws, (2) strengthen consequences for failure to comply, and (3) develop methods of monitoring field staff performance. (p. 33)
- The Board of Animal Health and the Department of Natural Resources should draft a memorandum of understanding outlining each agencies' responsibilities with respect to data sharing. (pp. 47-48)
- Board of Animal Health staff should take greater care to properly label not public data that they distribute to other agencies. (p. 48)
- The Department of Natural Resources should protect the not public data it receives from other agencies. (p. 48)
- The Legislature should convene an advisory task force to evaluate the state's regulations related to deer feeding and live-cervid imports. (p. 51)


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MINNESOTA
BOARD OF ANIMAL HEALTH

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April 16, 2018

Mr. James Nobles, Auditor
Office of the Legislative Auditor
658 Cedar Street
St. Paul, Minnesota 55155

Mr. Nobles,

We appreciate the opportunity to review and respond to the audit of the Board of Animal Health's Farmed Cervid Program. It was a pleasure to work with your professional team as they researched our program and interviewed our staff. While some of the recommendations were already on our radar and being remedied at the time of the audit, other valuable issues were brought to light by this report.

Responses to key recommendations by the Office of the Legislative Auditor:

1. **The Legislature should consider expanding the size of the Board of Animal Health and adding at least one member of the general public.**

The Board welcomes the proposal to expand its membership. Minnesota has a diverse livestock population that deserves to be well represented. A non-veterinarian or non-livestock representative from the general public could provide value to the decisions and operations of the Board. The Board will accept the decisions of the legislature regarding its makeup and size, and will accept the appointment of its members by the Governor's office. The Board encourages adding a veterinarian representing one or more of the following industries; sheep, goat, cervid and poultry.

2. **The Board of Animal Health should update its inventory report form to collect statutorily required information regarding the origin of the deer and elk that make up the registered herds.**

The Board does collect this information, however, it comes from the source herd and doesn't specifically require the receiving herd owner to provide proof of origin. The Board is already in the process of updating and streamlining its farmed cervidae forms, and will include this recommendation in its forms and documents. The Board constantly works on educating livestock producers of all species about the necessity and importance of maintaining accurate records.

3. **The Board of Animal Health should clarify expectations of whether and how often producers must verify their herd inventory on an animal-by-animal basis.**

The responsibility for an accurate herd inventory lies with the producer and their accredited veterinarian as outlined in BAH Rule 1721.0380. Subp. 4. Field staff must be able to see all animals are tagged during annual inspections. We require every animal to have one official identification, which is included on the herd inventory. If tags cannot be visualized by our field staff or the office staff cannot reconcile the herd inventory

from the producer and accredited veterinarian with our records in the Board database, then the Board has the authority to require the producer to present the entire herd for physical animal-by-animal inventory (Board rule 1721.0380. Subp. 4). We have exercised this authority for a number of herds in the last year and will continue to do so.

The Board does agree to clarify its expectations of cervid producers regarding herd inventories, and has reassessed its tracking of herd inventories within the past year. The Board has been continually improving livestock data quality in its database.

The only laws currently dictating the frequency of physical herd inventories are the USDA requirement for herds enrolled in the federal CWD Herd Certification Program to conduct a complete physical inventory no more than three years after the last complete physical herd inventory (9CFR. Part 55.23 (b) (4). The Board will require a physical animal-by-animal inventory every three years for herds where the official identification in an animal's ear cannot be verified by other means.

There are national groups working to increase the usage of Ultra High Frequency (UHF) radio ID tags in livestock. If those tags are approved and accepted by the stakeholders, it could offer a better opportunity to track individual animals from a greater distance.

4. **The Board of Animal Health should (1) systematically analyze whether producers submit tissue samples from all deceased deer and elk to test for chronic wasting disease and, (2) appropriately penalize those producers who fail to submit samples.**

The Board does gather data on whether all deceased deer and elk are tested for CWD as producers are required to keep these records as outlined in Board rule 1721.0380. Subp. 10. and the requirements of 1721.0420. CWD tests can only be conducted after the animal has died.

The Board has initiated data entry starting this state fiscal year that will track CWD testing of individual animals and can be compared to death reports of animals in the herd. The Board agrees with the recommendation to create a tracking report to match deceased animals with CWD testing submissions.

The Board is currently working with field staff to use its "Notice of Violation" and "Notice of Civil Penalty" enforcement tools more effectively. The Board also uses its authority in 1721.0420. Subp. K. to lower or cancel a herd's CWD status as an enforcement measure.

5. **The Board of Animal Health should develop an approval program for deer and elk producers who wish to collect their own chronic wasting disease test samples.**

The Board agrees with this recommendation. There is already a good template of this program in use by the Board's poultry program. It is something that can be scaled to match other livestock species and the Board will evaluate how to begin developing it. Additionally, the Board is evaluating the steps to initiate an Authorized Testing Agent program for other livestock species.

The Board has already created a "CWD Sampling Guide" to help producers successfully harvest their own CWD samples and submit them to the laboratory for testing. Many producers only harvest CWD samples with the assistance and oversight of trained Board field staff. This practice helps ensure correct sample collection.

6. **The Board of Animal Health should (1) fully enforce Minnesota law, (2) strengthen consequences for failure to comply, and (3) develop methods of monitoring field staff performance.**

The Board concurs with this recommendation. There is a balance between education and enforcement that needs to be considered on a case by case basis. Field staff do work with producers to educate them on our requirements and gain their cooperation in complying with our regulations. The Board program managers are working with field staff regarding the proper use of their enforcement powers and the necessity of proper documentation during routine field work to communicate situations where producers are uncooperative. Monitoring staff performance is also being addressed.

The Board is evaluating an increase in penalty amounts dependent upon the level of non-compliance. The Board will consider, and is already using in some instances, other recommended enforcement actions like the reduction in CWD herd status. The Board has increased electronic documentation in the last three years to better track corrective actions issued by field staff.

7. **The Board of Animal Health and the Department of Natural Resources should draft a memorandum of understanding outlining each agencies' responsibilities with respect to data sharing.**

A memorandum of understanding would benefit our agencies as we try to manage the same disease with our unique agency roles. It could help spell out the procedures and practices for proper information flow so we can achieve the common goal of managing and eliminating CWD. Minnesota Statutes in Chapter 13 apply to both state agencies and we share equal responsibility maintaining non-public data. The Board recently increased its efforts to improve data sharing between the agencies by expediting information requests by partner agencies.

8. **Board of Animal Health staff should take greater care to properly label not public data that they distribute to other agencies. The Department of Natural Resources should protect the not public data it receives from other agencies.**

The Board has already taken measures to more clearly mark non-public forms and established a good relationship with the DNR's data privacy staff. The Board has not had issues with other agencies disclosing non-public producer data.

9. **The Legislature should convene an advisory task force to evaluate the state's regulations related to deer feeding and live-cervid imports.**

The Board would welcome a transparent, legislative led, discussion about deer feeding and live-cervid imports. The Board is prepared to support a legislative advisory task force with the information it needs to make informed decisions about preventing CWD in Minnesota. As mentioned in a previous response, the Board would support membership from the general public.

Thank you for the recommendations and thorough evaluation of our Farmed Cervid Program. We also thank you for the opportunity to work with your staff.

We are dedicated to using this report to guide our continued improvements in this program.

Sincerely,

Dr. Beth S. Thompson
Executive Director and State Veterinarian
Minnesota Board of Animal Health

CC:

Equal Opportunity Employer

DEPARTMENT OF NATURAL RESOURCES

Commissioner's Office
500 Lafayette Road
St. Paul, MN 55155

April 16, 2018

Mr. James Nobles, Legislative Auditor
Office of the Legislative Auditor
Room 140 Centennial Office Building
685 Cedar Street
St. Paul, Minnesota 55155-1603

RE: Program Audit on Board of Animal Health's Oversight of Deer and Elk Farms

Dear Auditor Nobles:

Thank you for the opportunity to review and respond to the Office of the Legislative Auditor's (OLA) finding and recommendation resulting from the recent program evaluation of the Board of Animal Health's (BAH) oversight of deer and elk farms. As you know, the Department of Natural Resources (DNR) has a strong interest in the management of deer and elk farms in Minnesota given the connection to the health of Minnesota's wild deer, the protection of which is a key responsibility of the DNR and critically important to Minnesotans.

For over a decade, DNR staff have expressed concerns regarding the management of farmed cervid facilities in Minnesota. Our concerns have centered on the possibility of importing chronic wasting disease (CWD) into the state and exposing Minnesota's wild deer herd to the disease. The discovery of CWD in eight deer and elk farms since 2002, including the three concurrent infections now, has heightened those concerns. As you know, CWD has also been found in wild deer in two Minnesota counties, one of which (Olmsted) was closely connected to the Level-1 CWD positive elk farm in Pine Island.

We very much appreciate the independent review conducted by the OLA, and we believe the evaluation identified many of the key issues related to farmed cervid management and oversight as well as the intersections between BAH and DNR responsibilities.

DNR offers the following in response to the two recommendations pertaining specifically to DNR:

Recommendation: The Board of Animal Health and the Department of Natural Resources should draft a memorandum of understanding outlining each agencies' responsibilities with respect to data sharing.

DNR Response: As noted in the OLA report, DNR and BAH have now signed a data sharing agreement, which further clarifies roles and responsibilities with respect to data that is shared between the agencies. We also agree with the OLA's suggestion that the agencies may wish to address other points of coordination, such as "real-time" cooperation during CWD investigation and response and DNR involvement in developing plans for CWD-positive herds. We think such an agreement is particularly important given the lack of direct agency oversight and coordination via the Governor as well as the differences in the governance structure between BAH and DNR. We look forward to working with BAH on developing this memorandum of understanding.

Recommendation: The Department of Natural Resources should protect the not public data it receives from other agencies.

DNR Response: DNR agrees with this recommendation, and we have policies and procedures in place to ensure compliance with the Minnesota Government Data Practices Act. Additionally, as noted above, DNR and BAH now have in place a data sharing agreement.

DNR also offers the following overall comments in response to other recommendations included in the report:

DNR is greatly concerned with the OLA's finding that "in some instances, the Board of Animal Health has failed to enforce the state's deer and elk regulations," and we therefore concur with this recommendation. Adequate inspection of facilities, monitoring of herd inventories, and enforcement of regulations, such as fencing requirements, CWD testing requirements, and requirements to report escapes is fundamental to the state's ability to detect, track, and minimize the occurrence of CWD. Failure to adequately implement and enforce farmed cervid regulations puts Minnesota's enormously valuable wild deer herd at unacceptable risk. We therefore agree that tools such as monitoring the effectiveness of the inspection process and appropriate penalties to noncompliant producers should be used by BAH.

DNR also agrees that ensuring proper CWD testing of deceased animals is critical to tracking and minimizing the spread of CWD. DNR believes such a systematic analysis should include an independent examination of all farm records to determine CWD test compliance. This is particularly important because DNR's CWD response is risked-based and without full knowledge of risk, there is the potential to misalign our response to the actual nature of the problem.

Finally, DNR agrees that the Legislature should consider the OLA's finding that Minnesota's regulations related to deer feeding and live-cervid imports are not as rigorous as other states. DNR's Deer Management Plan Advisory Committee recently recommended that DNR pursue a statewide deer feeding ban. As part of plan implementation, DNR will seek additional public input on potential policy actions.

Thank you again for your work on this evaluation and for the opportunity to respond. We collectively agree that CWD is an insidious disease with long-term implications to wild and farmed cervids. Because farmed cervids have direct ramifications on wild deer management, we stand ready to work with BAH on making process improvements such that risk of CWD spread is minimized.

Sincerely,

Tom Landwehr
Commissioner


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Conservation Easements, February 2013

Environment and Natural Resources (continued)
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Minnesota Department of Health Oversight of HMO Complaint Resolution, February 2016
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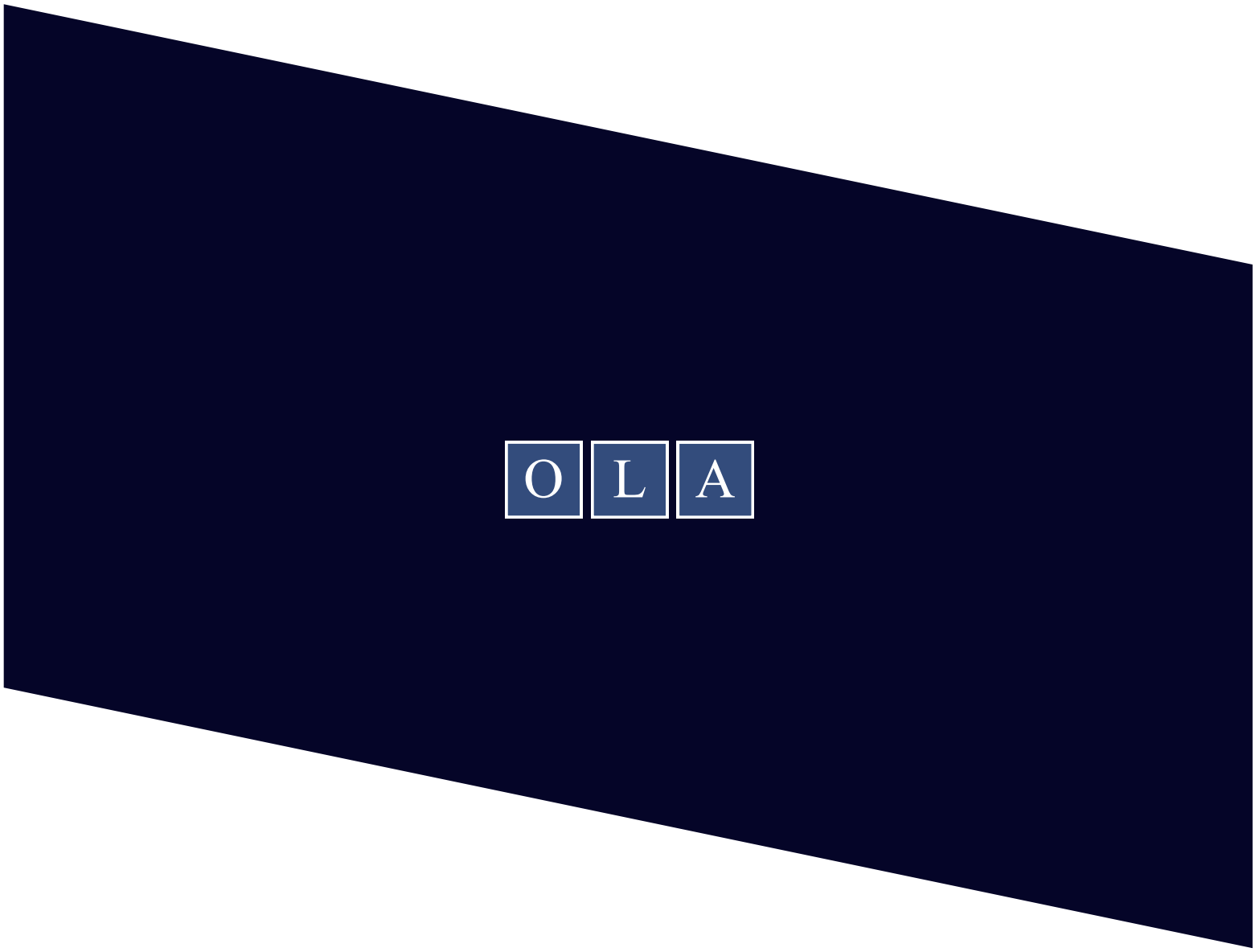

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