New York State Interagency CWD Risk Minimization Plan

New York State Department of Environmental Conservation
Division of Fish and Wildlife
Division of Law Enforcement

New York State Department of Agriculture and Markets
Division of Animal Industry

Cornell University College of Veterinary Medicine
Animal Health Diagnostic Center

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Taking an approach also means recognizing the North American deer herds as one and not two entities. While some cooperation exists between regulators of wildlife and livestock, it is clearly insufficient and almost non-existent in some jurisdictions. That cooperation also needs to include both game farmers and hunters, who have the most to lose in the long term. The time for finger pointing is over; the time for an integrated approach has begun.

– P. James 2008
Both Sides of the Fence: A Strategic Review of Chronic Wasting Disease
Executive Summary

Chronic wasting disease (CWD) represents a serious threat to New York State’s wild white-tailed deer and moose populations and captive cervid industry with potentially devastating economic, ecological, and social repercussions. This plan presents the recommendations to reasonably minimize the risk of re-entry and spread of chronic wasting disease (CWD) in New York State from an Interagency CWD Team, comprised of New York State Department of Environmental Conservation (DEC) Division of Fish and Wildlife, DEC Division of Law Enforcement, New York State Department of Agriculture and Markets (DAM) Division of Animal Industry, and Cornell University College of Veterinary Medicine Wildlife Health faculty. The legal mandate and agency missions support preventive action for wildlife disease as being the only proven management tool for CWD. Reintroduction of CWD into New York State by either captive or wild deer would have severe consequences for both sides of the fence and therefore, it is critical that both agencies support these preventive measures. Actions were considered based on expert CWD risk assessment, scientific evidence, field surveys, participant knowledge specific to New York and a desire to develop a plan that both agencies could endorse and implement. The recommendations for actions are based on three overarching goals: 1) keep infectious material and animals out of the state to prevent new introductions; 2) prevent exposure of infectious material to wild white-tailed deer in New York; and 3) provide education to increase the public understanding of CWD risks and impact on wild deer health. This plan provides specific strategies and associated actions for implementation that address regulation changes, field activities, and education plans for both agencies over the next five years.
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Agency Missions

DEC Bureau of Wildlife
To provide the people of New York the opportunity to enjoy all the benefits of the wildlife of the State, now and in the future. This shall be accomplished through scientifically sound management of wildlife species in a manner that is efficient, clearly described, consistent with law, and in harmony with public need.

DEC Division of Law Enforcement
To protect and enhance the environment and natural resources of the State of New York while also protecting the health and safety of its people through the enforcement of Environmental Conservation and related laws and public education.

DAM Division of Animal Industry
To promote sustainable animal production agriculture and the safety of the animal origin food supply. These goals are accomplished through regulatory and cooperative educational efforts with various agencies, both public and private. The Division seeks to detect, control and eradicate communicable diseases in food and fiber producing animals. These diseases cause severe livestock production and economic losses and often pose a significant threat to public health.

Cornell University College of Veterinary Medicine Animal Health Diagnostic Center
To improve the health of food and fiber producing animals, companion animals, sport and recreational animals, exotic animals, and wildlife. These activities protect and improve public health, promote environmental stewardship, and foster economic growth.

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Introduction

New York State Department of Environmental Conservation (DEC) and New York State Department of Agriculture and Markets (DAM) are committed to preventing the reoccurrence of chronic wasting disease (CWD) in New York by identifying a comprehensive list of risks for disease entry and exposure and mitigating those risks. This plan presents the recommendations of an interagency panel to minimize the risk of entry and spread of CWD in New York State. The Interagency CWD Team (Team) was comprised of DEC Division of Fish and Wildlife, DAM Division of Animal Industry, Cornell University College of Veterinary Medicine Wildlife Health faculty, and DEC Division of Law Enforcement. Efforts began in 2011 with a risk pathways analysis, qualitative risk assessment and field surveys conducted during on-site visits at taxidermists and deer processors in 2012. Scientific evidence and information on potential risks within New York was systematically gathered by Regional DEC and DAM field staff. A quantitative risk assessment was conducted to prioritize actions. The Team met over the course of several months and crafted recommendations for disease prevention as these actions apply not only to CWD, but to best management practices for other diseases such as tuberculosis and brucellosis. The recommended courses of action were determined after extensive debate and discussion and represent the best options based on the Team’s knowledge of CWD, disease management protocols, the cervid industry, and compliance with DEC and DAM existing CWD regulations.

Why is a comprehensive risk minimization plan necessary for New York?

Prevention is the only proven effective method of wildlife disease management. Once a disease is introduced into a wild population, it is extremely difficult and costly to manage or control. New York’s experience with the discovery of CWD and subsequent surveillance efforts from 2005 through 2009 highlighted the challenges faced by agencies in collecting adequate samples, enforcing special regulations, and maintaining the long term public interest and support for the effort. New York is one of only a small group of states that has not discovered additional cases of CWD after the initial cases were confirmed (Figure 1). However, scientific information and recent confirmation of CWD in new states indicate that current disease prevention measures and CWD control programs and regulations are inadequate. Because of the nature of the disease and the challenges associated with management, it is necessary and appropriate to take the most cautious approach yielding the most stringent measures possible to minimize the risk of CWD entering the state and exposing both New York’s captive cervids and the wild white-tailed deer population. CWD can be spread by live infected animals, by infected carcasses, parts, urine, feces, blood, and saliva, as well as by plants that have taken up prions from contaminated soil. Moreover, the infectious agents can remain active for long periods of time under conditions that kill bacteria and viruses. A comprehensive risk minimization plan, addressing all possible avenues of CWD introduction, is the only effective way to prevent the human-assisted movement of the disease into New York.
Problem Statement

In spring 2005, CWD was first detected in New York in a captive deer herd in Oneida County. A second infected deer was discovered in a nearby second captive herd within days of the index case. Deer had been exchanged between the two herds. Both herds were depopulated and indemnification was paid by DEC. Five captive deer tested positive for CWD. The index herd also had a taxidermy studio and engaged in the rehabilitation of white-tailed deer; deer may have been exposed to CWD via improperly handled taxidermy waste (salt). Immediate intensive sampling efforts began in a 10-mile radius “containment area” around those herds. Two wild deer tested positive for CWD during that sampling effort. Emergency regulations were subsequently enacted, which included:

- mandatory hunter check stations and testing of all harvested deer from a 23-township containment area;
- bans on: movement of intact carcasses outside the containment area, deer rehabilitation, possession and use of deer or elk urine taken from the containment areas, and possession of a deer killed by a motor vehicle;
- requirements for taxidermist record keeping, reporting, and contact barriers with live cervids.

Within the containment area, surveillance efforts detected no additional CWD-positive wild deer from more than 7,000 deer tested in a five year period from 2005 - winter 2009/10. The containment area was decommissioned in 2010. Estimated cost to DEC in handling the one disease event in April of 2005 was over $1 million. The former Oneida-Madison County CWD containment area may remain a source for future infection because of environmental contamination with prions. DEC conducts enhanced CWD surveillance in this area each year during the deer hunting season.

Ongoing Statewide CWD Surveillance

At the present time, CWD is not known to infect deer in New York. More than 40,000 wild white-tailed deer have been tested statewide since 2002 with no new cases of the disease being discovered in New York State since 2005. In 2013, the DEC initiated a revised method for determining CWD testing sample quotas (http://www.dec.ny.gov/animals/86782.html). The new sampling method was informed by the results of an evaluation of potential risks related to CWD introduction and exposure to wild white-tailed deer in New York. County-level sampling quotas are determined based on an analysis of field survey data collected by regional staff, deer population density estimates, and proximity to states with known CWD occurrences. A point system is used for the sampling quotas, in which each deer sampled is given a point value based on its sex and age. This point system encourages the collection of adult deer to increase their representation in the sample. In 2013, DEC also began a program whereby taxidermists collect retropharyngeal lymph nodes directly to obtain more samples from mature bucks and reduce DEC staff processing time. Adult bucks are valuable samples because they have the highest prevalence rates in states with CWD. This is likely due to their large home ranges and behaviors during the rut. There continues to be a strong emphasis on collection of deer behaving abnormally that represent a possible clinical-suspect CWD-positive deer. Each year, DEC necropsies and tests 80-110 clinical suspects. Given the current surveillance system, DEC is able to determine with 95% confidence that if CWD is present in New York’s wild deer herd it is at a prevalence rate of <0.1%. An Interagency NYS CWD Response Plan
exists to guide agency actions following detection of CWD within New York or close to the border, triggering intensive surveillance efforts in counties adjacent to the neighboring state’s disease management area.

**CWD Threat**

Chronic wasting disease continues to pose a serious threat to New York’s white-tailed deer population, deer hunting tradition, and the many other benefits associated with the species. New York has a captive cervid industry that would also be severely impacted if CWD is rediscovered or reintroduced in the state. In the long term, CWD could have many potential consequences, including ecological as the herbivory related to a significantly diminished deer herd could result in changes to plant communities at landscape levels; monetary as money from programs is directed toward CWD response; recreational as hunters’ attitudes toward sick deer decreases participation, and societal as the public view sick deer and perceive deer as a disease threat to humans. Captive cervid owners would be limited in their abilities to move animals and sell products. Generally, if CWD is discovered in a captive herd, all animals are depopulated and the land is quarantined behind a deer-proof fence for at least 5 years.

Many states and Canadian provinces conduct CWD surveillance in both captive and wild deer herds. As a result, several states and provinces have been identified as CWD-endemic areas. However, the long incubation period and varied intensity of disease surveillance preclude any certainty that locations not identified as having CWD are actually free of the disease. This is a crucial point that underscores the overriding need to act out of an abundance of caution when dealing with the possibility of CWD introduction from other states and provinces.

In spite of a range of Federal, state, and local laws, regulations and other measures intended to prevent the spread or reduce CWD prevalence, the disease continues to be identified in new areas annually. New York State has comprehensive CWD regulations in effect, but they are no longer considered adequate to prevent CWD from re-entry into the state. Revisions are necessary to better reflect recent advances in the science associated with the disease, and the current status of CWD on the greater landscape *(Figure 1).* Consideration of more restrictive regulations related to the movement and management of potentially CWD infected materials is needed now to stop actions and movement of animals that could potentially infect New York’s wild deer herd now and for generations into the future.
Legal Mandate

DEC and DAM have statutory authority for different aspects of CWD, CWD-susceptible animals, the welfare of the wildlife resources of the state and the welfare of the domestic animals of the state. The agencies, particularly in the case of DEC, operates under the Public Trust Doctrine, that administers trust resources (i.e., wildlife) as a valued public resource to be managed by the government for the benefit of the general public, both current and future generations. To ensure this intergenerational fairness, it is the responsibility of the state agencies to ensure that risks to trust resources are avoided until otherwise proven to not be harmful (e.g., precautionary principle, Decker et al. 2016).

The DEC Commissioner, pursuant to the New York State Environmental Conservation Law (ECL) section 3-0301, has the authority to protect the wildlife resources of the state. ECL section 11-0325 (Control of Dangerous Diseases) provides DEC with the authority to take actions necessary to protect wildlife from dangerous diseases. If DEC and DAM jointly determine that a disease, which endangers the health and welfare of wildlife populations, or domestic livestock, exists in any area of the state or is in imminent danger of being introduced into the state, the DEC is authorized to adopt measures or regulations necessary to prevent the introduction or spread of such disease. For CWD, DEC has promulgated a Chronic Wasting Disease regulation, 6 New York Codes, Rules, and Regulations (NYCRR) Part 189.

Figure 1. Chronic wasting disease has been detected in 24 states and 2 Canadian provinces in both captive (n=15 states) and wild (n= 20) cervid (deer, elk, and moose) species. New York found CWD in both captive and wild white-tailed deer in 2005 with no subsequent detections after intensive surveillance.
In addition, ECL section 11-1905 provides the DEC with authority to regulate the possession, propagation, transportation and sale of captive-bred white-tailed deer. This statute exists because wild white-tailed deer and captive-bred white-tailed deer are the same species.

ECL section 27-0703 (Powers and Duties of the Department; Solid Waste Management Facilities) provides DEC with the authority to regulate the disposal of solid waste including the solid waste generated by businesses such as deer processors (butchers) and taxidermists. DEC solid waste management regulations are contained in 6 NYCRR Part 360.

Agriculture and Markets Law sections 72 and 74 provide the Commissioner of DAM with the authority to take measures to prevent the introduction and spread of, including eradication of, infectious or communicable disease affecting domestic animals or carried by domestic animals and affecting humans. For CWD, the DAM has promulgated a regulation entitled Captive Cervid Health Requirements, 1 NYCRR Part 68. This regulation incorporates language for the CWD Herd Certification Program from the USDA-APHIS CWD rule 9 CFR Part 55.

**Economic Costs**

There are several categories of potential costs of CWD in the wild white-tailed deer herd of New York. First, the introduction of a uniformly lethal disease may cause deer populations to decrease over time (Almberg et al. 2011). Second, hunter participation may decline if hunters become disenchanted in pursuing animals that may be infected or worry for their own health (Vaske et al. 2004). The decrease in license sales and indirect economic contributions from hunters would be significant. Lastly, the immediate direct economic expenses from managing the disease in wild and captive cervids are substantial to private individuals and agencies and include changes in regulations, staff time, and potential litigation.

Wisconsin, which has been managing CWD for over a decade, has spent more than $32 million in the first 5 years of their efforts (Wisconsin Legislative Audit, Nov. 2006) and has been unsuccessful in stopping the spread of the disease. Hunting participation declined by 10% and other wildlife programs, dependent on hunting license dollars, suffered as funding was redirected (Vaske et al. 2004). Projected hunter participation would decrease 68% in a multistate survey if CWD was hypothetically found to infect humans (Needham et al. 2004). The estimated value of New York State’s wild white-tailed deer herd is just under $1.5 billion per year (see box on Page 12) and the potential economic losses of a 10% decline in hunting participation following the discovery of CWD, could be over $150 million, in addition to expenses associated with handling a disease outbreak that include personnel time, indemnification, land quarantine, carcass disposal, and stringent regulations.

In the past, the U.S. Department of Agriculture’s (USDA) CWD Program provided limited but important funding to states to offset the cost of diagnostic testing and indemnification. This program no longer has funds available. Some state wildlife agencies have reduced their wild deer surveillance due to this lack of funding. This may affect a state’s ability to detect the disease before it becomes established in the wild herd. DAM currently sends a veterinarian or technician to facilities that hold CWD-susceptible species in order to collect and submit specimens from mortalities and for routine program CWD surveillance.
testing. The cost of CWD testing of wild white-tailed deer is paid by DEC, and the cost for testing captive cervids is currently paid for by DAM. Other states require individual cervid farm operators to pay for the cost of testing, which can reduce the desire of operators to comply with the highest level of herd certification.

If a captive cervid facility is found to be infected with CWD, most states have depopulated the index herd and any animals that might have been sold from that herd. State agriculture or natural resource agencies typically pay indemnity to the herd owner to cover these animals. The agency may also choose to fence the property to exclude wild deer and elk and require a 5-year quarantine where no live CWD susceptible cervids can be placed back in the premises. For captive cervid herds in Canada after discovery of CWD, 43 herds were depopulated in 3 years. Overall captive elk numbers dropped 39% and captive white-tailed deer numbers declined by 18% (James 2008).
Economic Value of Wild White-tailed Deer
Hunting and the Captive Cervid Industry in New York

Wild deer population and hunting: $1.50B annually

- Direct revenue of Big Game Licenses: $21M\(^1\)
- Indirect economic input of deer hunting in New York: $1.47B\(^2\)
  
  *Includes:*
  - $777.2M in retail sales ($804.2M total - $21M license sales)
  - $458.1M in salaries & wages
  - $123.8M in state & local taxes
  - $116.5M in federal taxes
- Hunters afield 2012: 552,800\(^1\)
- Annual additional values – Food and Recreation: $479.3M
  - $61.2M in venison for households (10.2M lbs @ $6/lb for ground venison)
  - $418.3M in recreational value (10,459,000 days hunting deer @ $40/day)

Value of Captive Industry: $13.5M annually\(^3\)

- Direct sales (deer only): $5.1M
- Indirect sales (includes other game): $8.4M
- Estimated number of facilities: 276\(^4\)
- Deer and Elk facilities inventory by value: $4.7M
- Employment (labor): $425,000
  - Direct full time: 267
  - Direct part-time: 228
  - Indirect full-time: 117
  - Indirect part-time: 100

Comparison of economic values

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Sources

1. NYS Department of Environmental Conservation Automated Licensing System.
Risk Assessment

Risk is defined as the actual probability and consequence of undesired outcomes. Risk perceptions are defined as intuitive risk judgments and are a byproduct of risk assessment and risk communication (Slovic 1987). Risk perceptions have an element of experience with a particular hazard, which for the public are largely influenced by the media. For CWD, biologists, veterinarians, and administrators are on the forefront of a very complicated issue involving science and public perception. When looking specifically at disease management, strategies are typically aimed at reducing assessed risks determined by characteristics of disease epidemiology and potential consequences of the disease. To assess probability for introduction of CWD and exposure of infectious prions to wild white-tailed deer, an online risk perception via Qualtrics survey software (Qualtrics.com) was conducted to provide expert assessments of the risk associated with both wild and captive cervids. Panels of biologists and administrators from DEC, veterinarians and administrators from DAM, independent researchers and administrators from state and federal agencies and universities that all have experience with CWD in New York or other states, sportsmen, and captive cervid owners were asked to participate. The results of this study were published in a special issue on risks from captive cervids (Schuler et al. 2016) that identified any pathway involving interstate import of live cervids as a high risk for all groups except captive cervid owners. Other high risk hazards included CWD undetected in the wild cervid population for more than a year, reduced testing of captive cervids without federal or state subsidies, high wild white-tailed deer herd densities (>10 deer/km²), escaped captive cervids that were not recaptured, fence-line contact from captive to wild cervids, and import of wild deer heads for taxidermy purposes. Captive cervids owners generally ranked hazards lower than the other groups, but were most concerned about importation of wild cervid parts that were then left out on the landscape where they could be encountered by other cervids or scavengers. Expert opinion in a Canadian survey yielded similar results: targeted herd depopulation, natural barriers to wild animal movement, live animal transport bans, double fencing, reducing stray farmed cervids, and carcass disposal were likely the most effective options for controlling CWD (Oraby et al. 2016).

For the greater public, the risk perception of wildlife disease varies across gender, education, prior exposure to the disease, and concern for health or economic interests. While CWD is in the same family as “mad cow disease,” it is generally not considered a public health concern. There have been no known cases of CWD in humans; however, the Centers for Disease Control (CDC) recommends that no one eats venison from a known positive animal. Because CWD is a disease of wildlife with a complicated etiology, the public perception of risk may be accurate and thus support for management may be decreased (Hanisch et al. 2013). The Team spent considerable time crafting goals that achieved scientifically-appropriate disease prevention actions and educational strategies.
Chronic Wasting Disease Prevention

Goals:

1. **Keep infectious material and animals out of New York to prevent new introductions**
2. **Prevent exposure of infectious material to CWD-susceptible species in New York if CWD is present and undetected**
3. **Provide education to increase the public understanding of CWD risks and impact on deer health**

Goal 1: Keep infectious material and animals out of the state to prevent new introductions

Ensuring infective prions do not enter New York State is the highest priority and the best means of disease management. A long-term study of Wyoming white-tailed deer demonstrated that the deer population declined 10% annually in a high prevalence (>30%) endemic area; the authors stressed that the best management strategy remains minimizing movement of CWD to new areas (Edmunds et al. 2016). Based on extensive discussion and evidence from other states, live captive cervids present the greatest risk for CWD introduction because of extensive captive animal movement (sales and breeding) and the lack of a currently acceptable antemortem (live animal) test. For more than a decade, states have employed CWD certification programs for captive cervids to stop the spread of CWD. Despite these efforts, CWD continues to move to previously negative states such as Missouri, Iowa, Pennsylvania, Ohio, and Texas. As a result of the continued spread of CWD, the DAM revised 1 NYCRR Part 68 to prohibit importation of live CWD-susceptible cervids into New York State, exempting American Zoological Association collections. The regulation was put in place October 2013 and was recently extended until August 1, 2018. A hearing must be held prior to August 2018 for public comment to determine if the regulation should be amended, repealed or continued. Species currently known to be susceptible to CWD include white-tailed deer (O. virginianus), mule deer and black-tailed deer (O. hemionus), red deer (C. elaphus), elk (C. e. canadensis), moose (A. alces), sika deer (C. nippon) and caribou/reindeer (Rangifer tarandus). Germplasm (semen, embryos) has not demonstrated infectivity and would be permitted for import into New York unless future information identifies a risk of transmission. We also have taken steps to ensure that the hunting public is not illegally importing whole (field-dressed) wild cervid carcasses from prohibited states by alerting the public that improperly processed carcasses will be seized and destroyed regardless of test results. A 2013 survey of New England states demonstrated surveillance levels that may be insufficient to identify a CWD outbreak in a timely manner (Appendix IV).
Currently, the list of prohibited states continues to grow as each state detects CWD. This lag in detection and public knowledge creates difficulties in enforcement, which is why a ban on import from all states is preferable.

Other potential routes of CWD introduction into New York are from CWD-susceptible animal parts and products (e.g. deer urine). A complete import ban from all states regardless of CWD status is recommended on whole cervid carcasses and products, including urine and other excreted material (Figure 3). Current regulations permit hunters to import whole carcasses of CWD-susceptible cervids from other states until CWD is detected in that state. However, by the time CWD is detected in a state, it may have been in an area for years. Carcass importation associated with hunting activity could move prions to new areas where prions can remain viable for years. There are no disposal requirements prohibiting an individual New York hunter from disposing of his or her deer carcass on his or her property. However, businesses such as taxidermy or deer processing are required to dispose of their waste products in a municipal solid waste landfill or at a rendering facility. Thus, an individual hunter, disposing of the waste from his or her deer, could potentially distribute prions on the landscape if that...
deer was infected with CWD. The same would apply to CWD-susceptible cervids killed by hunters outside of New York and imported into the state. Scavengers, such as crows and coyotes, are capable of passing prions through their digestive tract and these remain infectious in feces (Nichols et al. 2015). We encourage all hunters to ensure that their harvested deer carcasses end up in a municipal solid waste landfill whether they are processing their animals at home or using a deer-related business. We may facilitate appropriate carcass disposal by identifying cooperating taxidermists and deer processors that use municipal landfills for carcass disposal, combined with enforcement efforts for those businesses not following DEC Solid Waste regulation 6A-2 NYCRR Part 360.

**Figure 3.** Twelve states and provinces have enacted prohibitions on the import of whole hunter-harvested carcasses from out-of-state. AZ, IL, and MO allow carcasses to be taken to an approved processor or taxidermist within 72 hours. KY allows imports from OH and IN; ME allows carcasses imported from NH, QC, NB, and NL.
Prions have also been detected in saliva, feces, blood, velvet, and urine (Angers et al. 2006, Angers et al. 2009, Haley et al. 2011, Mathiason et al. 2006). Most urine sold commercially is collected from captive deer facilities. It may be batched from several locations and can be distributed across the country via retail and internet/catalog sales. As stated above, movement of animals and recent failures in CWD certification programs indicate that captive cervids present a higher risk for CWD. If real cervid urine containing prions is put on the landscape by deer hunters, in a scrape or other area used by cervids, prions may bind to soil and contaminate that location for years or decades. Prions deposited in this manner will have a cumulative effect over time. Plants are capable of binding prions on leaves and taking up prions into their tissues; those prions remain infectious (Pritzkow et al. 2015). Cervids attracted to that location (cervid urine is marketed as a deer or elk attractant) have the potential to then ingest prions and become infected. Alaska, Vermont, Virginia, and several Canadian provinces have already banned natural cervid urine for hunting because of these risks. There is no “safe” dose of prion; exposure to one prion may be enough to cause infection (Fryer and McLean 2011). Once infected, exposed cervids shed prions into the environment where they can be encountered by unexposed deer. Infected cervids are known to shed prions prior to showing signs of disease. There is currently no rapid, cost effective test to determine if collected urine contains prions (John et al. 2013). A complete ban on use of products that contain or purport to contain real or “natural” cervid urine and glandular products would limit sales, possession, and use afield, and keep prions off the landscape via this route.

**Strategy 1.1: Enhance DEC regulated activities such as to not allow entry of CWD into New York State**

- **Action 1.1.1:** DEC will amend Part 189 to implement a comprehensive ban on importation of certain parts or tissues of hunter-harvested cervids (deer, elk and moose), regardless of origin. Importers shall only import the deboned meat, cleaned skull cap, antlers with no flesh adhering, raw or processed cape or hide, cleaned teeth or lower jaw, and finished taxidermy products.

  **Advantage:** 1. Standardizes regulation to reduce confusion in hunting community and law enforcement because only deboned meat etc. may be imported into New York regardless from the place of origin; 2. Prevents delay in identifying the new states with CWD and prohibiting imports by amending the CWD regulation

  **Disadvantage:** Increased effort for hunters traveling outside of New York to comply because they cannot import whole carcasses.

- **Action 1.1.2:** DEC will amend 6 NYCRR Part 189 to prohibit retail sale, and possession, use, and distribution while afield of the urine, glands, or other excreted substances or products containing the urine or excreted substances from any CWD-susceptible animal for any purpose.

  **Advantage:** 1. Limits abilities of hunters to use urine or urine based products while afield deer hunting; 2. Prohibits the sale of urine by the deer farm industry in New York to send a clear message about the hazard of this product
Disadvantage: Urine producers will no longer have a market for their products in New York.

- Action 1.1.3: DEC will amend 6 NYCRR Part 189 to only include a list of known CWD-susceptible species by removing those species that have not been found to be susceptible to CWD.

  Advantage: Removing species that are not known to be susceptible from regulation provides regulatory relief without compromising CWD prevention.

  Disadvantage: Will require DEC to amend the CWD regulation as new species are found to be CWD susceptible.

**Goal 2: Prevent exposure of infectious prions to CWD-susceptible species in New York State if CWD is present but undetected**

There are multiple potential routes of CWD exposure to wild deer that should be addressed including concentrating animals around feeding and baiting sites. Also, the mishandling of deer or cervids or products thereof that may be infected with CWD prions, could result in an exposure to wild deer. Captive cervid facilities pose a high risk for both disease entry through importation and exposure through fence line contact between captive cervids and wild deer or escapes of captive cervids into the wild. The captive cervid industry should be held to high standards within New York. Other states, including Virginia, have banned the ownership of captive cervids or specific species (Figure 2). Because captive cervid activities were often considered “high risk,” the Team discussed eliminating or reducing captive cervid facilities in New York. However, DAM took a great stride in protecting wild and captive deer by revising 1 NYCRR Part 68 to prohibit importation of live CWD-susceptible cervids into New York State so the Team chose to identify key actions that would further reduce risks to wild and captive cervids.

**BAN FEEDING OF WILD DEER:** Increasing numbers (density) or concentrating any wildlife around a food source has the potential to increase spread of infectious disease by direct animal-to-animal contact, aerosol transmission, ingestion of feed contaminated with fluids (i.e., saliva) from another infected animal, or contact with body fluids, such as urine or feces. Similar to CWD, bovine tuberculosis is another disease in white-tailed deer that can be spread more efficiently through supplemental feeding. Novel food sources can lead to other nutritional issues, such as rumenitis and bloat, and death when white-tailed deer consume large quantities. Concentrating deer around feeding sites can cause damage to the habitat through trampling and increased herbivory, as well as increase the incidence of deer vehicle collisions. Species other than deer can visit feeding piles and have similar negative effects. Wildlife accustomed to supplemental feeding can have behavioral changes, such as habituation, that can become a public nuisance. A statewide ban on feeding is currently in place, but not being enforced. DEC plans to revise the regulation 6 NYCRR Part 186 to have an enforceable regulations prohibiting feeding of wild deer.
CERVID FACILITIES GOING OUT OF BUSINESS: For those captive cervid owners looking to close their facility, DEC and DAM need to implement a program to eliminate herds without creating a risk of illegal liberation to the wild. Special Purpose or Monitored herds, primarily in use as high fence shooting operations, are those that do not meet USDA criteria for certification, and thus are held under quarantine and cannot move live animals except directly to an approved facility for immediate slaughter. The current national USDA CWD Herd Certification Program has developed minimum standards to prevent the spread of CWD by instituting mandatory testing only on herds that enroll voluntarily. The DAM reviewed their regulation [1 NYCRR 68.5 (f)] and determined that it provides a safe, effective and legal course of action for cervid facilities to close their operations. DEC should review and amend, as necessary, Domestic Game Animal Breeder license conditions to ensure that captive white-tailed deer licensees are able to comply with the provisions of DAM protocols for decommissioning a deer farm.

AMEND DEC REGULATIONS FOR ENFORCEMENT PURPOSES AND INCREASE AGENCY OVERSIGHT: The Team recommends that DEC CWD regulations be amended to facilitate enforcement of DAM regulations by DEC Environmental Conservation Officers and that enforcement of these regulations would include all instances of any failure to adhere to license conditions including recordkeeping and compliance with CWD testing requirements. DEC will conduct site visits to facilities holding a Domestic Game Animal Breeder License to examine record keeping, conduct a fence inspection to make sure the facility is secure and limits opportunity for contact with wild deer, and provide a herd inventory or estimates. It is the practice of DEC that all escapes of any captive CWD-susceptible cervid species be euthanized unless authorities are informed that the owner is making immediate, ongoing, and substantive efforts to recapture escaped or liberated animals (Appendix II). DAM and DEC should also institute new standards for traceability including permanent identification for all cervids from birth to death and require biosecurity and herd closure plans for disease containment. The Team discussed numerous options for fencing requirements for captive facilities, but concluded that adding further regulations would not be effective since existing rules were not well enforced. In addition, specialized fencing prevents nose-to-nose contact of animals, but it does not prevent movement of infected material through runoff, disposal of waste, scavengers, or mechanical vectors (vehicles and equipment). Captive facilities will be advised to protect their animals from possible CWD introduction via wild deer by using mechanisms to prevent nose-to-nose contact through the fence line by installing electric fence on outriggers, visual barriers, slant fencing, or double-fencing with alleys between.

INCREASE TESTING REQUIREMENTS FOR CAPTIVE CERVID OPERATIONS: We recommend DAM adopt a more stringent reporting system for any natural death, harvest, or euthanasia of a CWD-susceptible cervid over 12-months of age for both Certified and Special Purpose herds. Immediate reporting will allow samples to be collected for CWD and tuberculosis testing.

Commercial shooting operations enrolled as Special Purpose herds present a risk because they frequently bring in adult male deer as “shooter bucks” that are the sex/age class with the highest CWD prevalence rates. These animals may not be tested because only 10% of the herd or up to 30 animals must be tested annually. The herd owner can choose the animals to be tested, thus allowing an unscrupulous owner to avoid testing of suspect animals, even though CWD-clinical suspects must be reported and all natural mortalities are required to be tested. Because of the lack of requirement for a
complete herd inventory and identification of all individuals in these herds, animals may die without detection or testing.

We propose all carcasses leaving Special Purpose herds coming from shooting facilities be tested. Currently, all CWD testing of captive cervids is funded by DAM. DEC Bureau of Wildlife staff will provide assistance to DAM to collect specimens for testing.

WILDLIFE REHABILITATION OF WHITE-TAILED DEER: Movement of live wild deer and captive deer within New York becomes a concern following introduction of prions because of the long delay between the time a deer becomes infected and when that deer shows clinical signs, the inability to test live animals for CWD, and the possibility that animal dies (in captivity or following release) without being tested. White-tailed deer fawns or moose calves have potential to be exposed to CWD, but show no signs for more than a year so they are less desirable surveillance candidates. It is likely that CWD will be found in an adult deer through annual surveillance activities rather than in a rehabilitation facility. However, moving and concentrating wild deer in confinement at a rehabilitation facility could potentially spread disease to a group of wild deer that would be liberated back into the environment. Another concern is the distance that wild deer (primarily fawns) are moved to a wildlife rehabilitator (Figure 4). In some cases, the long distance transport of an ‘abandoned fawn’ is facilitated by a misguided but well-meaning attempt by a private citizen. Ideally, all wild deer that are brought to rehabilitators should be accurately recorded and tracked while in rehabilitative care in a manner that allows DEC to do trace-outs if CWD is confirmed in a wild deer that has been in the wildlife rehabilitation system.

Our recommendation is to increase DEC oversight of wild deer rehabilitation by developing special license conditions to ensure that wildlife rehabilitators are using best management practices to reduce transmission through exposure, movement, and liberation of potentially diseased animals. Increased DEC oversight of wild deer rehabilitation includes using electronic reporting systems to identify which rehabilitators take in deer. These facilities should be inspected by DEC on a regular basis and meet basic standards outlined by the International Wildlife Rehabilitation Council. One goal is to establish better working relationships with wildlife rehabilitators to facilitate information transfer for all potential disease situations. Deer rehabilitators will be required to provide carcasses or samples for diagnostic testing, and they must report any deer exhibiting clinical signs consistent with CWD (uncoordinated gait or stumbling, drooling, head tilt, emaciation). Deer rehabilitators must dispose of carcasses in an approved solid waste landfill, keep adult deer separate from fawns at their rehabilitation facilities, and stop long-distance transport of deer for the purpose of rehabilitation. Fawns should not be overwintered except for those fawns that require continued rehabilitative care. Deer rehabilitators must maintain accurate records for all deer that are handled under the authority of their Wildlife Rehabilitator License including all deer transferred to another rehabilitator, released to the wild, euthanized, or that have died.
Strategy 2.1. Stop feeding wild white-tailed deer by the public because it presents a variety of ecological and behavioral problems, in addition to increasing infectious disease transmission and nutritional deficiencies.

- Action 2.1.1: DEC will prohibit feeding of wild deer via regulation 6 NYCRR Part 186.

**Advantage:** Prohibition on feeding will prevent artificial congregation of cervids. Close contact at feeding sites can promote CWD transmission between animals. Saliva, feces, and urine left at feeding sites can serve as a source of environmental contamination that may remain infectious for years.

**Disadvantage:** Some of the public feels that deer feeding is important and they like to see the deer.

*Figure 4.* Movement patterns for white-tailed deer taken in by licensed rehabilitators in 2012. Most deer released were young-of-the-year (fawns). Several deer were moved more than 40 miles to a rehabilitation facility. Release locations for deer were not available.
Strategy 2.2. DEC and DAM will collaborate more closely on oversight of captive CWD-susceptible cervid operations

- Action 2.2.1: DEC will amend Part 189 to clearly incorporate DAM CWD regulations to allow DEC Environmental Conservation Officers to better enforce violations of the CWD regulations.

  Advantage: 1. Allows ECOs to issue tickets pursuant to provisions of Part 189 where such violations would also be a violation of DAM CWD regulations; 2. More efficient enforcement of CWD regulations. 3. DAM does not have the same law enforcement capabilities as DEC.

  Disadvantage: None

- Action 2.2.2: Annually, DEC Special Licenses Unit and DAM Division of Animal Industry cross reference DEC records for DEC Domestic Game Animal Breeder licensees with DAM records for captive white-tailed deer farms and DAM shares records of other known CWD-susceptible cervid farms in New York to ensure consistency. The DEC and DAM will maintain accurate records and share annual reports, reports of farm inspections, reports of escapes or sick or dead animals, reports of cervid moved from farm to farm and reports of any alleged violations of license conditions or regulations.

  Advantage: Accurate records of the captive cervid industry in New York and shared information related will reduce non-compliance with license conditions or regulatory mandates.

  Disadvantage: Time invested by DEC and DAM personnel

- Action 2.2.3: DEC and DAM will review and amend as needed existing procedures and requirements for decommissioning (closure) a cervid farm operation to ensure no threat of disease transmission to wild deer or other captive cervids. Herd closure options (1 NYCRR Part 68) will be made available by DEC Special Licenses Unit as part of the application process and as a license condition on the Domestic Game Animal Breeder License.

  Advantage: 1. The two agencies should have a sound process that allows cervid operations to go out of business without creating an impetus to release the animals to the wild; 2. Decrease the number of captive cervid operations in the state

  Disadvantage: There may be issues with trying to place a large number of live captive cervids when a cervid operation elects to go out of business

- Action 2.2.4: DEC and DAM will review current recordkeeping processes to ensure information collected is consistent and useful for both agencies.
Advantage: Will avoid unnecessary duplication of records, reduce paperwork for the cervid operations and provide critical information for CWD management

- Action 2.2.5: DEC and DAM will explore the feasibility of employing some type of permanent identification for all captive cervids and, if feasible, take the necessary measures to make permanent identification a requirement.

Advantage: 1. Improves the ability of both agencies to trace an animal in the captive cervid system; 2. Provides both agencies with critical information about an animal's movement should CWD be found in a captive herd

Disadvantage: 1. Will increase costs for cervid operators; 2. Will require maintaining additional records by DEC and DAM and the cervid owner; 3. It would be difficult to mark all natural birth animals in Special Purpose herds because of the lack of handling facilities and inability to capture all animals in large enclosures.

- Action 2.2.6: DEC and DAM will implement joint compliance inspections, facilities inspections and enforcement investigations to ensure that captive cervid operations are in compliance with DEC and DAM CWD prevention measures.

Advantage: Enforce regulations with a standardized method. This may be particularly important for new facilities that may have other regulatory issues.

Disadvantage: Increased time dedicated to inspections and enforcement

Strategy 2.3: DEC and DAM review and revise regulations to reduce CWD risk from captive CWD-susceptible species and increase responsibility of owners of captive CWD-susceptible species facilities.

- Action 2.3.1: DAM will amend 1 NYCRR 68 to require testing of all CWD-susceptible species that are killed or die in all Special Purpose herds. DAM already tests natural mortalities. The DEC will amend CWD regulation 6 NYCRR Part 189 as necessary to accomplish this strategy.

Advantage: 1. Increase surveillance sample at locations known to bring in larger numbers of adult males; 2. Limit possibilities for clinical suspects to avoid detection

Disadvantage: 1. Financial cost to DAM if they continue to collect samples and fund testing; 2. Captive cervid operators will object to paying for testing; 3. Increased DEC staff time to assist DAM with sample collection for testing.

- Action 2.3.2: DEC will amend Part 189 to prohibit distribution or disposal of taxidermy, deer processor waste or byproducts (salt), and captive cervid operation waste on the landscape
and conduct site visits to businesses to ensure compliance with solid waste regulations 6 NYCRR Part 360

Advantage: Enforce existing regulations and improve security of hunting-related businesses and eliminate or significantly reduce an avenue of CWD transmission to wild deer

Disadvantage: Time invested by DEC and DAM personnel to conduct compliance inspections.

- Action 2.3.3. DEC will explore the feasibility of legislative action to require a bond from Domestic Game Animal Breeder license applicants. This bond would be held to offset costs resulting from escape of captive CWD-susceptible cervids into the wild that DEC must remove or in the event that CWD has been introduced into New York by the actions of a Domestic Game Animal Breeder licensee.

  Advantage: 1. Limits the state’s financial burden if CWD is detected on a captive cervid operation; 2. Requires responsibility to be taken by captive cervid owners for potential damage caused by their activities; 3. May encourage better fencing and routine maintenance

  Disadvantage: Existing Environmental Conservation statute related to Domestic Game Animal Breeder Licenses does not allow DEC to collect a bond

- Action 2.3.4. DEC will explore options for assessing fines from actions involving captive cervids that have escaped into the wild and have the potential to introduce CWD to the wild deer herd.

  Advantage: 1. Requires responsibility to be taken by captive cervid owners for potential damage caused by their activities; 2. May encourage better fencing and routine maintenance

  Disadvantage: 1. Some owners may not come forward to report escapes if they will be held liable; 2. Lack of permanent marking in Special Purpose herds makes differentiation of captive cervids difficult

- Action 2.3.5: DEC and DAM will collect information on rendering of deer carcasses and composting road-killed wild deer to assess risks to human health and disease exposure to wild deer.

  Advantage: Be able to make informed decisions about CWD and prions resulting from rendering or composting of CWD-susceptible animals

  Disadvantage: Composting road-kill is broadly practiced by NYSDOT and county municipalities, but not standardized across the state.

Strategy 2.4. DEC will minimize risk posed by rehabilitation of white-tailed deer.
Action 2.4.1: DEC will develop license conditions that have appropriate procedures and protocols to ensure wildlife rehabilitation activities do not pose a threat of disease transmission and contribute to disease surveillance. These include record keeping and mortality reporting, facility inspections, movement restrictions, diagnostic testing and marking requirements, and disposal of carcasses in an approved manner.

**Advantage:** 1. License conditions will be systematically evaluated for the potential for wildlife disease transmission; 2. Rehabilitators have the potential to participate in disease surveillance activities.

**Disadvantages:** Current legal issues may make it difficult to ensure compliance by the regulated community.

**Goal 3: Provide education to increase the public understanding of CWD risks and impact on animal and human health**

Wildlife disease prevention and management often involves changing human behaviors that contribute to disease introduction and transmission. It is the responsibility of DEC and DAM to not only inform the people, but to provide the information about diseases, such as CWD, to engage the support of the public for management decisions made by DEC and DAM to protect the wildlife resources and the interests of livestock owners. Such education efforts must be based on the best scientific information and risk assessments available, and they must be developed and executed by experts in education and information (public relations/advertising professionals) for all the people of the state. As a relatively recently discovered disease, research on CWD is ongoing and new information becomes available monthly. There are several components that are important to convey to the public so they understand the long-term consequences of CWD for the wild white-tailed deer population of New York State and the public health concerns.

Disease detection and perceived threats to human health may contribute to a decline in hunter participation and recruitment (Vaske et al. 2004). In turn, decreased hunting would reduce the effectiveness of the primary method that natural resource agencies use to control deer populations. **Higher deer densities** can lead to increased incidence of disease. Once the disease is established, managing the deer population will be more costly and less reliable. These facts are important for both the public and policy makers to understand in order to grasp the long-term consequences of CWD. Epidemiologic studies, to date, have not provided any evidence of CWD transmission to humans, but follow-up of individuals at increased risk of exposure to CWD is ongoing. Laboratory research on transgenic (e.g. humanized) mice is being used to study species barriers and routes of transmission. Inquiries about the safety of venison consumption should be handled by the New York State Department of Health (DOH). DEC and DOH continue to advise against consumption of ill or ill-acting animals.
Public interest in CWD waned in Oneida County and throughout the state several years after CWD was discovered in 2005. With no additional CWD cases discovered after intensive sampling from 2005 through 2009, it was difficult to engage stakeholder interest in the disease without substantial outreach efforts. However, it is the public trust duty of the DEC to maintain the quality of wildlife for the people of the state for current and future generations. Diseases are a threat to wildlife resources and, consequently, to the quality of life in New York. In particular, CWD is a slowly progressive disease that may not be immediately devastating to wild deer populations, but could have significant impacts over the course of decades. It is incumbent on DEC, with their scientific and technical expertise, to explain the nature of these disease threats to the wildlife resources with the purpose of educating and informing the people of the state. To do this, a comprehensive, targeted communication strategy must be developed for various stakeholder groups to address concerns specific to their interests. These groups include hunters, the general public, captive cervid owners, landowners, and other groups or businesses handling deer (NYS Department of Transportation, taxidermists, deer processors, rendering companies, wildlife rehabilitationists, landfill operators). Messages should be crafted in partnership among agencies to be disseminated across multiple media venues: print, online, social media, in person/hands-on, and lecture. Information should be targeted to:

1. Prevent introduction of CWD-infected materials by following regulations related to importation of live cervids, hunter-killed carcasses, and their products (e.g., urine);

2. Eliminate possible introduction of prions to wild white-tailed deer by disposing of deer parts and processing waste where they are not accessible to wild animals, such as a municipal solid waste landfill;

3. Understand the biology of prion diseases that makes them unique among infectious agents because of the difficulties with detection and disinfection, long infection period when animals are shedding prions, ability to bind to the soil and plants and remain infectious (environmental contamination), potential population-level effects, and lack of immunity, treatment, vaccine, or effective management strategies for wild deer;

4. Recognize actions that contribute to disease transmission, such as concentrating animals around bait piles or feeding, mixing activities such as taxidermy, deer rehabilitation and captive cervid ownership including canned hunting operations;

5. Be aware of Interagency Response Plan actions to prevent the disease from becoming established and continue maintenance actions in areas if the disease is established.

Public engagement in CWD management and trust in the state wildlife agency are critical elements in the success in message delivery. Our recommendation is to develop avenues to inform the public about risks and engender support for disease prevention and control actions.

**Strategy 3: Develop a communication plan defining messages and audience, outreach and advertising strategy to re-engage various stakeholder groups in CWD education**

- Action 3.1: DEC will take the lead in educating DEC agency personnel, sportsmen and women and the public through increased information available in print (CWD Fact Sheet and poster at
all DEC offices and Sportsmen Education classes, DEC press releases, The Conservationist, NY Outdoor News), online (DEC website, NYS wildlife rehabilitation listserv), and in person (Sportsmen conferences, NY Bowhunters annual meeting, NYS Taxidermists annual meeting, Sportsmens Education Instructor Refresher meetings)

Advantage: Re-engage stakeholders in a conservation message related to disease prevention

Disadvantage: Requires considerable effort from multiple divisions and outside assistance

- Action 3.2: DAM will take the lead in educating captive cervid owners on the risks of CWD

  Advantage: Provide a balanced and scientific view of why CWD presents a risk to their industry and wild deer

  Disadvantage: May be a difficult group to engage

- Action 3.3: DEC will take the lead in ensuring landfill operators understand the importance of proper disposal of deer carcasses and allow use of their facilities for disposal. Work with DEC Waste Management to educate landfill operators (Completed Summer 2014)

- Action 3.4: DEC will include the NYS Fish and Wildlife Management Board and NYS Conservation Council in discussions of CWD prevention to ensure engaged stakeholders have a better understanding of CWD implications (Completed 2013-2014)

- Action 3.5: DEC will provide information on CWD regulations online and in the annual hunting regulation guide.
Definitions

Captive cervid facility – facility that raises and sells deer and elk or their products (urine, velvet, venison, antlers, shooting opportunities), 8-ft fence required, and permit from DEC for white-tailed deer

Certified herd – captive cervid operation that participates in DAM CWD Herd Certification Program by identifying animals, reporting and testing all mortalities in deer over 12-months and is able to move live deer and elk off the premises

Cervid – hooved mammal that typically grows and sheds antlers yearly; includes deer, elk, and moose

Environmental contamination – prions shed in carcasses, urine, feces, and saliva bind to the soil and plants and remain infectious to deer

Index (herd or animal) – first disease detection in a location or animal that starts the epidemiology investigation

Prevalence – Number of animals positive for CWD divided by number of animals in the population

Prion – misfolded protein that is the infectious agent of CWD

Commercial fenced shooting operation (canned hunt, shooter herd, preserve) – facility that sells “hunts” within a fenced enclosure; does not require a license; pricing is typically based on animal’s antler size; falls into the “Special Purpose” category for testing

Special purpose (Monitored) – captive cervid operation that does not have live animals leaving the facility unless going to slaughter; CWD testing is 10% of the total population up to 30 animals per year; animals are not required to be identified or inventoried. Facilities are not required to have animal handling equipment

Trace-back – epidemiological investigation examining all animals and parts imported into a location to determine the source of infection

Trace-outs – epidemiological investigation examining all the movements of animals into and out of a facility to determine the source of infection and any possible exposures of other animals to an infected animal
References


Appendix I

Frequently Asked Questions about CWD and NY State’s CWD Risk Minimization Plan

*Why are live deer or elk (cervids) a risk for CWD entry into New York?*

The importation of live deer and elk from other states is a risk of CWD entry into New York State. The reason live animals are a risk is because live animals are not tested before they are moved. The USDA CWD Herd Certification Program includes certain testing requirements of carcasses for interstate movement of captive cervids, but has not yet approved a live animal test although there are several live testing methods that are currently in development. Each state has individual requirements for the movement of cervids into the state that may be more stringent than the USDA Certification Program. Despite this level of government regulation, nine states (PA, IA, MO, TX, UT, WI, MN, MI, and AR) have detected CWD since 2012. The long latency period of CWD without any clinical signs makes ante-mortem (live) diagnosis difficult. Postmortem testing is insufficient to detect disease before animal movement occurs. As a result, all CWD Certified herds operate on a “trust” system that deer producers are consistently testing all mortalities for five years to achieve a certified status and to be permitted to export live animals. During these five years, certified facilities are permitted to import animals into their herds so testing of dead animals does not reflect the true herd status. The delay in detection of CWD because of postmortem testing is unlike ante-mortem tests available for tuberculosis (*Mycobacterium tuberculosis*) or *Brucella* spp. where animals can be tested before they are moved to a new herd. Live animals may be moved to multiple herds (Romano 2012) and thereby infect many other animals and premises. Our Team concluded live animal movement presents an unacceptable level of risk. Recent convictions of prominent deer breeders in Texas and Missouri demonstrates the potential for smuggling or illegal movement to meet the demands of the industry. Prior to the live cervid import ban in New York, thirty facilities imported deer into New York from outside the state and 65% of these imports came from states now known to be CWD-positive, such as PA or WI.

In 2015, there were 209 active cervid herds with CWD-susceptible species recorded in NY by DAM. Of these operations, 108 (52%) were CWD Certified herds and 101 (48%) were Special Purpose (Monitored) herds (see sidebar for designations). There were at least 18 locations that have both CWD Certified and Special Purpose herds with the same owner. The risk associated with dual cervid facility ownership is that a visibly sick or CWD suspect deer could avoid mandatory testing in a Certified herd by being moved to a Special Purpose herd. From a 2012 survey, there were 30 (11%) locations that imported cervids from outside of New York State. There were 44 (16%) facilities that were identified as commercial shooting operations by either DAM field veterinarians or DEC biologists, but these businesses are not separately identified from the rest of the Special Purpose herds in regulation. Commercial shooting facilities often bring in large numbers of adult males in the course of their operations and this sex/age class often has the highest CWD infection rates (Miller et al. 2008). Fence quality on 42% of all facilities was ranked as low or medium. At least 38 (14%) of facilities had escapes and 11 were listed as unsuccessful in their recovery. There were 42 (15%) facilities with DAM compliance issues. Only 60
(21%) of herds were known to be under the routine care of a veterinarian. Finally, for potential co-mingling activities, 11 (4%) had taxidermy businesses on site, 2 (<1%) engaged in wild deer rehabilitation which is illegal under current regulations, and 72 (26%) butchered deer on site. The Oneida County CWD outbreak in 2005 was at a captive deer facility where the owner mixed taxidermy and deer rehabilitation activities together so NY has taken steps to limit co-occurrence of these activities. This captive facility was designated as Special Purpose (Monitored) and conducted required testing. The subsequent epidemiological investigation revealed CWD-positive animals in the facility and in the wild.

<table>
<thead>
<tr>
<th>CWD-Certified Herd</th>
<th>Special Purpose (Monitored) Herd</th>
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<tbody>
<tr>
<td>Live animal imports</td>
<td>Live animal imports</td>
</tr>
<tr>
<td>Live animal exports</td>
<td>No live exports</td>
</tr>
<tr>
<td>Official and visual identification requirement</td>
<td>No identification requirement</td>
</tr>
<tr>
<td>Restraint system*</td>
<td>No restraint system</td>
</tr>
<tr>
<td>CWD testing for all natural mortalities of animals &gt;12-months-old</td>
<td>CWD testing for 10% of herd up to 29 animals; ≤9 animals does not include lethal sampling</td>
</tr>
<tr>
<td>Typically breeding herds</td>
<td>May include commercial fenced hunts</td>
</tr>
</tbody>
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*From publication of the new rule (Oct. 15, 2013) forward, all new CWD-certified herds will be required to have a restraint system.

**Why are deer carcasses and parts a risk for CWD entry?**

Prions are found throughout the body, but are in higher concentrations in specific tissues, such as the brain, spinal cord, tonsils, lymph nodes, spleen, and intestinal tract (Williams 2005). Disposal of deer carcasses by hunters is not easily regulated in New York. A deer carcass that is disposed of on the landscape where it is available to scavengers and wild deer presents a risk because prions are not easily degraded and can remain viable for an undetermined amount of time [>16 years for scrapie prions (Georgsson et al. 2006)]. Prions bind to soil particles and remain infectious and prions can be taken up by plants (Pritzkow et al. 2015). Scavengers may transport prions in feces (VerCauteren et al. 2012, Nichols et al. 2015). A minimum of 54,000 deer are taken to taxidermists and processors each year in New York and of those, an estimated 3-5% (>2000) are deer harvested from outside the state. When conducting a 2012 survey of deer hunting businesses in the state, DEC biologists found that many deer processors and taxidermists were unaware that DEC’s solid waste regulations applied to their businesses for waste disposal. For disposal, 50% of businesses used a landfill, 25% used rendering services exclusively, and 15% indicated they composted, used a pit, or otherwise left carcasses on the landscape where they could be encountered by wild deer and present a risk of disease transmission to wild deer. The remaining 10% used a variety of methods, with <1% choosing incineration. Our concern is that 25% of businesses (those not using landfills or rendering) were disposing of waste with a method that made prions directly available to wild deer.

**Why are products that contain deer fluids (urine) a risk for CWD entry?**

Deer infected with CWD begin shedding prions in urine more than a year before they appear ill, resulting in thousands of prion infectious doses over the course of CWD infection (Henderson et al. 2015). Urine is
collected from captive cervids in catch pens that also contaminate urine with feces and saliva, which also have prions (Angers et al. 2006, Angers et al. 2009, Haley et al. 2011, Mathiasen et al. 2006). Extensive movement of animals and limited and delayed testing make captive cervids a high risk for CWD. Nationally, CWD continues to be found at captive cervid facilities in increasing number [2013 – 1, 2014 – 5, 2015 – 6, 2016 – 8, Feb.2017 – 3]. Urine from captive cervid producers may be batched from multiple locations by a vendor for retail sale, in which urine from one CWD-positive animal may contaminate multiple products. Urine products are distributed across the country via retail, internet, and catalog sales. Urine production and sales is not regulated by any agency, nor are there any testing or marking requirements. There is currently no rapid, cost effective test to determine if collected urine contains prions (John et al. 2013). If cervid urine containing prions is put on the landscape by deer hunters, in a scrape or other area used by cervids, prions may bind to soil and contaminate that location for years or decades. Plants are capable of binding prions on leaves and taking up prions into their tissues; those prions remain infectious (Pritzkow et al. 2015). Cervids attracted to that location have the potential to then ingest prions in plants or soil and become infected. There is no “safe” dose of prion; exposure to one prion may be enough to cause infection (Fryer and McLean 2011). Alaska, Vermont, Virginia, and several Canadian provinces have already banned natural cervid urine for hunting because of the risk of CWD. There are 92 known companies that produce 824 urine-related products, 20% of which are synthetic products that do not contain natural deer urine, so safe alternatives are available to hunters.

**Why are live wild white-tailed deer a risk for CWD entry?**

Chronic wasting disease in Pennsylvania was detected within 200 miles of the New York border. Although the average dispersal distance for yearling bucks is less than 40 miles, deer have been documented traveling longer distances (Long et al. 2008). High deer densities may expose more animals and dispersal by juvenile animals may spread disease further toward NY. In addition, the epidemiological investigations from infected captive facilities in Pennsylvania and Ohio were incomplete, raising the possibility that there may be other unidentified exposed herds in Pennsylvania. Pennsylvania has over 1,100 captive cervid herds and Ohio has 540 captive herds distributed statewide.

**Why is the area where CWD was detected in New York in 2005 still a risk?**

Prions bind to the soil and remain infectious for many years (Georggson et al. 2006). They can also be taken up in to plant tissues and remain infectious (Pritzkow et al. 2015). Prions are shed in feces, urine, and saliva of infected deer. Carcasses also contain prions in various tissues. Ingestion of soil contaminated with prions by a deer could cause an infection. While no other cases of CWD were found after 2005, it is possible that there is environmental contamination that can remain infectious for an unknown period of time in the area where these positive deer were found.

**Why is rehabilitation and release of wild deer a risk?**

Wildlife rehabilitators in New York take in both adult and young-of-year (fawn) deer. Often, these deer are moved around the state with very little tracking. In 2012, 35% of deer taken in by wildlife rehabilitators were moved by the public or by the rehabilitator further than the closest rehabilitator, with a number of deer being moved over 50 miles. Movement of these animals presents a potential for
diseases to spread to new areas of the state. Once in captivity, wild deer may be commingled with other wild deer being held, increasing contact rates and the likelihood of the property becoming a disease amplifier. Deer are also transferred between rehabilitators. In 2012, 16% (5 animals) of adult deer and 41% of fawns taken into rehabilitation were released back into the wild. Deer released after rehabilitation are currently not required to be identified or tracked.

**Why is escape of captive deer into the wild a risk for exposure to New York’s wild white-tailed deer?**

Horizontal transmission through nose-to-nose contact is sufficient to transmit CWD. The longer an infected captive deer interacts with wild deer, the greater the chance of disease transmission. A deer that escapes captivity may not remain identified and therefore, cannot be easily distinguished from wild deer. Recapture can be very difficult or impossible. Many captive facilities, including the fenced shooting operations that offer hunting commercially, do not have an identification or inventory requirement, so these captive deer could be unaccounted for indefinitely. Based on informally reported information (including publicly reported sightings of tagged deer outside of known facilities), in 2010, DEC responded to 18 escape incidents involving 23 captive animals. In 2012, DEC responded to 10 incidents involving 55 escaped captive animals; in one event, 35 animals escaped from the premises and all were not recovered. A certified herd owner has 72 hours to recapture the deer (J. Lewis, DAM, personal communication). However, they may be concerned that bringing an escaped deer back into the herd would result in a loss of certification status; through regulation, we have negatively incentivized the recapture of an escapee.

**Why is intrastate movement of captive deer a risk to wild deer?**

A permit from DAM is required for intrastate movement, but live captive animals cannot be tested for CWD before being moved to new facilities. If a herd discovers CWD, DAM must conduct extensive epidemiological ‘trace backs’ to find out where deer on the facility came from and ‘trace forwards’ to determine where infected animals may have gone. Depending on the level of investigation, multiple levels of tracing may be required to account for all animals. This entire system is based on the accuracy of the records reported by the captive cervid owner and maintained by the DAM.

For example, Pennsylvania Department of Agriculture (PDA) has sole responsibility for the oversight of captive cervids in PA. PDA was unable to trace all of the exposed animals sold from the index herd in order to perform CWD testing. The reported identity of the index animal was contradicted by DNA testing, therefore, all suspected source herds were removed from quarantine (14 herds). The source of infection and origin of the index animal remains unknown. The index herd shipped animals out-of-state and those animals are unaccounted for. One of the animals from the index herd was illegally sold to an unpermitted facility where it escaped and remained at large for months. As of November 9, 2015, 36 herds in PA remain under quarantine, presumably because they are unable to trace the index herd animals purchased by these herds. An assessment of the risk of CWD transmission in PA stated that the major limitation was “the vast amount of missing cervid data (due to data entry, geocoding errors or lack of an official ID)” (Romano 2012). Depending on state regulations, it may be difficult or impossible to completely reconstruct movement patterns of deer potentially exposed to CWD. Within NY, conducting trace-backs to imported animals requires a tremendous amount of time and effort by DAM.
**Why is high density of wild white-tailed deer a risk for CWD exposure?**

CWD is primarily transmitted from deer-to-deer through direct contact or from environments contaminated with infected carcasses, feces, saliva, or urine (Almberg et al. 2011). Therefore, CWD is transmitted both in frequency-dependent (based on how often the deer contacts a contaminated environment) and density-dependent (how often a deer encounters another deer) modes of transmission. Deer attracted to specific areas, such as mineral licks or bait piles, are more likely to encounter other animals at those sites and leave their infected body fluids behind on that site as well.

**Why is a wild deer trophy head a different risk than a wild deer carcass?**

Typically, hunters are most likely to want older adult males (bucks) prepared as a taxidermy mount. In states with CWD, adult males are up to twice as likely to be infected as females. According to taxidermy records, New York hunters traveled to western states, such as Colorado, Wyoming, and Kansas and harvested trophy deer that they brought back to New York. To illustrate this point, the known CWD-positive cases from captive deer in Oneida Co. were suspected of having been exposed to CWD through taxidermy waste material, likely from trophy cervid heads brought into New York from a CWD-positive state. Disposal of deer carcasses and parts on the landscape could make prions available to wild deer. The concentration of prions is highest in brain and central nervous system tissues. In addition, waste or byproduct material from taxidermy businesses that are not disposed of in a landfill may become a source of infection for wild deer. Deer shot on captive commercial fenced operations are of particular concern because adult male deer are brought in from multiple sources.
What are the currently banned states for whole carcass importation?

Import to New York Prohibited
New York State Department of Environmental Conservation
Bureau of Wildlife
Protocol for Reported Captive Cervids at Large
(Appendix to CWD Manual)

Background
Many species of deer and elk, the family Cervidae, may be legally held in captivity under
permits issued by the NYS Department of Agriculture and Markets. As of October 2002,
Agriculture & Markets estimates that less than 1,000 animals in this family are held in NY on
about 150 premises. These animals of unknown origin at large in the state pose a disease risk
(tuberculosis, brucellosis, chronic wasting disease) to wild and other captive cervids, and
therefore such animals at large should be removed from the wild.

Legal Authorities
ECL 11-0325 Control of dangerous diseases. The Commissioner of Agriculture and Markets
certified on December 22, 1999 that the running at large of Cervids of unknown origin and
unknown health status posed an imminent danger of introducing disease into the State,
endangering the health and welfare of wildlife and domestic livestock. Further, 6 NYCRR Part
189 authorizes Department staff to undertake appropriate measures to control the risk of
introduction or spread of chronic wasting disease. Under this regulation the following cervids
have been identified as a potential threat. The Genus Cervus meaning the following species and
hybrids: Thorold's Deer (C. albirostris), Visayan Deer (C. alfredi), Barasingha (C. duvaucelii),
Elk (Red Deer, Wapiti) (C. elaphus), Eld's Deer (Thamin) (C. eldii), Philippine Sambar (C.
mariannus), Sika Deer (C. nippon), Schomburgk's Deer (C. schomburgki), Sunda Sambar (C.
timorensis) and Sambar (C. unicolor). The Genus Odocoileus meaning the following species and
hybrids: Mule Deer (O. hemionus), Black-tailed Deer (O. hemionus columbianus) and White-
tailed Deer (O. virginianus). And the Genus Alces meaning the following species and hybrids:
Moose (Alces alces).

These species, and all other cervids (including Fallow Deer (Dama dama)) also pose a risk of
introduction or spread of tuberculosis that could endanger the health and welfare of wildlife and
domestic livestock. The following protocol should be applied to all at-large cervids.

Protocol
1. When an observation of a captive Cervid at large is reported, determine the date, time,
location, and nature of the observation from the person reporting it. Ask for any information
regarding the sex of the animal, condition/behavior (i.e. health) and if the animal had any type
of identifying tag. Thank the caller for reporting their observation, and explain that DEC will
check with Agriculture and Markets to attempt to locate the owner. Advise them that certain
Cervids such as elk are protected under New York law and cannot be hunted, but the State
may remove them from the wild as a protective measure because of concerns that these
animals of unknown origin pose a disease risk to wild deer and to deer and elk legally held in
captivity.

2. If the circumstances regarding condition/behavior of the animal cannot be determined by
phone, than a direct inspection of the animal and location should be attempted as soon as
possible.

3. When reliable reports of animals at large are received, staff should notify Agriculture and
Markets and make reasonable attempts to locate the owner of the escaped animal. If
observation of the animal shows no outward signs of disease, the owner will be allowed 48 hours to attempt to recapture his animal and return it to his premises.

4. If the animal at large is exhibiting signs of illness or disease, removal of the animal from the wild will be considered a priority and options for live capture will not be considered. To preserve tissues needed for pathological examination, head shots should be avoided if possible.

5. If the animal at large is not exhibiting signs of illness or disease, but the owner cannot be located, or if the owner is unwilling or unable to recapture the animal, DEC staff, Agriculture and Markets staff, or any law enforcement officer in the area will be authorized to destroy the at large animal.

6. If the at large animal is on private property, permission to access and collect the animal should be secured from the landowner or his agent via a signed written permission form or letter. If permission is denied and the animal exhibits signs of disease, staff shall notify Central Office for assistance in seeking legal authority for such entry and collection.

7. All animals killed will be removed from the site and submitted for necropsy by a wildlife pathologist or Agriculture and Markets veterinarian. Arrangements should be made to have the carcass immediately transported to a wildlife pathology unit, either the Wildlife Pathology Unit at the Wildlife Resources Center in Delmar or the Wildlife Services Unit at Cornell University in Ithaca. A copy of any and all investigative reports should accompany the carcass. Keeping the carcass cool will be required if there is a delay in transporting the specimen.

8. Handling procedure of the animal at large exhibiting clinical signs of illness or disease should follow those recommended by the NYS Department of Health protocol for rabies. Rabies is extremely rare in cervids but does occur. Additionally, all at large animals will be tested for rabies, chronic wasting disease or tuberculosis where applicable.

9. The following parties shall be kept apprised of plans and results of any response to an “At Large Cervid” situation: Regional Wildlife Manager, Regional Captain of Law Enforcement, Regional Director, Regional CP Specialist, Regional Agriculture & Markets veterinarian, Director of DFWMR, Chief Bureau of Wildlife, Director of Law Enforcement, Program Attorney for DFWMR, Press Officer, Wildlife Pathology Unit, Director of Animal Industry Agriculture & Markets. Primary responsibility for communications will lie with the Regional Wildlife Manager.
Recommended Disposal Options for Deer Carcasses and Parts

Placing deer carcasses and parts in a landfill is the best option for disposal of this waste and the preferred method in this plan. Deer waste can be generated by hunters directly, by hunters via deer processors and taxidermists, or by highway departments who pick up road-killed deer, but could also come from a targeted surveillance collection if CWD is found. Regulated sanitary landfills routinely cover their waste (at least once per day), minimizing the it is exposed to scavengers and the elements. Additionally, sanitary landfills are designed to contain any leachate with a system of liners, with this material ultimately going to a waste water treatment plant (although this type of treatment itself does not render prions inactive). Placing deer waste in a regulated sanitary landfill is nevertheless the safest, most practical, and most accessible means of disposal currently available to hunters, taxidermists, deer processors, and highway departments.

There are 26 sanitary landfills in New York, all regulated and permitted under NYCCR Part 360 (Figure 1). In the spring of 2014, we contacted all of the individual landfill operators to determine their willingness and ability to accept deer waste. In addition to discussing facility constraints and operating procedures, we also shared DEC’s CWD plan and our approach to more strongly encourage hunters to dispose of deer carcasses and parts in the waste stream. All the landfills indicated they would accept deer waste, although conditions varied under which they would do so (Table 1). Most of the facilities also indicated they would assist DEC with larger scale disposals (sharpshooting, staff collections, etc.) if necessary. About half of the state’s sanitary landfills are county operated, and half privately run.

Deer carcasses and parts can also be disposed of by incineration. It’s important to note however, that incineration by itself is not a complete disposal method; the resultant ash needs to be then deposited in a sanitary landfill, albeit in much reduced volume. There are ten industrial incineration facilities in the state regulated by NYSDEC (Figure 1). In the summer of 2014, we contacted all of these facilities to determine their willingness and ability to accept deer waste. Only two were willing and able to do so (Table 1).

Reasons for negative responses to incineration varied, but could be grouped into four categories:
1) Their contract with another regulatory entity (not DEC) precludes it;
2) Due to their size and composition, deer carcasses do not fully combust;
3) They are located in a residential area or otherwise concerned about negative reactions from people, including staff;
4) Small size of their facility limits the overall volume they can accept.

Due to the greater number of facilities, their accessibility, and intake volume that landfills afford as compared to industrial incineration facilities, we recommend landfilling as the preferred method of disposal for deer and deer parts in New York. Nothing in the preceding statement, however, would preclude us from using incineration as an additional disposal method in the future if we so choose.

Table 1. New York’s sanitary landfills and industrial incineration facilities, grouped by their policies on acceptance of deer waste (blue = will accept, brown = will not accept)

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Policy</th>
<th>Facility</th>
<th>County</th>
<th>Town</th>
<th>DEC Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary Landfill</td>
<td>Will take carcasses and parts; prior notice for large volume (62%)</td>
<td>Colonie Sanitary Landfill</td>
<td>Albany</td>
<td>Colonie</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinton County Landfill</td>
<td>Clinton</td>
<td>Black Brook</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broome County Landfill</td>
<td>Broome</td>
<td>Nanticoke</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Auburn Landfill No. 2</td>
<td>Cayuga</td>
<td>Auburn</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chenango County Landfill</td>
<td>Chenango</td>
<td>Pharsalia</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cortland Co. Westside Extension Landfill</td>
<td>Cortland</td>
<td>Solon</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Madison Co. Westside Extension Landfill</td>
<td>Madison</td>
<td>Lincoln</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemung County Sanitary Landfill</td>
<td>Chemung</td>
<td>Chemung</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seneca Meadows Landfill</td>
<td>Seneca</td>
<td>Seneca Falls</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bath Sanitary Landfill</td>
<td>Steuben</td>
<td>Bath</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chautauqua Landfill</td>
<td>Chautauqua</td>
<td>Ellery</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Modern Landfill</td>
<td>Niagara</td>
<td>Lewiston</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ontario County Sanitary Landfill</td>
<td>Ontario</td>
<td>Seneca</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allegany County Sanitary Landfill</td>
<td>Allegany</td>
<td>Angelica</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ava Landfill</td>
<td>Oneida</td>
<td>Ava</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hyland Landfill</td>
<td>Allegany</td>
<td>Angelica</td>
<td>9</td>
</tr>
<tr>
<td>Sanitary Landfills</td>
<td>Facility Name</td>
<td>County</td>
<td>Town</td>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>---------</td>
<td>------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Will take carcasses, parts, and large volume; prior notice needed for all (15%)</td>
<td>Franklin County Regional Landfill</td>
<td>Franklin</td>
<td>Constable</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fulton County Landfill</td>
<td>Fulton</td>
<td>Johnstown</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Devel. Authority of the North Country Landfill</td>
<td>Jefferson</td>
<td>Rodman</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bristol Hill Sanitary Landfill</td>
<td>Oswego</td>
<td>Volney</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High Acres Western Expansion Landfill</td>
<td>Monroe</td>
<td>Perinton</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mill Seat Sanitary Landfill</td>
<td>Monroe</td>
<td>Riga</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chaffee Landfill</td>
<td>Erie</td>
<td>Sardinia</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Allied Waste Niagara Falls Landfill</td>
<td>Niagara</td>
<td>Niagara</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will take carcasses and parts; paperwork needed for large volume (15%)</td>
<td>Albany Rapp Road Landfill</td>
<td>Albany</td>
<td>Albany</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Will take some carcasses and parts with prior notice; no large volume (4%)</td>
<td>Delaware County Solid Waste Management Facility</td>
<td>Delaware</td>
<td>Walton</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oswego County Energy Recovery Facility</td>
<td>Oswego</td>
<td>Volney</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Covanta Niagara, L. P.</td>
<td>Niagara</td>
<td>Niagara Falls</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Incinerators</td>
<td>Hempstead Resource Recovery Facility</td>
<td>Nassau</td>
<td>Hempstead</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Babylon Resource Recovery Facility</td>
<td>Suffolk</td>
<td>Babylon</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Covanta MacArthur Renewable Energy</td>
<td>Suffolk</td>
<td>Islip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Huntington Resource Recovery Facility</td>
<td>Suffolk</td>
<td>Huntington</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dutchess County Resource Recovery Facility</td>
<td>Dutchess</td>
<td>Poughkeepsie</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wheelabrator Westchester</td>
<td>Westchester</td>
<td>Peekskill</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wheelabrator Hudson Falls</td>
<td>Washington</td>
<td>Kingsbury</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Onondaga County Resource Recovery Facility</td>
<td>Onondaga</td>
<td>Onondaga</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix IV - CWD Surveillance Data from Northeast States

<table>
<thead>
<tr>
<th>STATE</th>
<th>ELK/MOOSE SAMPLED 2013</th>
<th>DEER POP EST</th>
<th>DEER HARVEST 2013</th>
<th>GOAL</th>
<th>CLINICAL SAMPLES</th>
<th>HUNTER HARVEST</th>
<th>ROADKILL</th>
<th>REGS for TAXIS/PROC</th>
<th>URINE BAN?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>0</td>
<td>0</td>
<td>13,000</td>
<td>300 in 2014</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Not likely</td>
</tr>
<tr>
<td>Delaware</td>
<td>583</td>
<td>14,263</td>
<td>same in future</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>No, education for hunters</td>
</tr>
<tr>
<td>Maine</td>
<td>504</td>
<td>11</td>
<td>200,000</td>
<td>24,795</td>
<td>same in future</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>News releases and hope to restrict in the future</td>
</tr>
<tr>
<td>Maryland</td>
<td>261</td>
<td>227,000</td>
<td>95,863</td>
<td>same in future</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y-taxis, N-processors</td>
<td>No. Focus on education.</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>6 (1 captive fallow, 2 WTD, 1 roadkill WTD, 2 illegal PA WTD)</td>
<td>1 (emaciated)</td>
<td>100,000</td>
<td>11,566</td>
<td>same in future</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>No internal discussions</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>405</td>
<td>113,300</td>
<td>12,540</td>
<td>400 annually and clinical suspects</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Hoping to ban. Publishing info.</td>
</tr>
<tr>
<td>New Jersey</td>
<td>514</td>
<td>105,535</td>
<td>51,595</td>
<td>same in future</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>No</td>
</tr>
<tr>
<td>New York</td>
<td>2597 (88 clinicals)</td>
<td>1</td>
<td>960,000 ?</td>
<td>same in future</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Possible</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>5114</td>
<td>73 elk</td>
<td>352,920</td>
<td>same in future</td>
<td>Y</td>
<td>Y (4105)</td>
<td>Y (930)</td>
<td>N</td>
<td>Yes, regulated in DMAs</td>
</tr>
<tr>
<td>Quebec</td>
<td>1130</td>
<td>16 moose (clinical)</td>
<td>400,000</td>
<td>61,067</td>
<td>not sure - funding</td>
<td>Y (12)</td>
<td>Y (733)</td>
<td>Y (385)</td>
<td>N but could</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>178</td>
<td>15,000</td>
<td>2458</td>
<td>same in future</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Under consideration only</td>
</tr>
<tr>
<td>Vermont</td>
<td>8</td>
<td>1</td>
<td>135,000</td>
<td>14,000</td>
<td>same in future</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Oct. 2014 - planning to ban natural deer urine</td>
</tr>
<tr>
<td>Virginia</td>
<td>406</td>
<td>945,000</td>
<td>244,440</td>
<td>Y</td>
<td>Y (CA)</td>
<td>Y (CA)</td>
<td>Y</td>
<td>2015 plan for urine ban, education for hunters now</td>
<td></td>
</tr>
<tr>
<td>STATE</td>
<td>CAPTIVE CERVIDS?</td>
<td># CAPTIVES</td>
<td>SHOOTING OPS</td>
<td>CAPTIVE IMPORTS?</td>
<td>TESTING CAPTIVES</td>
<td>AGENCY REG CAPTIVES</td>
<td></td>
<td></td>
<td></td>
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<td>-------------</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>Y</td>
<td>N (allowed, but 12 none exist)</td>
<td>N</td>
<td>No</td>
<td>FW for native, Ag for non-natives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delaware</td>
<td>Y</td>
<td>7 (3WTD, 1sika, 2 fallow, 1 red deer)</td>
<td>N</td>
<td>N</td>
<td>Test all that die or killed (&gt;12 mon) or show clinical signs Dept. of Ag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maine</td>
<td>Y</td>
<td>74 farms</td>
<td>Y</td>
<td>Y (except WTD)</td>
<td>Test any animals that die FW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maryland</td>
<td>Y</td>
<td>11 with 150 animals</td>
<td>N</td>
<td>N</td>
<td>Test all deer that die or are killed FW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Y</td>
<td>10 (no WTD)</td>
<td>N</td>
<td>N</td>
<td>Test all that die or killed FW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td>Y</td>
<td>16 farms</td>
<td>N (1 grandfathered)</td>
<td>Voluntary herd certification</td>
<td>FW for native, Ag for non-natives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td>Y</td>
<td>14 Y (archery only)</td>
<td>N</td>
<td>No, owners report suspicious mortality Wildlife</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Y</td>
<td>279 in 2012</td>
<td>Y (at least 44)</td>
<td>Cert. - Morts &gt;12 mon., Monitored - 10% up to 30</td>
<td>FW and Ag for WTD, Ag for all others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Y</td>
<td>1100 Y</td>
<td>N</td>
<td>2,200 of 25,000 tested 2013 DOA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quebec</td>
<td>Y</td>
<td>170 with 9477 cervids</td>
<td>Y</td>
<td>All slaughterhouse and voluntary program but DOA tests</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhode Island</td>
<td>N</td>
<td>0</td>
<td>N</td>
<td>None exist FW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vermont</td>
<td>Y</td>
<td>16 farms (2 reg by FW, 14 by Dept of Ag)</td>
<td>Y (non-native)</td>
<td>Test all harvested susceptible spp. FW and Dept. of Ag</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virginia</td>
<td>Y</td>
<td>16 (no farms, mostly grandfathered, 3 active)</td>
<td>N</td>
<td>Samples from all captive cervids FW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>