

**A SURVEILLANCE AND RESPONSE PLAN  
FOR CHRONIC WASTING DISEASE  
IN BRITISH COLUMBIA**

by

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SIGNATURE PAGE

**A Surveillance and Response Plan for Chronic Wasting Disease in  
British Columbia**

**Prepared by the BC Wildlife Health Program**

**June 2019**

Approved by:

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June 12, 2019

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## EXECUTIVE SUMMARY

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### BACKGROUND

Chronic wasting disease (CWD) is an infectious and degenerative disease of the central nervous system that affects species of the deer family (cervids). CWD belongs to a family of diseases called transmissible spongiform encephalopathies (TSEs). TSEs are caused by abnormal proteins called “prions”, and include diseases such as bovine spongiform encephalopathy (i.e. “mad cow disease”), scrapie in sheep and goats, and Creutzfeldt-Jakob disease in humans. These diseases rarely cross species and there is no direct evidence that CWD is transmissible to humans. In later stages CWD results in weight loss, behavioral changes, drooling and poor coordination. CWD is fatal in all cases. Although many details about the disease remain unknown, much has been learned through research and experience over the last 3 decades.

The origin of CWD is unknown. The disease was first detected in captive mule deer (*Odocoileus hemionus*) in a Colorado research facility in 1967, and in the free-ranging mule deer population in the 1980s. It has since been confirmed in captive and free-ranging elk (*Cervus Canadensis*), white-tailed deer (*Odocoileus virginianus*), mule deer, and moose (*Alces alces*) in 24 US States and 2 Canadian provinces (Alberta, and Saskatchewan), captive elk in South Korea, captive red deer (*Cervus elaphus*) in Quebec, free-ranging moose, reindeer (*Rangifer tarandus*) and red deer in Norway and free-ranging moose in Sweden and Finland. CWD has not yet been detected in British Columbia (B.C.).

Economic impacts of CWD are difficult to measure, but could be far-reaching for both farmed and free-ranging cervid resources in B.C. A decline in sales of hunting licences, sporting goods, lodging and tourism related activities following CWD introduction in free-ranging populations has been documented in other jurisdictions. The costs and resources required for provincial and federal agencies to deliver response activities are significant.

### CWD SURVEILLANCE AND RESPONSE PLAN

The development and implementation of the “Surveillance and Response Plan for Chronic Wasting Disease in British Columbia” (The Plan) is a high priority for the provincial Wildlife Health Program of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD). The Plan addresses prevention, surveillance and early response in the event of a positive diagnosis, providing a framework for the B.C. Wildlife Health Program to work with staff, stakeholders and governments (other ministries, federal government, First Nations, advisory committee, regional working groups and others). The purpose of the Plan is to: present the risk of CWD for B.C.; delineate operational roles in CWD prevention,

surveillance and response; guide implementation of strategies and actions; and identify and respond to local and provincial concerns. The Plan will be dynamic and responsive as new information becomes available.

The most significant risk factor for the entry of CWD to B.C. is human importation of an infected cervid carcass or tissues, or contaminated plant material, such as hay or grain seeds, from an area affected by the disease. These materials can shed infectious prions into the environment (soil) where they persist, resistant to any practical method of destruction, and have the potential to infect healthy cervids that come into contact with them. The closest cases of CWD to B.C. occur in South Central Alberta as well as the recent discovery of CWD in the North Central counties of Montana. CWD surveillance in Alberta wildlife shows the disease moving westward towards the BC border.

Surveillance is a critical component of disease detection. Since 2001, the B.C. Wildlife Health Program has conducted surveillance and outreach activities in target areas of the province, and has assessed potential risks and methods of CWD entry into B.C. Outreach has focused on the hunting public and First Nations communities to increase awareness and promote surveillance.

CWD presentations are delivered by Wildlife Health Program staff to various audiences, including the British Columbia Wildlife Federation (BCWF), First Nations and staff. Outreach materials and online resources are updated and distributed annually. Research extension and other communications are developed as needed to disseminate new research findings and to address concerns about human health risks.

In the event of a positive diagnosis of CWD in a free-ranging cervid in B.C., the Provincial Wildlife Veterinarian will take the lead role in coordinating the response. The first step will be to confirm the positive diagnosis. Once the positive diagnosis is confirmed, the Wildlife Veterinarian will communicate and consult widely before initiating targeted sampling of cervids within the area of concern to confirm species affected, spatial distribution and disease prevalence (proportion of animals affected within a population). The CWD Advisory Committee and regional working groups will advise on response efforts based on geographical area and species of concern, and will assist in the dissemination of information as appropriate. Response efforts will be revised as new information becomes available. Eradication will be the goal. If eradication is not possible, efforts will refocus on preventing the spread of CWD into new areas and managing cervid populations to maintain low disease prevalence.

## CONCLUSION

CWD is considered to be the most important free-ranging cervid management issue in North America. The disease can reduce cervid populations, has negative socio-economic implications and potential public health concerns. Experts recommend comprehensive regional and national strategies for CWD surveillance and management with particular emphasis for CWD-free jurisdictions to focus on prevention. Additional research is also critical to improve understanding of the disease and will support decision making and management actions. Currently there are very limited options available to effectively mitigate the impacts of CWD however if CWD reaches B.C. the circumstances here may be very different relative to the experiences of other jurisdictions.

## 1.0 INTRODUCTION

### 1.1 Chronic Wasting Disease

Chronic wasting disease (CWD) is a fatal infectious disease of cervids (species of the deer family). It is of increasing importance to wildlife managers, public health officials, agriculture, national and international trade, and communities that depend on a healthy and sustainable wildlife resource.

CWD belongs to a group of neurologic diseases known as transmissible spongiform encephalopathies (TSEs), which include bovine spongiform encephalopathy (BSE) or “mad cow disease”, scrapie in domestic sheep and goats, and Creutzfeld-Jacob disease in humans. All TSEs are caused by altered cellular proteins called “prions.” Prions accumulate in all tissues, but appear to concentrate in the central nervous system and lymphatic tissue. TSEs tend to be species-specific, meaning they are not readily transmitted from one species to another; however, cross-species transmission of CWD has been documented in research settings (Race et al 2014, Kurt and Sigurdson 2015, Moore et al 2017, Czub et al 2017).

After initial infection, signs of CWD may not become apparent for months to years but animals will shed the infectious agent throughout the course of the disease. Early signs of CWD include gradual weight loss and changes in behavior. In later stages drooling and difficulty swallowing, increased drinking and urination, depression, muscle trembling and poor coordination leading to stumbling may be seen. The long incubation and lack of reliable diagnostic tools in live animals makes this disease difficult to detect early. The disease is fatal in all cases and there are no known vaccines or treatments for CWD.

Infected animals shed prions through saliva, urine and feces. Unlike other TSEs, CWD can be transmitted through direct contact with infected animals or through the environment (soil) and shared resources (water, food) contaminated with CWD prions. Decomposing infected carcasses or body parts can also deposit prions in the environment. Prions have been shown to bind to soil particles and to the surface of plants, contributing to their persistence in the environment. Prions can also be uptaken by plants and infect animals that consume the plant material. Infectivity of prions in the environment can persist for years, even in the absence of infected animals. Without a practical method to test soils and plants, the potential for disease exposure from a contaminated environment presents a complex challenge for monitoring and controlling new introductions and spread of the disease.

The diagnosis of CWD can be made only through microscopic examination of the brain stem (obex) and lymphoid tissues of the head (tonsils and lymph nodes) to visualize the abnormal prion accumulations. Live animal testing, which involves the microscopic examination

of rectal or tonsil lymphoid tissue biopsies, is less reliable and has limited management applications.

## 1.2 History and Distribution of CWD

The origin of CWD is unknown. The disease was first detected in captive mule deer in a Colorado research facility in 1967, and determined to be a TSE in 1978. Between 1981 and 1990, CWD was diagnosed in free-ranging populations of elk, mule deer, and white-tailed deer in areas of Colorado and Wyoming. The first diagnosis of CWD in Canada was a retrospective diagnosis in 1981 of a mule deer that had died at the Toronto Zoo in 1978.

In 1996, Canada had its first positive diagnosis of CWD, in a game-farmed elk in Saskatchewan. In response, the province of Saskatchewan initiated a surveillance program in free-ranging deer through the submission of hunter samples and clinical suspects. The first report of CWD in a free-ranging mule deer in Saskatchewan occurred in 2000. Between 1997 and 2017, Saskatchewan tested 46,449 free-ranging cervids, of which 575 have been confirmed CWD positive. The majority of CWD cases in free-ranging cervids have been in mule deer (79%), followed by white-tailed deer (19%), elk (2%) and moose (0.2%). Hunter samples from the 2017 hunting season had a disease prevalence of 10.3% (78 of 754 samples). The Saskatchewan management response was to reduce the density of free-ranging deer herds in specific areas, reduce artificial congregations of deer in high-risk areas, and sample to confirm the number and distribution of infected deer.

In 2002, CWD was diagnosed in two elk farms and one white-tailed deer farm in Alberta. All animals on the three farms were destroyed and tested, but no additional cases were identified. Sampling of free-ranging deer in the area of the infected game-farms was conducted by provincial wildlife authorities in the same year, and no positive wild cervids were identified in the surrounding areas. However, CWD was diagnosed for the first time in a free-ranging hunter-harvested deer in Alberta in September of 2005. The Alberta government responded with a rapid cull and salvage operation to reduce deer densities and increase surveillance. Unfortunately, mitigation efforts since 2008 have not had the same level of political and public support. From 2005 to 2017, Alberta has tested over 60,000 free-ranging cervids, and has confirmed CWD in 919 free-ranging cervids. Hunter samples from the 2017/18 hunting season had a disease prevalence of 5.2% (327 of 6340 samples), primarily in male mule deer. In 2013, Alberta detected the first case of CWD in moose in Canada from an area endemic for CWD and a high density mule deer population. The first recorded case of CWD in a free-ranging elk in Alberta occurred in 2016.

A myriad of factors, both natural and anthropogenic, have contributed to the spread and increase in disease prevalence of CWD in North America (Miller and Fischer 2016). One such

factor that has contributed significantly to the spread of this disease has been the movement of live infected animals, and many Canadian cervid game-farms have been affected in this way. Since 2000, the CFIA has destroyed thousands of farmed cervids including animals on infected farms and trace-out animals. A federal disease control program was initiated in 2000 and CWD became reportable under the *Health of Animals Regulation* in 2001. B.C. does not farm native cervid species and therefore has not been impacted by game farming practices. B.C. does, however, farm a small number of fallow deer (*Dama dama*) and reindeer.

As of September 2018, CWD has been confirmed in captive and free-ranging elk, white-tailed deer, mule deer and moose in 24 US States, 2 Canadian provinces (Alberta, Saskatchewan), captive red deer in Quebec, captive elk in South Korea, free-ranging moose, reindeer and red deer in Norway and free-ranging moose in Sweden and Finland. CWD is currently recognized as endemic in free-ranging cervid populations in parts of Alberta and Saskatchewan. CWD has not been recognized in fallow deer in a natural setting. In Europe, the first cases of CWD were recognized in free-ranging reindeer and moose in Norway in 2016. The finding of CWD in reindeer has implications on the conservation and disease susceptibility of North American caribou, as reindeer and caribou are considered to be the same species.

B.C. is considered to be at low risk for having CWD. The Province has never permitted captive farming of native cervid species, and has prohibited the import of live native cervid species into the province since 1991. Steps have also been taken to reduce the risk of CWD introduction via infected cervid tissues or biological material making their way into the environment. In 2010, B.C. enacted a regulation prohibiting the import of high risk tissues (head, hide, hoof, spinal column, internal organ or mammary glands) from cervids harvested outside the province. In 2018, a regulation was introduced that prohibits the use of any cervid part or derivative (i.e. scents) sourced from outside of B.C., for the purpose of hunting or trapping. The spread of CWD through natural animal movement is relatively slow, but the import of tissues or materials containing infectious prions is a real and imminent threat.

Although CWD is not known to occur in this province, it has been recognized in an increasing number of jurisdictions across the continent. See current CWD distribution from the US Geological Survey National Wildlife Health Centre (Appendix 1). The practicalities of managing wildlife diseases in general, and the unique characteristics of CWD specifically, make the prospects for complete control and eradication unlikely in any region where it has been established in a free-ranging population, New York being the only exception with an aggressive and rapid response to spill over from an affected captive herd. The ongoing challenges of managing this disease in wildlife populations make it prudent for B.C. to proactively manage for CWD. This Plan is a framework for a complete and concise surveillance and response strategy to proactively prevent and/or mitigate the occurrence and negative impacts

of CWD in B.C.

## 1.2 CWD and Human Health

Although prion diseases are rarely transmitted between species, research has demonstrated that CWD can be transmitted to non-humans primates, among other mammal species, under certain conditions. The findings, however, have been inconsistent. The Canadian Food Inspection Agency (CFIA) documented CWD transmission to macaque monkeys by oral administration of CWD positive deer muscle and brain tissue (Czub et al 2017). In contrast, the findings of Race et al (2018) did not demonstrate disease transmission to macaque monkeys by similar means of exposure. There is still no direct evidence that CWD can infect humans, and there have been no reported cases of human CWD. As a precautionary measure the World Health Organization, Health Canada, and other health authorities strongly recommend that all products from animals suspected or known to be infected with a prion disease not be used for human consumption. Hunters that harvest cervids from areas where CWD has been reported are encouraged to take precautions when handling carcasses. Hunters are asked to avoid handling the brain, spinal cord, eyes, tonsils, spleen or lymph nodes and are asked to leave these high risk tissues at the kill site. Hunters should have the animal tested (this is mandatory in most CWD affected areas) and to wait for a negative result before consuming any part of the animal. In B.C., First Nations communities that engage in traditional harvest practices in neighbouring jurisdictions and the use of hunted cervids tissue (such as brain for tanning) may be subject to unique risks. Outreach and awareness in First Nations communities is therefore essential to ensure safe harvest, handling, and consumption practices.

## 1.4 Cervid Species in British Columbia

### 1.4.1 Free-Ranging Cervids

The management of free-ranging cervids in B.C. is under the jurisdiction of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD). Free-ranging cervids are found in all of B.C.'s nine wildlife management regions and include Rocky Mountain elk, Roosevelt elk, moose, mule deer, black-tailed deer, white-tailed deer, and woodland caribou.

Ecosystem changes are believed to have significant effects on wildlife populations through, among others, changes in immunity and the resulting ability of individual animals to overcome disease. Today, the major challenges facing wildlife managers are related to ever-increasing human activities that affect the quality, fragmentation, and availability of habitat; particularly climate change, urban development, forestry, agriculture, hydroelectric projects, and

mining. The cumulative impacts of these changes to the landscape present unique stressors to ecosystems and wildlife populations.

The wide variety and generally plentiful populations of free-ranging cervids in B.C. are a highly valued natural resource. Unfortunately, some species and populations are in decline - many herds of woodland caribou, for example, are now considered endangered or threatened. Hunters play an important role in the management of cervid populations through regulated harvests and rely on healthy wild cervids as an important food source. First Nations rely on this resource for food as well as for cultural and ceremonial purposes. Wildlife viewing continues to be a growing and important sector of the tourism industry. Consumptive and non-consumptive users of cervids must have confidence in the general health of B.C.'s free-ranging cervid populations. The introduction of CWD to B.C. cervids would seriously jeopardize the province's ability to manage these populations, and would negatively affect communities and economies that rely on the resource.

#### 1.4.2 Game-farmed Cervids

Game-farming in B.C. was approved for fallow deer (and bison) in May 1987 and reindeer in February 1988, and remains restricted to these species. No native cervids are farmed in B.C. For the purposes of this Plan, only fallow deer and reindeer will be discussed. Bison are not part of the cervid family, and CWD transmission has not been documented in this species. As of October 2018, a single reindeer farm (with 11 animals originally from Ontario) and 10 fallow deer farms (with a total of 442 animals) remain in operation in B.C. The B.C. game-farming industry has experienced substantial declines over the last couple of decades. In 1997 the B.C. inventory for fallow deer was 15,000 animals on 64 farms and 200 reindeer on 19 farms.

B.C. has strict regulations governing licensing, housing, transport, slaughter, and import and export of game-farmed cervids. Management of game-farms in B.C. is under the jurisdiction of the B.C. Ministry of Agriculture, and game farms are required to comply with regulations for domestic farm animals such as those outlined in the *Livestock Act*, the *Animal Disease Control Act*, the *Waste Management Act*, and the *Meat Inspection Act*. Game-farmed animals are not considered wildlife unless they are at large for more than 30 days, or are escaped animals posing an immediate threat to property, or to other animals, humans, or wildlife. Animals at large then fall under the jurisdiction of FLNRORD under the *Wildlife Act*.

The requirements to acquire a license for farming fallow deer or reindeer in B.C. include an application to the Ministry of Agriculture that provides details of legal land location and title, number of animals projected, breeding stock supplier and building plans and design for the facility, including fencing type and manufacturer. The specifics are reviewed in accordance with government regulations and policies, and a license is granted following a successful site

inspection. The license is renewed annually, provided that annual inventory and game-farm transaction reports are submitted.

It is the responsibility of licensees to obtain permission and the appropriate approvals from both the federal and provincial governing bodies before transporting cervids across a provincial border. All provincial import restrictions are under the jurisdiction of the provincial ministries of Agriculture and FLNRORD and may differ from those of the CFIA. The CFIA does not distinguish between native and non-native cervids, and may permit a producer to transport elk from Alberta to B.C. However, FLNRORD prohibits transport of all live native cervids into the province and will not issue a permit for such shipments.

All farmed/captive cervids moved in Canada (either intra- or inter-provincially) require a CFIA Cervidae Movement Permit, which is issued only after an accredited veterinary certification of a negative status for tuberculosis and brucellosis has been provided. In addition, the herd must not be under investigation or quarantine for CWD. For cervids moving directly to inspected slaughter, a Cervidae Movement Permit is still required but the requirement for negative TB and brucellosis status is waived. To import cervids into Canada from another country, the licensee must obtain a federal import certificate that meets the official certification requirement of the importing country (Canada).

Transport of game-farmed cervids between farms or to slaughter facilities within B.C. currently does not require a provincial permit. The buyers and sellers are required to have valid game-farm licenses, and the animals must be identified with an approved B.C. registration ear tag. The movement must also be recorded on a Transaction Report. The movement of zoo or wildlife park cervids onto game-farms is not permitted unless special permission is obtained from the Ministry of Agriculture.

#### 1.4.3 Management of CWD in B.C. Game-farmed Cervids

There is currently no mandatory testing program for cervids in B.C. The CFIA has developed the Canadian Chronic Wasting Disease Voluntary Herd Certification Program (VHCP) for interested producers across Canada, the objective of which is to provide owners with an elite herd status with respect to CWD. The level at which a herd is certified depends on the length of time that the herd has been participating in the program. By meeting the requirements of registration to the VHCP producers are eligible for compensation for animals ordered destroyed as well as a full disease investigation conducted by the CFIA.

Any premises on which cervids are kept are eligible to apply for entry into the program, and all cervids on the premise must be enrolled in the program. Compliant producers' herds advance in status each year until they reach the fully certified level. Non-compliant producers either fail to advance to the next level or their certification is suspended. This program requires

that a regional administrator and status assessor be appointed for a province. In Alberta and Yukon, the provincial Ministry of Agriculture and Territorial government have taken on this role, respectively. The Canadian Sheep Federation has assumed this responsibility for Saskatchewan, Manitoba, Ontario and Quebec. B.C. and the Atlantic provinces currently have no farms participating in the VHCP.

## 1.5 Potential Economic Effects of CWD

### 1.5.1 Effects on the Free-ranging Wildlife Resource and Economies

A CWD outbreak would have far-reaching impacts on B.C.'s free-ranging cervid resources, with implications at the international, national, provincial, municipal, local, and personal levels. The revenue generated from wildlife-associated recreation is important to many stakeholders, communities and conservation efforts. Surveys and questionnaires used to evaluate the effect of CWD on hunting practices indicated that hunter confidence drops when infectious diseases such as CWD are diagnosed in a free-ranging cervid population of the respective jurisdiction. In the US, economic losses due to declines in hunting-related activities (e.g. license and sporting goods sales, lodging, tourism) have been documented to occur after a CWD diagnosis in an area (Bishop 2010). In addition to these short-term effects, the long term effects of a CWD epidemic may include population declines in some cervid species (DeVivo 2015, Edmunds et al 2016). In any event, the costs and resources required for provincial and federal agencies to deliver response activities would be significant.

### 1.5.2 Effects on the Agricultural Sector

CWD has gained international attention, in part because it is a prion disease related to BSE. However, accurately determining the economic impacts of CWD on the Canadian game-farming industry is confounded by several other concurrent factors. Drought, bovine tuberculosis, BSE-related international trade bans and restrictions between 2003 and 2005, and bans on the export of antler velvet to Korea, all negatively impacted Canadian game-farming. While farming in some areas declined dramatically, other farms successfully diversified to accommodate changing markets.

Potential restrictions to the movement and import of plant material (as applied by Norway) present implications to agriculture and range management practices and economies. The sourcing of hay for livestock or grain seeds for crops may be impacted as these products, if contaminated with prions, have the potential to introduce the disease to new areas.

## 2.0 OVERVIEW OF THE SURVEILLANCE AND RESPONSE PLAN

The B.C. CWD Surveillance and Response Plan (the Plan) follows recommendations and guidelines from other CWD management plans, academic literature, risk assessments and technical reports, with special attention paid to the Montana CWD Management Plan (2018) and the Association of Fish and Wildlife Agencies (AFWA) Technical Report on Best Management Practices for CWD (Gillin and Mawdsley 2018). The Plan will be dynamic and responsive as new information becomes available and will be updated every 3 years to include new research findings and current disease distribution.

The Plan addresses prevention, surveillance and early response in the event of a positive diagnosis, providing a framework for the B.C. Wildlife Health Program to work with staff, stakeholders and governments (other ministries, federal government, First Nations, advisory committee, regional working groups and others). The purpose of the Plan is to: present the current risk of CWD to B.C.; delineate operational roles in CWD prevention, surveillance and response; guide the implementation of strategies and actions; and identify and respond to local and provincial concerns.

### 2.1 Objectives of the Plan

The objectives of the Plan are to:

1. Guide the B.C. CWD Advisory Committee and regional working groups in prevention, surveillance and mitigation planning;
2. Provide strategies and actions to prevent disease entry;
3. Provide strategies and actions for surveillance and early detection;
4. Provide strategies and actions for outreach to increase awareness;
5. Provide strategies and actions for response to a positive CWD diagnosis;
6. Provide a plan for communications in the event of a positive CWD diagnosis; and
7. Provide budget requirements for Plan delivery.

### 2.2 Risk Evaluation

Recent research has contributed to a better understanding of transmission methods and the susceptibility of different species to CWD. Analysis of the risk of CWD in B.C. is based on the current understanding of CWD and will be reviewed and adapted as scientific understanding continues to grow. Several factors that influence the risk of exposure and disease transmission include:

- High density free-ranging cervid populations.
- Presence of native cervid game-farms.
- Proximity to CWD-positive free-ranging or game-farmed animals.
- Proximity to land with a history of CWD-positive animals.
- Import of potentially infected cervids or cervid parts from CWD affected areas.
- Use of cervid attractants or repellants containing cervid biological products.
- Import of potentially contaminated plant material (hay, grain, seeds) from CWD affected areas.
- Artificial aggregation of cervids through baiting, supplemental feeding, or other human-related activity.
- Low abundance of natural predators.
- Presence of contiguous habitat or migration corridors used by cervids.

B.C. is currently considered to be free of CWD and despite the continued spread; a qualitative analysis of the current risks in B.C. suggests a low risk for presence of the disease. There have been no positive cases since surveillance began in 2001, although statistical confidence is relatively low because of limited sample size. Some of the above-mentioned risk factors are present in B.C. and a detailed explanation of the current B.C. context is provided here:

1. High density free-ranging cervid populations

- The distribution and density of free-ranging cervid varies annually and seasonally. For example, winters with deep snow can concentrate deer, elk and moose in higher densities especially if Ministry of Agriculture cultural crops are available.

2. Presence of native cervid game-farms

- Native cervids are not game-farmed in B.C. and strict regulations control the movement of game-farmed animals into and out of B.C. to prevent introduction and transmission of cervid diseases. Although B.C. game-farmers do not routinely test for CWD, the few farms operating with captive reindeer (1) and fallow deer (10) are considered a low risk to native wildlife. Game-farmed cervids (fallow deer and reindeer) are rarely fed processed feeds, and the rendering of cervids is prohibited in B.C. Provincial Ministry of Agriculture culture regulations for game-farm facilities include adequate fencing standards to prevent escape; however, double-fencing is not currently a requirement and fence-line contact between game-farmed cervids and free-ranging native cervids is probable. CWD has never

been reported in fallow deer, and experimental transmission studies in fallow deer have been unsuccessful. CWD was recently reported in European reindeer, but has not been reported in North American caribou.

- Native cervid game-farms are present in Alberta and Montana. Some native cervid farms in Alberta are in close proximity to parts of the BC Peace Region. To date Alberta has detected CWD on 6 cervid farms, most recently in January 2018 on an elk farm. All cervids over one year of age that die on Alberta farms are tested for CWD; nevertheless, there is still the risk of disease transmission with escapes or fence-line contact.

3. Proximity to CWD-positive free-ranging or game-farmed animals.

- The current level of risk of CWD introduction to B.C. as a result of natural animal movement is considered low despite the continued spread of the disease in free-ranging cervids in Alberta and the new detection of CWD in Montana. Montana detected its first CWD-positive cases in free-ranging mule deer and white-tailed deer during surveillance efforts in October 2017 in the south-central part of the state. A hunter harvested mule deer also tested positive for CWD in the north central part of the Montana, approximately 50 kms from the US-Alberta border. Surveillance in 2018 has revealed several additional CWD positive cases from hunter samples. 26 positive cases in free-ranging cervids have been reported as of December 2018, most from the North Central region adjacent to the Alberta border. Montana has now reported CWD-positive areas in the central-north, central-south and western parts of the state and it is expected that new cases from new areas will continue to emerge. Although the risk of CWD introduction through natural animal movement is low, the risk of a CWD infected cervid carcass or tissue harvested from an affected area and brought back to B.C. is high. CWD has not been reported in any free-ranging cervids from Yukon, Washington State or Idaho.

4. Proximity to land with a history of CWD-positive animals

- After a CWD-positive cervid farm is depopulated, it is likely that the environment (soil) will remain contaminated with infectious prions from the urine and feces of infected animals for several years. New environments may also become contaminated by plant materials (grain seeds, hay) that contain infectious prions; even if there have been no CWD-positive animals present. Presumably, jurisdictions will have records and location information for farm lands affected by CWD so that steps can be taken to contain the infectious agents. However, there

are few, if any, procedures in place to track the movement of contaminated plant material and no practical way to test plant material or environments for the presence of prions.

5. Import of potentially infected cervids or cervid parts from CWD affected areas.

- Importation of live native cervid species into B.C. has been prohibited since 1991. CWD was classified by the CFIA in 2001 as a reportable disease. This designation prohibits the import of native cervids to Canada from any US state with a history of CWD in its free-ranging population.
- There has been an increase in the number of B.C. hunters returning with CWD positive meat harvested in areas affected with the disease. B.C. regulations prohibit the import of high risk tissues (brain, spinal cord, organs, lymph nodes) into the province and require hunters to process the animals before returning to B.C. and returning with only the meat (de-boned). Reports to the B.C. Wildlife Health Program however, indicate that carcasses continue to be unlawfully transported into the province and dumped in the environment. Insufficient outreach and education regarding the risk of tissues or materials containing prions has left B.C. vulnerable to the CWD prions making their way into the environment. First Nations communities may be at particular risk due to cultural uses of high risk tissues and traditions of hunting in neighboring jurisdictions. The resiliency of prions and the potential transmission pathways of CWD complicate management of the disease. An infected animal will shed prions through saliva, urine, feces and infected carcasses. Prions will persist in the environment for several years, possibly decades. The disease is transmitted through direct contact between animals as well as contact with contaminated environments and shared resources. Prions are extremely resistant to heat or any practical decontamination method, and are essentially impossible to remove once they have been introduced into an environment. Contaminated environments can be a source of infection to healthy animals in the absence of any sick animals.
- Elk were translocated to B.C. in the early 1900s from Elk Island National Park in Alberta. A CWD surveillance program initiated by Parks Canada in 1996 for the Elk Island herd has found no evidence of CWD in this population. Other known imports of live cervids into B.C. include an illegal live shipment of captive-bred elk from Alberta to a B.C. slaughterhouse – all animals were seized and tested negative for CWD – and the occasional import of live animals into permanent captive display at zoos within BC. The temporary import and export of live

cervids for possession for research purposes or for use in the movie industry has occurred infrequently. Translocations of woodland caribou have been carried out within B.C. for specific herd recovery purposes. Recent trials of short term translocations of urban mule deer have occurred in the East Kootenay region to evaluate the method as a mitigation and recovery tool. FLNRORD has existing Translocation Policy and Procedures to assist with risk analysis and mitigation. Some rehabilitation facilities in B.C. rear orphaned cervids and, at 6 months or more of age, release them to the wild. The CFIA Cervidae Movement Permit Policy controls the movements of cervids across the country.

6. Use of cervid attractants or repellants containing cervid biological products.

- Commercially available attractants and repellants containing biological material from cervids pose a risk of introduction. B.C. enacted a new regulation in 2018 that prohibits the use of any part or derivative of a cervid sourced from outside B.C., for the purpose of hunting or trapping. Prions can be present in urine or other biological material of an infected animal and could be a potential source of environmental contamination. These products are produced on captive cervid farms for hunting and pest control; unfortunately the industry is not well regulated in terms of where the material comes from and what it contains. There has yet to be a documented link that these material have been responsible for a new introduction, however there is no way to prove that this material is risk-free, so it is prudent to avoid their use in B.C. These products are also banned in Manitoba, Ontario, Yukon, and several US jurisdictions.

7. Import of potentially contaminated plant material (hay, grain, seeds) from CWD affected areas.

- Research has demonstrated that plants can retain, uptake and bind to prions, and those prions were shown to be infective for several weeks (Pritzkow et al 2015). This has yet to be documented on the land, but the risk of potentially contaminated plant material cannot be ruled out as potential a source of CWD into new areas. With the unprecedented wildfires and the subsequent destruction of range land in B.C. in recent years, there has been a need to import plant material (i.e. feed sources) to support livestock. Feed that is used in supplemental feeding of wildlife also presents a risk. If this material comes from an area affected by CWD it could contaminate the environment with prions and become a source of disease introduction to B.C. Norway has not banned the import of hay from CWD endemic areas ion North America.

8. Artificial aggregation of cervids through baiting, supplemental feeding, or other human-related activity.

- Any activity that encourages the artificial aggregation of cervids and leads to an increase in animal density could increase the opportunity for disease transmission through direct contact between animals. When CWD is present in a population, the aggregation of animals may also lead increased environmental contamination or disease “hot spots” and potential exposure through contact with a shared food, water and the environment. Clear policy and regulatory tools are recommended to reduce the potential risks that baiting, supplemental feeding or other human-related activities present to cervid populations.

9. Low abundance of natural predators.

- B.C. has a full suite of native predators, perhaps more than any other jurisdiction. In general, the low abundance of natural predators would not be an issue in B.C., although specific localized areas, such as urban centers, maybe see reduction in predator density.

10. Presence of contiguous habitat or migration corridors used by cervids.

- The Rocky Mountains may act as a geographic barrier to cervid movement between B.C. and the CWD endemic areas of Alberta in the central eastern part of that province. Geographic barriers such as mountains are not present between the B.C. Peace Region and Alberta. Deer and elk theoretically cross provincial and international boundaries in localized migrations. In general cervids do not disperse or migrate over long distances (with the exception of some caribou populations) however some studies in the Peace and Kootenay regions have documented mule deer movement into Alberta. Research is needed to better understand how cervid movement patterns can affect CWD transmission and spread. There is a particular knowledge gap for cervid movements from CWD endemic areas in Alberta and Montana towards the direction of B.C.

### 2.3 Advisory Committee and Working Groups

A positive diagnosis of CWD in B.C. would affect human health, wildlife conservation, game-farming, Ministry of Agriculture, First Nations and hunting economies and lifestyles. A response plan must therefore be developed with the collaboration and integration of these relevant disciplines, programs, policies and perspectives.

The Provincial CWD Advisory Committee (formerly the CWD Technical Group) was formed in 2006 and is chaired by the Provincial Wildlife Veterinarian. The objectives of the committee are to: 1) provide input on the Plan, 2) identify specific responsibilities and roles of each agency or group in prevention, surveillance and response, 3) aid in coordination and implementation of activities and dissemination of information and 4) support the B.C. Wildlife Health Program in delivery of the Plan.

Program and research updates have been distributed to the committee on an annual basis however engagement has been limited in recent years. A newly formed Provincial CWD Advisory Committee met face to face in May 2019. Membership has been updated to include:

- B.C. Wildlife Health Program, FLNRORD
- Associated Director of Wildlife, FLNRORD
- Provincial Ungulate Biologist, FLNRORD
- Policy and Regulations Analyst, FLNRORD
- Section Head, Fish and Wildlife Peace Region, FLNRORD
- Section Head, Fish and Wildlife Kootenay Region, FLNRORD
- Range Program, FLNRORD
- Agriculture Wildlife Program, Ministry of Agriculture (MAg)
- Chief Veterinarian, MAg
- Chief Conservation Officer, Ministry of Environment and Climate Change (MOE)
- Wildlife Conflicts Prevention Coordinator, MOE
- Canadian Food Inspection Agency (CFIA)
- B.C. Wildlife Federation (BCWF)
- Guide Outfitters Association of B.C. (GOABC)
- First Nations
- Provincial Hunting and Trapping Advisory Team (PHTAT)
- Representatives from Alberta and Montana CWD Programs

Two Regional Working Groups were originally formed in 2007 in the East Kootenay and Peace regions however engagement has been limited in recent years. The objectives of the regional working groups are to: 1) provide input on the Plan, 2) obtain current information on

CWD and aid in the dissemination of information, 3) identify and discuss local concerns and needs, and 4) support implementation of strategies and actions at the local level.

The working groups met face to face in January (East Kootenay) and February (Peace) 2019. Both are chaired by the CWD Program lead (Wildlife Health Biologist, FLNRORD). Membership has been updated to include:

- B.C. Wildlife Health Program, FLNRORD
- Regional Wildlife Biologist, FLNRORD
- Habitat Biologist, FLNRORD
- Regional Agrologist, MAG
- Conservation Officer Service, MOE
- CFIA
- BCWF club representatives
- GOABC
- First Nations
- Regional District
- Taxidermists / Meat Cutters
- Sporting Goods Businesses
- Livestock Associations
- Wildlife Associations

### 3.0 PREVENTION OF CWD

B.C.'s primary objective is to prevent the entry of CWD into the province. Once CWD is established in a free-ranging population and prions are present in the environment, it is virtually impossible to eliminate the disease from the wild. The only exception appears to be the rapid effort of New York State in response to spill over from an affected captive facility. Below are the current activities delivered by the B.C. Wildlife Health Program to support disease prevention.

#### 3.1 Current Activities

1. Prohibited import of live native cervids: In 1991, B.C. legislated a ban on all imports of live, native cervids into the province under the *Wildlife Act* (*Wildlife Act Permit*

Regulations: B.C. Reg. 253/2000-Schedule 1, Section 7(1)). The regulation reduces the risk of novel disease and parasite introduction into the province's free-ranging cervid populations.

2. Regulated movement of captive non-native cervids: The movement of non-native game-farmed cervids (reindeer, fallow deer) is regulated by MINISTRY OF AGRICULTURE and CFIA, and is permitted within B.C. Transport of animals across provincial and international borders is restricted and permit and health certificates are minimum requirements.
3. Prohibited import of intact cervids carcasses or high risk tissues: A Wildlife Act Regulation enacted in 2010 prohibits possession of the head, hide, hoof, spinal column, internal organ or mammary gland of an animal of the family Cervidae that was killed outside British Columbia except; a hide that is treated in a manner that removes all tissues before being brought into British Columbia, or an antler or a part of the skull that has had all tissues removed before being brought into British Columbia. Highway signs promoting this message were erected in 2010 at the BC-Alberta border on two main highways (Hwy 2 in the Peace and Hwy 3 in the East Kootenay).
4. Communication and outreach: Information is provided through the B.C. Wildlife Health website ([www.gov.bc.ca/wildlifehealth](http://www.gov.bc.ca/wildlifehealth)); presentations by B.C. Wildlife Health Program staff to First Nations, stakeholders and government staff; CWD pamphlets and posters; and the Hunting and Trapping Regulations Synopsis.
5. Data integration: Data on provincial wildlife health surveillance and testing is compiled into a provincial database, and a subset of the data has been integrated into the Canadian Wildlife Health Cooperative database. A shared database allows national standardization and sharing of information, as well as providing accessible up-to-date information on CWD prevalence and distribution across Canada.
6. Prohibited use of cervid scents and attractants: A Wildlife Act Regulation enacted in 2018 prohibits any part or derivative of a deer, elk, moose or caribou, sourced from outside B.C., for the purpose of hunting or trapping. Prions can be present in urine or other biological material of an infected animal and could be a potential source of environmental contamination.

### 3.2 Recommendations

1. Establish new membership, annual meetings and regular communications with the CWD Advisory Committee and Working Groups: These groups will act to focus responsibilities of member organizations in support of the Plan, particularly the response to a positive diagnosis. Initial action items will include the collective development of a Terms of Reference for the Advisory Committee and Working Groups.
2. Increase outreach and communication: Further emphasis on outreach to increase awareness in government staff, First Nations, stakeholders, local and out-of-province hunters, other ministries, agricultural producers and the general public is highly recommended. Additional resources and partnerships will be required to enhance delivery of outreach and increase awareness.
3. Develop protocol to respond to possession and ensure proper disposal of CWD positive meat and parts from animals harvested from CWD endemic areas by B.C. hunters: Request advice from the Conservation Officer Service on potential enforcement tools to support search, seizure and disposal of meat and parts. Communicate protocol to enforcement staff, hunters, meat cutters and taxidermists. Work with Hazardous Waste Program to develop options for building capacity to dispose by incineration.
4. Inventory of cervids in game-farms/zoos and review of disposal practices: Ministry of Agriculture to provide up-to-date data on captive cervids in B.C. to ensure this information is readily available in the event of positive diagnosis. Disposal practices to be reviewed for farms, game meat cutters, rehabilitation centers and zoos, and recommendations made for appropriate disposal methods. It is recommended that euthanized game-farm and zoo animals be tested for CWD.
5. Evaluate surveillance efforts and target surveillance areas relative to cervid movement patterns, distribution and demographics: Work with partners and neighboring jurisdictions to collate existing data and conduct a gap analysis. Apply GIS tools to evaluate efforts, assess risk and use this information to develop mitigation and response strategies.
6. Outreach to Captive Cervid Industry: Captive cervid producers will be encouraged to participate in the CFIA's CWD VHCP or a modified provincial version of the CWD certification program tailored to suite B.C.s needs. Zoo facilities are not eligible for the VHCP.

7. Review of Free-ranging Cervid Feeding Practices: Purposeful supplemental feeding, baiting, and availability of salt licks or other sources of feed or water that increases the density of free-ranging cervids is rare but does occur in some regions of B.C. The public and stakeholder groups should be informed of the increased risk of disease exposure and transmission among cervids that accumulate unnaturally, and the practice reviewed in collaboration with stakeholders and First Nations.

#### 4.0 SURVEILLANCE FOR CWD

Surveillance for CWD in B.C. is critical to confirm CWD is not present in B.C. and to ensure the disease is early detected as early as possible. Detecting CWD while it is still at a low prevalence provides the best opportunity for the successful control and eradication before the disease becomes well established. An effective CWD surveillance program must incorporate the collection of an adequate number of samples (for statistical confidence), timely analysis of those samples, interpretation of the results, and reporting to submitters, the regional working groups and the advisory committee.

##### 4.1 Surveillance of Free-Ranging Cervids

In 2001, B.C. initiated a program of active and passive surveillance for CWD in all native cervid species. Surveillance updates and results can be found at [www.gov.bc.ca/chronicwastingdisease.ca](http://www.gov.bc.ca/chronicwastingdisease.ca)

##### 4.1.1 Current Activities

1. Conservation Officers, wildlife biologists, and the general public are asked to notify the B.C. Wildlife Health Program of any free-ranging cervid showing clinical signs of the disease. Every effort is made to collect and test these clinical animals for CWD.
2. The wildlife management regions adjacent to the Alberta border (i.e. Peace and East Kootenay) are considered to be at highest risk and are therefore the focus of CWD surveillance efforts in B.C., although samples are accepted from across the province.
3. Hunter samples, suitable road kills and clinical suspects are tested. Most samples come from voluntary hunter submissions. Road killed or clinical suspect animals are sourced from the Conservation Officer Service (COS), or from regional wildlife biologists and trappers permitted to pick up road kill.

4. The tonsils and retropharyngeal lymph nodes are collected from mule deer and white-tailed deer, and obex (brain stem) and retropharyngeal lymph nodes are collected from moose, elk and caribou. Sections of the obex and lymphatic tissues of the head (tonsils and retropharyngeal lymph nodes) are fixed in formalin and submitted to the University of Saskatchewan for diagnostic testing by immunohistochemistry. A frozen back-up sample from each animal is held in B.C. for retesting in the event of a suspicious or inconclusive result.
5. Since 2001 over 3900 free-ranging cervids from B.C. have been tested for CWD, with no positive cases reported.
6. A BCWF led initiative “Hats for Heads” was launched in 2016 to encourage hunters to submit their harvested deer, elk or moose heads for CWD testing.

#### 4.1.2 Recommendations

1. Limited capacity within the B.C. Wildlife Health Program has hampered efforts to conduct outreach in more northern and remote communities. The program has not been able to reach all of the hunting public, nor has it accessed an adequate number of samples to have confidence in the absence of CWD. It is proposed that a seasonal CWD program coordinator be employed to deliver outreach, increase awareness of the program and support the sampling efforts. The coordinator would distribute posters and informational material to local businesses, deliver presentations to local clubs and attend COS check-points throughout the hunting season to facilitate hunter outreach and sample submission.
2. Surveillance is currently focused on the Peace and Kootenay regions of B.C., however, an expansion of effort to include the Omineca region has been proposed. With contiguous habitat and potential movement corridors between jurisdictions in these regions, the 3 wildlife regions along the Alberta border must be included in the target sampling area.
3. A report (*Estimation of Sample Size Requirements for Chronic Wasting Disease Surveillance August 2017*) was produced by the CFIA for CWD Surveillance in B.C. The report had 3 main recommendations:
  - A sample size of approximately 300-320 cervids is required, from each of the target wildlife management regions, to detect CWD in free-ranging cervids at a population prevalence of 1% (95%). B.C. sample numbers are consistently well below this

- sample size, particularly in the Peace region.
- Focus surveillance on older mule deer, as this is the group most affected by CWD in other jurisdictions.
  - Target sampling in specific geographic areas based on patterns of animal movement and herd distribution.

#### 4.2 Surveillance of Captive Cervids

The B.C. MAg along with B.C. game-farmers do not consider the species farmed in B.C. (Reindeer and Fallow Deer) to be at high risk for CWD, and few producers prioritize CWD-specific management strategies. There are no cervid farms in B.C. currently enrolled in the CFIA CWD VHCP. However, mandatory points of control, such as fencing guidelines, are in place. Although not specific to CWD prevention, fences do contribute to herd security.

##### 4.2.1 Recommendations

It is recommended that all captive cervids (over 1 year of age) in B.C. that die be tested in an accredited laboratory for CWD.

## 5.0 EARLY RESPONSE ACTIVITIES

### 5.1 Positive Case in a Game-Farmed Cervid

In the event of a positive diagnosis in a game-farmed cervid, CFIA involvement will depend on the VHCP status of the herd. Commencing on April 1, 2019, CFIA “will only respond to and compensate affected producers who have been enrolled in and compliant with a VHCP for at least 12 months” (CFIA 2018a). This includes movement controls, destruction and disposal of infected herds, and provision of compensation to producers. Herds that are not enrolled in a VHCP will be subjected to a limited CFIA disease response that includes restrictions on animal movements and epidemiological investigations, but the CFIA will not participate in animal destruction and disposal or premises decontamination (CFIA 2018b). In general, the following steps will be carried out:

1. The suspect sample will be retested by CFIA to confirm the presence of CWD prions in the submitted tissues by methods recognized by the national CFIA CWD reference laboratory.
2. CWD is a reportable disease: The CFIA Animal Health Veterinary Officer will be notified.
3. The CFIA and the Chief Veterinary Officer of B.C. will have the lead roles in outbreak management.

4. The Chief Veterinary Officer will officially confirm the CWD positive test result to MAg, the Provincial Wildlife Veterinarian who will then notify the Advisory Committee and Working Groups.
5. Key representatives of the CWD Advisory Committee will hold a conference call as soon as possible to coordinate implementation of the appropriate response strategies.
6. CFIA will initiate epidemiological investigations to trace back the source of the positive diagnosis.
7. In a VHCP-enrolled herd, CFIA will implement the eradication policy by depopulating the source herd and any cervids that have left the premises in the 36-month period before confirmation of the positive case. All cervids that have left the premises in the period from 36 to 60 months before confirmation of the positive case will be placed under surveillance and movement restrictions will be put in place for these animals.
8. In a VHCP-enrolled herd, all culled animals will be submitted to the CFIA for CWD testing.
9. CFIA will coordinate public communications and press releases.
10. FLNRORD will lead efforts to 1) determine the prevalence and risk in the free-ranging cervid population around the affected and potential trace-out facilities, 2) implement appropriate surveillance measures, 3) restrict movement of hunter-harvested cervids or cervid parts, and 4) other potential mitigation efforts.

## 5.2 Positive Case in a Zoo Cervid

The response to a CWD positive zoo cervid will be informed by a risk assessment of the situation. Many of the response steps outlined above (see Positive Case in a Game-Farmed Cervid) may be implemented on a case-by-case basis.

## 5.3 Positive Case in a Free-Ranging Cervid

In the event of a confirmed positive diagnosis in a free-ranging cervid, the steps taken will be led by the Wildlife Veterinarian with support and input from the Advisory Committee and the affected Regional Working Group. In general, the following steps will be carried out:

1. The suspect sample will be retested by CFIA to confirm the presence of CWD prions in the submitted tissues by methods recognized by the national CFIA reference laboratory.
2. The CFIA District Veterinarian, the Chief Veterinary Officer and the Wildlife Veterinarian will be notified.
3. The Wildlife Veterinarian will take the lead role in response management and will initiate an Incident Command System (Appendix 4).

4. The Wildlife Veterinarian will confirm the CWD positive test result to FLNRORD executive, Government Communications and Public Relations (GCPE), regional staff and the CWD Advisory Committee and Regional Working Groups.
5. If the positive animal was hunter-killed, the Wildlife Veterinarian will contact the hunter and initiate epidemiological investigations to trace back the source of the positive diagnosis and determine if the meat entered the food chain.
6. The CWD Advisory Committee and Working Groups will communicate as soon as possible to coordinate initial response activities.
7. Initial response activities will include;
  - Targeted sampling within an Initial Response Area (approximately 10 km radius from the index case - assuming precise location data is available). If a second positive case is confirmed, further sampling will be requested to determine the spatial distribution and prevalence of CWD in that area.
  - Consultation with regional wildlife biologist, the regional working group and Advisory committee to assess the level of risk for adjacent free-ranging cervid populations. Mitigation strategies will be considered.
  - Potential implementation of management actions, such as restrictions on movement of hunter-harvested cervids and their parts, mandatory submission of samples, targeted reduction in density of free-ranging cervids as well as other management actions used elsewhere.
  - Outreach to the hunting community and the public in the affected region as well as broader communications provincially. Communications will be coordinated with GCPE and other agency communications departments. **A communications plan is recommended.**
  - Evaluation of risk and potential transmission to captive cervids, if any, in the area of the positive diagnosis, led by Ministry of Agriculture and CFIA.

## 6.0 CONTROLLING CWD AFTER A POSITIVE DIAGNOSIS

After the initial response phase, efforts will focus on evaluating the spatial distribution, species involved, and prevalence of CWD in captive and free-ranging cervids in relation to the index case. Following the detection of the disease in B.C. the priority will be for containment and eradication. The CWD Advisory Committee and Working Groups review information from the initial response and the provincial situation. This information as well as new science and tested management strategies will guide the development and implementation of a CWD Management Plan to mitigate potential negative impacts to B.C. Wildlife.

## 7.0 COMMUNICATION AND OUTREACH

### 7.1 Communication and Outreach Prior to Detection of CWD

The priority of communication and outreach activities, prior to the detection of CWD in B.C., is to support prevention by reducing risk and ensuring early detection. Outreach will provide the most current information on CWD, disease distribution and the risks of introduction as well as to promote surveillance efforts.

#### 7.1.1 Current Activities

1. CWD presentations are delivered by Wildlife Health Program staff to various audiences, including PHTAT, BCWF, local clubs, First Nations and staff.
2. Outreach materials (pamphlets, posters, banners) and online resources are updated and distributed annually.
3. Research extension and other communications are developed as needed to disseminate new research findings and to address concerns about human health risks.

#### 7.1.2 Recommendations

Expand outreach and communications to increase awareness of risks and facts among staff, other ministries, range programs, First Nations, stakeholders, the public, and captive cervid facilities.

### 7.2 Communication and Outreach After Detection of CWD

Following detection of CWD in B.C., a communication and outreach plan is critical to ensuring that the correct information reaches the appropriate audiences. The role of the CWD Advisory Committee and Working Groups in messaging and dissemination of information will need to be clearly defined.

#### 7.2.1 Recommendations

Develop communication plan that outlines methods of communication, responsibilities and timing of information dissemination. This plan should include an early response flow chart, a phone tree, pre-approved draft press releases, identification of relevant social media platforms and forums and a Frequently Ask Questions section.

## 8.0 BUDGET

The BC CWD Program currently has no dedicated budget, aside from salary for staff time. External partners, regions and other programs have supported the minimum level of activities required to deliver the BC CWD Program. See 2018/19 CWD expenditures and proposed 2019/20 CWD budget in Appendix 2.

In addition to current activities the B.C. Wildlife Health Program requires additional political and financial support to:

1. Reinvigorate membership on the CWD Advisory Committee and Regional Working Groups.
2. Improve outreach and communications to support prevention through increased awareness.
3. Increase sampling effort to a level that meets CFIA recommended sample size to confirm CWD-free status and ensure early detection of disease.
4. Contract regional CWD coordinators (part time) in the target surveillance areas.
5. Expand the targeted sampling area to include the Omineca region.
6. Increase testing of road killed cervids in partnership with Ministry of Transportation and Infrastructure.
7. Evaluate surveillance efforts and cervid population metrics using spatial tools to develop and implement a weighted surveillance strategy.
8. Present science-based findings relating to the health risks of supplemental feeding and baiting practices for free-ranging cervids.
9. Work with captive facilities and Ministry of Agriculture to review testing and carcass disposal protocols for captive cervids in B.C.
10. Develop a protocol for collection and disposal of CWD positive cervid meat (harvested by B.C. hunters outside of B.C) and pursue options for increasing incinerator capacity within B.C.
11. Pursue options (and capital investment) to build diagnostic capacity in B.C. to decrease turnaround time for CWD test results (currently 8+ months).
12. Develop a communication plan for early response to a positive CWD diagnosis.

## 9.0 CONCLUSION

As a fatal infectious disease of cervids, CWD is of increasing importance to wildlife managers, public health officials, Ministry of Agriculture interests, national and international trade, and communities that depend on a healthy and sustainable wildlife resource. There is no known vaccines or treatments available and strong evidence that CWD will persist in the

environment for long periods of time. Some management policies, regulations and outreach are in place but must be improved or updated to reflect new information and emerging risks. B.C. must do everything possible to prevent CWD from entering the province and be prepared so that in the event that CWD enters B.C., an effective response strategy can be implemented.

## REFERENCES

- Bollinger, T., Caley, P., Merrill, E., Messier, F., Miller, M.W., Samuel, M.D., and Vanopdenbosch, E. 2004. Chronic Wasting Disease In Canadian Wildlife: An Expert Opinion On The Epidemiology And Risks To Wild Deer. Report prepared for Canadian Cooperative Wildlife Health Centre, Saskatoon, SK, 1-32.
- Bishop, R. 2010. The economic impacts of Chronic Wasting Disease (CWD) in Wisconsin. *Human Dimensions of Wildlife*, 9(3), 181-192, DOI: 10.1080/10871200490479963
- CFIA. 2018(a). Notice to Industry – Updates to the federal management of chronic wasting disease in farmed cervids. Available at: <http://www.inspection.gc.ca/animals/terrestrial-animals/diseases/reportable/cwd/2017-12-12/eng/1498797517693/1498797518630>. Accessed on 10/12/2018.
- CFIA. 2018(b). Chronic Wasting Disease – What to expect if your animals may be infected. Available at: <http://www.inspection.gc.ca/animals/terrestrial-animals/diseases/reportable/cwd/if-your-animals-may-be-infected/eng/1330188848236/1330189018195>. Accessed on 10/12/2018.
- CZUB, S., SCHULZ-SCHAEFFER, W., STAHL-HENNIG, C., BEEKES, M., SCHAETZL, H., AND MOTZKUS, D. 2017. FIRST EVIDENCE OF INTRACRANIAL AND PERORAL TRANSMISSION OF CHRONIC WASTING DISEASE (CWD) IN CYNOMOLGUS MACAQUES: A WORK IN PROGRESS. PRION 2017 CONFERENCE EDINBURGH, SCOTLAND.
- DEVIVO, M. 2015. CHRONIC WASTING DISEASE ECOLOGY AND EPIDEMIOLOGY OF MULE DEER IN WYOMING. UNIVERSITY OF WYOMING.
- Edmunds, D. Kauffman, M., Schumaker, B., Lindzey, F., Cook, W., Kreeger, T., Grogan, R., and Cornish, T. 2016. Chronic Wasting Disease Drives Population Declines Of White-Tailed Deer. *PLOS one*, 11(8), e0161127.
- Gillin, C.M. and Mawdsley, J.R. (eds.). 2018. AFWA Technical Report on Best Management Practices for Prevention, Surveillance, and Management of Chronic Wasting Disease. Association of Fish and Wildlife Agencies, Washington, D. C. 111 pp.
- Kurt, T.D. and Sigurdson, C.J. 2015. Cross-species transmission of CWD prions, *Prion*, 10(1), 83-91, DOI: 10.1080/19336896.2015.1118603
- MILLER, M.W., AND FISCHER, J.R. 2016. THE FIRST FIVE (OR MORE) DECADES OF CHRONIC WASTING DISEASE: LESSONS FOR THE FIVE DECADES TO COME.

TRANSACTIONS OF THE NORTH AMERICAN WILDLIFE AND NATURAL  
RESOURCES CONFERENCE 81: *IN PRESS*.

Montana CWD Management. 2018. Available at:

<http://fwp.mt.gov/fishAndWildlife/diseasesAndResearch/diseases/chronicWastingDiseases/management.html>. Accessed on 01/09/2019.

Moore, S.J., Greenlee, M.H.W., Kondru, N., Manne, S., Smith, J.D., Kunkle, R.A., Kanthasamy, A., and Greelee, J.J. 2017. Experimental Transmission of Chronic Wasting Disease Agent to Swine after Oral and Intracranial Inoculation. *Journal of Virology*. 91(19), e00926-17

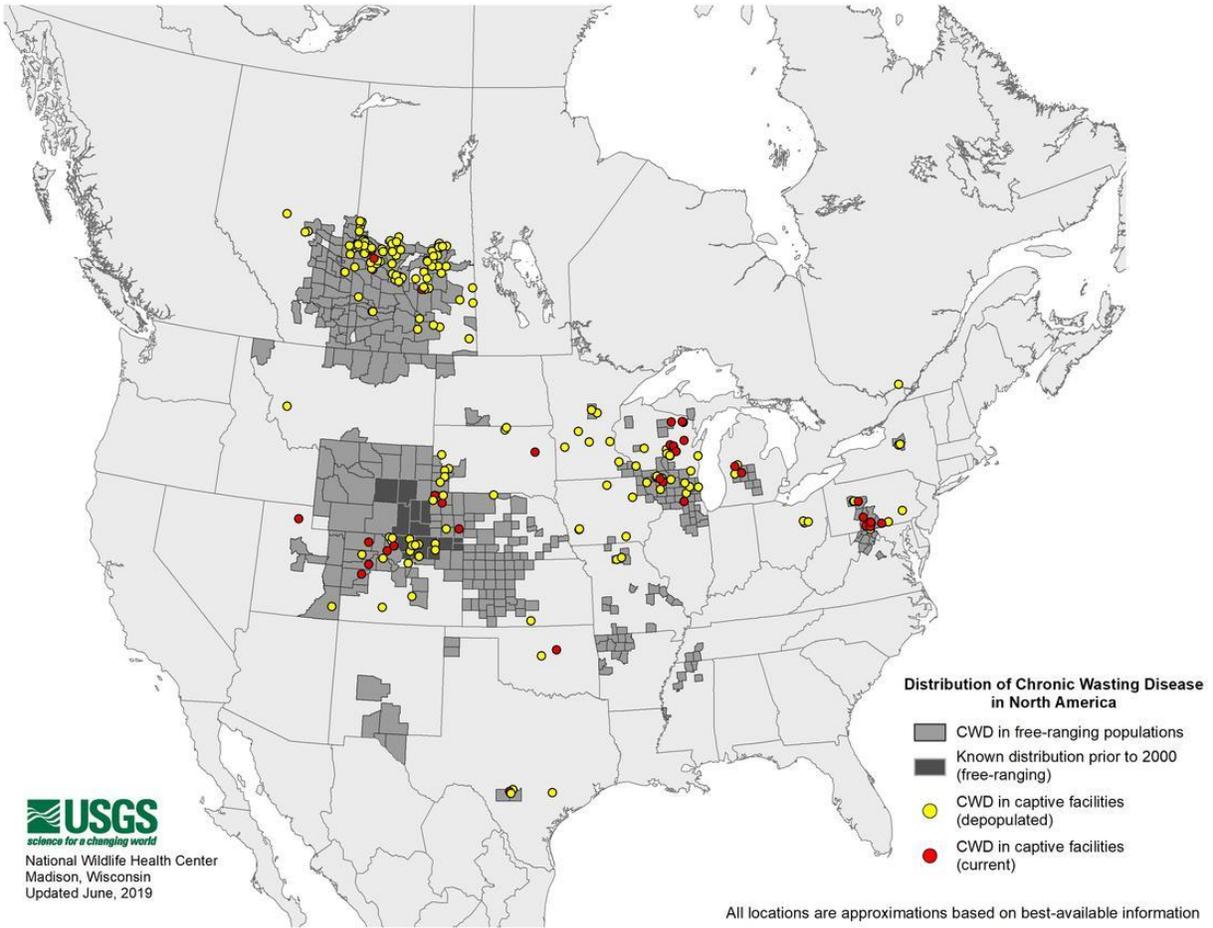
Pritzkow, S., Morales, R., Moda, F., Khan, U., Telling, G., Hoover, E., and Soto, C. 2015. Grass Plants Bind, Retain, Uptake And Transport Infectious Prions. *Cell Reports* 11(8), 1168-1175.

RACE, B., MEADE-WHITE, K. D., PHILLIPS, K., STRIEBEL, J., RACE, R., AND CHESEBRO, B. 2014. CHRONIC WASTING DISEASE AGENTS IN NONHUMAN PRIMATES. *EMERGING INFECTIOUS DISEASES*, 20(5), 833-837.  
<https://dx.doi.org/10.3201/eid2005.130778>.

Race, B., Williams, K., Orru, D., Hughson, A.G., Lubke, L., Chesebro, B. 2018. Lack of Transmission of Chronic Wasting Disease to *Cynomolgus* Macaques. *Journal of Virology* Jun 2018, 92 (14) e00550-18; **DOI:** 10.1128/JVI.00550-18

WESTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES. 2017.  
RECOMMENDATIONS FOR ADAPTIVE MANAGEMENT OF CHRONIC  
WASTING DISEASE IN THE WEST. WAFWA WILDLIFE HEALTH COMMITTEE  
AND MULE DEER WORKING GROUP. EDMONTON, ALBERTA, CANADA AND  
FORT COLLINS, COLORADO, USA.

# APPENDIX 1: CWD DISTRIBUTION MAP (USGS JUNE 2019)



APPENDIX 2A: 2018/19 CWD EXPENDITURES

2018/19 CWD EXPENDITURES		FUNDING PARTNERS			TOTAL EXPENDITURES
Expenditure Category	Expenditure Detail	HCTF	Region	WLH Program	Total Spent
BCCF Work Order	Regional CWD Coordinator - Peace	6000	2500	650.4	9150.4
Travel	Staff travel for sample collection, training, outreach, meetings		2500	5529.81	8029.81
Supplies and Diagnostics	Diagnostics: University of Saskatchewan (deer = \$25, other cervids = \$75)	2000		12855.01	14855.01
<b>TOTAL</b>		<b>8000</b>	<b>5000</b>	<b>19035.22</b>	<b>32035.22</b>

APPENDIX 2B: PROPOSED 2019/20 CWD BUDGET

PROPOSED 2019/20 CWD BUDGET		FUNDING PARTNERS			PROJECTED EXPENDITURES
Expenditure Category	Expenditure Detail	?	?	WLH Program	
BCCF Work Order	Regional CWD Coordinators - Peace/East Kootenay/Omineca				30,000.00
Travel	Staff travel for sample collection, training, outreach, meetings				10,000.00
Supplies and Diagnostics	Diagnostics: University of Saskatchewan (deer = \$25, other cervids = \$75)				20,000.00
	Diagnostics: BC Animal Health Center - in province diagnostic capacity (capital investment in BioRad platform)				251,649.00
Outreach Material	Update and print the CWD Pamphlet (10,000 copies)				5,000.00
<b>TOTAL</b>					<b>316,649.00</b>

## APPENDIX 3: TERMS OF REFERENCES

### B.C. CWD Advisory Committee

#### Terms of Reference - DRAFT

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#### Purpose

The objectives of the committee are to: 1) provide input on the Surveillance and Response Plan for CWD in BC (the Plan), 2) identify specific responsibilities and roles of each agency or group in prevention, surveillance and response, 3) aid in coordination and implementation of activities and dissemination of information and 4) support the B.C. Wildlife Health Program in delivery of the Plan.

#### Desired Outcomes

The Advisory Committee will develop and recommend effective strategies and actions, with clear deliverables and timelines, to reduce potential negative impacts of CWD to free-ranging cervids in B.C.

#### Expected Activities

The Advisory Committee will recommend priorities, provide strategic advice and offer policy guidance to Government, on how to reduce potential negative impacts of CWD to B.C. in the following areas:

- Prevention
- Outreach
- Surveillance
- Response
- *The advisory committee is not a decision-making body.*

#### Approach and Operation

The Advisory Committee represents FLNRORD staff, Conservation Officer Service, Ministry of Agriculture, Canadian Food Inspection Agency, BC Wildlife Federation, Guide Outfitters of B.C., First Nations, Provincial Hunting and Trapping Advisory Team, Academia and representatives from the Alberta and Montana CWD Programs. The Advisory Committee is co-chaired by the Provincial Wildlife Veterinarian and the Senior Wildlife Health Biologist.

#### Expenses

Members will volunteer their time.

#### Secretariat Support

B.C. Wildlife Health Program staff will support this committee by:

- Chairing the Advisory Committee, assuming all duties of a Chair (logistics, agenda, minutes, etc.)
- Requesting independent expertise, as needed
- Reporting to the Advisory Committee at least quarterly, or as needed, by email, conference calls and one annual face to face meeting in the spring.
- Leading the development of supporting documents to the Advisory Committee (e.g., terms of reference)

#### Meeting schedule

- The Advisory Committee will be convened in-person once per year.
- The Advisory Committee will be convened over conference call as needed.
- Ad-hoc meetings will be called at the discretion of the Secretariat

## Conduct

Members are obliged to participate in this group, with the following principles in mind:

- We encourage shared learning opportunities and we will respect the credibility of published and peer reviewed scientific research and will consider the work of other jurisdictions
- We engage in respectful dialogue, communication, and documentation
- We respect timelines, our accountability and we act with transparency

## Membership and Roles and Responsibilities

Membership on the Advisory Committee and the associated terms of reference will be based on a one-year term and include the following organizations:

Organization	Role
Ministry of FLNRORD	<ul style="list-style-type: none"><li>• Provide expertise related to Wildlife health and management.</li><li>• Provide briefings to and facilitate decision making at the Executive level, and with the Minister of FLNRORD, as required.</li><li>• Facilitate the development of policy and regulatory tools to mitigate the potential negative impacts of CWD to B.C. wildlife.</li><li>• Ministry programming and/or funding related to outreach, surveillance and diagnostic.</li><li>• Ministry programming and/or funding related to surveillance and diagnostics.</li></ul>
Ministry of Agriculture	
Ministry of Environment and Climate Change	
Canadian Food Inspection Agency	
BC Wildlife Federation	
Guide Outfitters of BC	
First Nations	
Provincial Hunting and Trapping Advisory Team	
Alberta and Montana CWD Programs	

APPENDIX 4: INCIDENT COMMAND SYSTEM (Template)

