

WORKSHOP SUMMARY

Management of CWD in Canada:

Past Practices, Current Conditions,
Current Science, Future Risks and Options

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Canadian Cooperative
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Management of CWD in Canada: Past Practices, Current Conditions, Current Science, Future Risks and Options February 9-10, 2011, Edmonton

Executive Summary

A workshop was held in Edmonton, Alberta, on February 9-10, 2011, as part of a two-step process to review and draft a proposed update to Canada's National Chronic Wasting Disease Control Strategy. This Strategy was prepared for the Federal-Provincial/Territorial Resource Ministers Council in October, 2005. A copy may be viewed at: <http://wildlife.1.usask.ca/en/Publications/NCWDCS2005.pdf>.

The Edmonton Workshop brought us up to date on the many developments regarding Chronic Wasting Disease (CWD) that have occurred since 2005.

We heard from U.S. state and Canadian provincial disease control experts as well as from academics about the significant spread of this disease in both farmed and wild cervids through Saskatchewan, into Alberta and perhaps beyond. Practitioners described the difficulty of designing programs to control CWD in wild cervids, especially when these involve culls or other measures that the public and hunters find difficult to support. Meanwhile, CWD eradication from farmed cervids has proven costly and had limited success. These developments and challenges have led state, provincial and Canadian federal officials to consider control rather than eradication as an objective of their programs.

We also heard about variable understanding of this disease by First Nations communities, hunters and the general public, as well as the challenges and uncertainties involved in calculating the full economic, social and cultural impacts of the disease.

On a more positive note, much has been learned about CWD since 2005. We now have important insights into its spread within herds by age and gender, as well as geographically, for example along river basins. Research is also improving our understanding of how the disease may spread between farmed and wild populations, insights that may lead to improved methods for bio-containment. These insights may improve disease control methods in the short and medium term. Meanwhile, observations on genetic susceptibility of host species and the impact of environmental factors on the disease agent may lead to new approaches to disease control in the longer term.

Last, but not least, we heard from a representative of the Public Health Agency of Canada and other speakers concerning expert views on the possibility that CWD might be transmitted to humans, including the possibility that this risk could evolve with the changes to the agent itself and its spread in wild or farmed cervids.

These observations and discussions of the Edmonton workshop will be considered in the updating of the Strategy.



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INTRODUCTION



Chronic wasting disease (CWD) is an infectious prion disease of North American cervids. This fatal neurodegenerative disease is known to affect mule deer (*Odocoileus hemionus hemionus*), white-tailed deer (*Odocoileus virginianus*), black-tailed deer (*Odocoileus hemionus columbianus*), Rocky Mountain elk (*Cervus elaphus nelsoni*) and moose (*Alces alces shiras*).

The workshop, *Management of CWD in Canada: Past Practices, Current Conditions, Current Science, Future Risks and Options*, was held in Edmonton, Alberta, on February 9 and 10, 2011. The workshop was funded and organized by PrioNet Canada and the Alberta Prion Research Institute, with input from the Canadian Cooperative Wildlife Health Centre and the support of Alberta Agriculture, Food Safety and Animal Health Division, Agriculture and Rural Development, the Alberta Government, Alberta Sustainable Resource Development, Alberta Fish and Wildlife, the Saskatchewan Ministry of Agriculture, and the Saskatchewan Ministry of Environment.

The purpose of the workshop was to generate a full picture of developments over the past five years of CWD research and management in wildlife and agriculture and the implications for public health. The facilitated workshop featured guest speakers and panel members who provided broad perspective and insight on scientific advances in prion disease research and their potential impact on CWD management, as well as the social and economic impacts of CWD. Workshop participants were largely from the CWD management community.

The workshop sought to collect participant feedback on two fundamental questions:

1. *What tools or capacities currently are most needed by CWD managers (wildlife, livestock, human health and well-being)?*
2. *What are currently achievable management objectives for CWD in Canada (wildlife, livestock, human health and well-being)?*

This Workshop Summary Report provides an overview of the presentations and discussions held at the workshop. Apart from the summaries of presentations and opening comments of panel members, comments have not been attributed to individuals. The presenters and panel members had the opportunity to review their summaries prior to publication.

Elder Angela Jones of the Alexis Nakota Sioux Nation, Alberta, provided greetings and prayers.





CWD Management in Wildlife and Farmed Stock

1. Chronic Wasting Disease in Colorado: Trends, Observations & Implications

Dr. Michael Miller, Senior Wildlife Veterinarian, Wildlife Health Program, Colorado Division of Wildlife

Chronic wasting disease has infected wild cervid populations in Colorado, USA, since at least the early 1980s. Knowledge about the distribution and occurrence of CWD has improved markedly since 2001. Cases have been diagnosed in all four of Colorado's native cervid species (mule deer, white-tailed deer, elk, and moose), but occurs and is currently at higher rates in mule deer than in the other three species. CWD appears to be restricted to the cervid family, as no other native or domestic ruminants or other mammalian species have shown evidence of natural susceptibility.

Thus far there does not appear to be any evidence of selection for natural resistance. However, variations have been seen in the prion gene between and within cervid species that appear to be important in modulating the course of the disease and perhaps susceptibility.

Through the study of demographic and spatial patterns in Colorado over the past 10 to 15 years, a number of observations have been made on CWD. These include:

- Herd demographics, movement and congregation patterns appear to influence the rate of infection.
- There seems to be higher infection rates in males than in females, and infection rates tend to increase with age (at least to a point).
- There has been both natural and human assistance to the spread of CWD.
- Harvest strategies and other management practices may influence prevalence.
- The prevalence of CWD has been increasing.

There is evidence that the environment plays a role and that prions can be transmitted through environmental sources, such as soils and reservoirs. Clay-rich soils in particular have demonstrated an ability to increase the incidence of the disease (e.g., a 1% increase in clay content of soil led to a 9% increase in the odds of CWD infection in some areas). This correlation may be useful for assessing risk of outbreaks, identifying surveillance target areas, and developing disease control strategies.

Assessing CWD prevalence is difficult. For example, the apparent higher rate of CWD in older male cervids may bias estimates based on hunter-submitted samples because these cervids are more frequently harvested and tested in some areas. Wild cervids infected with CWD tend to die fairly quickly, so not many cases are seen by people. This also makes it difficult to convey the importance of the disease to the public.

Although some attempts were made to either control or contain CWD in Colorado, there was no clear evidence that they had an effect on the disease's prevalence over the few years that control measures were applied. In addition, there was limited public support for policy changes, management approaches or surveillance strategies. The imperative to act was also reduced by the lack of evidence that CWD is readily transmissible to livestock and humans. As a result, these efforts were abandoned.

Although the CWD transmission process and disease detection methods are understood, the long-term ecological impacts are not. Practical management approaches that don't affect sport hunting or recreation activities are needed.





CWD Management in Wildlife and Farmed Stock

2. Chronic Wasting Disease in Wisconsin: Management and Research Updates

Dr. Michael Samuel, Department of Forest and Wildlife Ecology, University of Wisconsin

The prevalence of chronic wasting disease in Wisconsin in 2002 was approximately 5% of the white-tailed deer population, located in a fairly concentrated area. Today, this percentage has increased significantly and there are two focal areas, one in the south central part of the state and one near the Wisconsin-Illinois border. These two areas appear to be growing together, even though the habitats and deer behaviour patterns are different between the two areas. Most of the data on CWD in Wisconsin has been collected in the south central area.

Wisconsin has very high deer density. The deer population in the south central area has more than doubled over the past 25 years. Even with the introduction of CWD, the population seems to be steady. Testing and monitoring of harvested deer in one of the affected areas has shown recent increases in disease prevalence especially in adult male deer.

Wisconsin's initial CWD management goals were to limit the spread of the disease from known infected areas, eradicate the disease in known infected areas, expand surveillance of both wild and captive cervid populations, and to increase scientific knowledge and understanding of CWD. Hunters were considered a key partner in implementing solutions; however, their contributions were not as effective as anticipated. Wisconsin has now shifted from a CWD eradication approach to a CWD containment policy that includes prevention, monitoring and response. However, there is limited state funding and few concrete, tested strategies.

Additional emphasis has also been given to developing a public relations message about CWD management and public contribution to containment efforts. To this end, Wisconsin hired a private marketing firm to survey hunters and landowners. Results showed that hunters are better informed about the effects of CWD in Wisconsin than in other CWD affected areas. Many consider CWD to be a moderate to serious problem, one that will increase if not addressed. More than half support disease containment or control measures, but do not support reducing the size of the deer herd.

Current CWD research includes studies on density-dependent transmission, which has indicated that CWD transmission to young deer is related to the abundance of infected deer on the landscape. These results suggest that strategies for disease control should consider both CWD prevalence and deer density. Evaluation of PrP genotypes in Wisconsin deer has shown much higher infection rates and lower post-infection survival of deer with the common homozygous PrP. Although genetic selection for resistance may be occurring, this is likely to be a slow process with little potential for CWD management in wild deer populations.

Other research areas include selection pressure and PrP genotypes, the rate of CWD spread, modelling transmission and management strategies, landscape genetics for disease spread, infected mothers and fawns, CWD detection in environment, vaccine tests and herd immunity.

Understanding the rate of CWD spread is important for predicting future CWD distribution. A preliminary estimate of disease spread appears to be one to two miles per year. However, the Wisconsin deer population has very "simple" behaviour patterns with limited migration.





CWD Management in Wildlife and Farmed Stock

3. The Perils of Chronic Wasting Disease Regulation

Dr. Greg Douglas, Chief Veterinary Officer, Saskatchewan Ministry of Agriculture

Since the detection of chronic wasting disease in Saskatchewan in 1996 in farmed elk, a variety of regulatory approaches have been attempted at both the federal and provincial level. As of February 1, 2011, 64 cervid farms have been infected with CWD in Canada (all but two have been in Saskatchewan). There are currently seven farms under quarantine in Saskatchewan, and 12 farms have been declared “highly contaminated premises” and are under permanent quarantine.

From 1996 to 2002, evidence suggested that CWD occurred through direct transmission. Since 2002, direct transmission by farmed cervids is not as apparent and indirect transmission is increasingly considered a factor. In some cases, investigators were unable to determine the source of the CWD introduction, as multiple possibilities exist (environment, soil, feed, etc.).

CWD has been a federally reportable disease since 2001. An eradication approach is currently in place; however, policy will be shifting to one of control and zoning. This involves killing of the herd and all trace-outs up to 36 months; quarantine and surveillance of trace-outs from 36 to 60 months; and cleaning and disinfection. Compensation is provided to producers. In addition, mandatory provincial surveillance programs exist in four provinces (Manitoba, Alberta, Saskatchewan and the Yukon) and all on-farm deaths are tested. A national CWD voluntary herd certification program for producers has been in place since 2003, and is monitored by the Canadian Food Inspection Agency (CFIA). Wild cervid surveillance is under provincial/territorial authority. The federal *Health of Animals Act* requires a permit prior to movement of both wild and captive cervids within Canada.

The cervid industry includes three main components: the hunt farm industry (only in Saskatchewan and Quebec); the velvet industry (medicinal use of antlers, mainly for export); and the meat (venison) industry. The collective contribution to Saskatchewan’s economy is approximately \$15M (cash receipts) annually, with the hunt industry accounting for more than two-thirds of that amount. The economic impacts of hunting in Saskatchewan are approximately \$200M annually.

Most states and provinces allow farming of domestic cervids, and most jurisdictions allow the importation of cervids. Ninety percent of imported cervids, which are predominantly from Alberta, go to hunt farms. In 2005, the farmed cervids population in Saskatchewan was approximately 54,000. By 2010, the population had declined to 22,000 (6,000 white-tailed deer and 16,000 elk). The number of licensed game farms has also declined, from 616 in 2002 to 421 in 2011.

In the early years of the cervid industry, mandatory surveillance, movement permits, traceability systems, testing, and other regulations were accepted by the industry. The provincial regulations package has been a challenge to implement.

CWD has social, political, economic, environmental and other challenges. The control of CWD should take a “one health” approach that involves wildlife, environment and human health interests. Saskatchewan believes that we have a responsibility to prevent the spread of CWD to wild populations if it is possible to do so.





CWD Management in Wildlife and Farmed Stock

4. The Alberta Advantage: Integrated Surveillance, Management and Research during the Early Stages of Chronic Wasting Disease Intrusion – Look Early, Act Quickly, and Learn as You Go

Dr. Margo Pybus, Provincial Wildlife Disease Specialist, Fish and Wildlife Division, University of Alberta (presenting); Dr. Mark Ball and Jim Allen, Fish and Wildlife Division, University of Alberta; Drs. Evelyn Merrill, David Coltman, and Vic Adamowicz, University of Alberta

Alberta has been actively engaged with chronic wasting disease since 1998 when ongoing surveillance of wild and farmed cervids began. As of February 8, 2011, we have detected 91 cases of CWD in wild cervids in Alberta: 82 cases were mule deer and 9 were white-tailed deer; 30 animals were female and 61 were male. There is a significantly lower survival rate for adult male mule deer.

Ongoing research in Alberta on deer biology has shown that mule deer and white-tailed deer share the landscape, although there are local areas of only mule deer or only white-tailed deer. The majority of both deer species are sedentary, occupying relatively small summer and winter ranges. Mule deer have a significantly higher winter group size. However, the home range does not change as deer density increases.

Implications for CWD include:

- Genetic relatedness appears to be a factor in CWD infection: CWD-positive deer are more closely related than CWD-negative deer. Genetic relatedness is limited to about 1 km.
- There is some evidence that CWD is becoming more established in the deer population, as there has been a significant increase in the number of animals with late stage CWD.
- There appears to be a close correlation between CWD infection and watersheds, with the disease appearing to spread within continuous deer habitat along river valleys.
- There is also indication that the disease is continuing to spread westward from the core Saskatchewan/Alberta border areas.

From 2005 to 2008, Alberta took an aggressive approach to CWD control. If a deer hunted in the fall tested positive for CWD, a targeted winter cull would be undertaken within the area where the positive deer was taken. This local herd reduction efficiently removed other infected deer and created a lower deer density, thereby reducing the risk of transmission among the remaining deer. During these years, the overall prevalence of CWD noted through hunter surveillance was steady at around 0.15%. Since the disease control was stopped, the prevalence has risen to 0.25% in 2009 and 0.40% in 2010.

Research on public perceptions related to CWD indicated that:

- 70% of Albertans are aware of CWD, although they are uncertain about its effects.
- 80% of Albertans support eliminating CWD from the province.
- The hunting public is more concerned with increased prevalence than increased spread of CWD.
- Albertans are willing to pay higher taxes to reduce the perceived threat.
- Despite some aversion to culling, aggressive management efforts are generally well-received.

The success of any surveillance and management program is tied to public and political education and understanding. A key barrier to effective CWD management is the lack of political will to provide long-term funding support. This undermines the public message that CWD is of concern, and that its spread will continue in the absence of active control.





CWD Management in Wildlife and Farmed Stock

5. CWD in Wild Cervids in Saskatchewan

Dr. Trent Bollinger, Department of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan

Chronic wasting disease was introduced into Saskatchewan through the importation of infected farmed elk from the United States in the late 1980s. Further cases were detected in other Saskatchewan game farms as part of the CWD management and surveillance program; these infections were linked back to the original source.

The disease then spread from the elk and deer farms to wild cervids in at least three locations in Saskatchewan, and was first detected in a wild mule deer near the Alberta border in 2000. Since then, CWD has spread to cover much of the south-western part of the province and into eastern Alberta; it has also spread easterly and is now within ~100 km of the Manitoba border.

Incentives for hunters were introduced to reduce deer populations in CWD areas, including free hunting permits, increases to the number of animals per license, and expansion of permits to allow harvesting of younger males and females. The programs had mixed results: in some areas the cervid population decreased; in other areas it increased. Over the ten years since the introduction of CWD, its prevalence in mule deer has increased to approximately 5% in some areas. One cluster or “hot spot” has a CWD infection rate of 25%.

Management efforts are now focused on tracking movement of the disease. Mobile CWD test stations are used to collect samples from hunters in zones where CWD has not yet been detected. Incentives are used to encourage hunters to submit samples.

Current research efforts are focused in predicting rates and direction of geographic spread; determining factors affecting transmission; predicting effects on cervid populations; and developing strategies for CWD management. Research findings include:

- No evidence of subpopulations, so no barriers to gene flow or CWD spread.
- Mule deer families within 2 km of one another are likely to be related; cervids have a matriarchal social structure.
- Within a local area, CWD infected animals are more likely to be related to one another than non-infected animals; CWD transmission is facilitated within female family groups.
- Focal herd reduction is not an effective management strategy to prevent CWD spread: by the time CWD is detected in a new area, it has likely been there for some time.
- Deer migration and movement of dispersing young deer can be up to 100 km; CWD management zones are typically too small to be effective.
- CWD is transmitted through both direct and indirect contact, but the relative role of each is uncertain.

Management strategies need to look beyond just reducing deer numbers to encompass multifaceted approaches for both wild and farmed cervids. A five-year commitment of funds and resources is needed in order to establish and evaluate CWD management strategies and control measures.





Public Awareness and Economic Impacts

Public Awareness and Economic Impacts

6. An Update on the Economic Impacts of Chronic Wasting Disease and Hunting/Recreation/Wildlife *Dr. Vic Adamowicz, Department of Rural Economy, University of Alberta*

The economic impacts of chronic wasting disease in Alberta affect a number of sectors, including First Nations peoples, hunters, cervid farmers, recreational land users, landowners, consumers of cervid meat products and tourism (non-resident hunters).

Hunting in Alberta accounts for expenditures of about \$100M per year for residents and about \$10M-\$12M for non-residents. About 50% of these expenditures are for big game (deer, moose, and elk). Economic risks associated with CWD also include changes in non-market values (i.e., the quality of the hunting experience), such as risks to access, habitat, presence/absence of control programs, etc.

Urban and rural hunters were surveyed over two years (2008 and 2009) to assess changes in the quality of the hunting experience and their perceptions of risk related to CWD. They were asked:

- *Do you feel CWD is a threat to human health?*
- *Do you feel CWD is a threat to wildlife?*
- *Do you no longer consume deer meat because of CWD?*
- *Has CWD affected your enjoyment of hunting deer?*

Modelling results from both years indicated that in the second year there was a reduction in the number of trips for hunting, that affected areas were avoided, and that urban hunters have different perceptions and behaviours than rural hunters; however, some of these changes between the two years could have arisen from weather or other influences.

Although there have been few economic benefit/cost studies on CWD, estimates of economic impacts in other regions have included \$45M to \$72M per year in direct economic loss (Wisconsin) and “tens of millions annually” (Colorado). Other studies have indicated that up to 50% of hunters may stop hunting and non-resident hunters are more likely to stop hunting or avoid hunting in CWD areas.

In Alberta, many residents have direct or indirect contact with cervids regularly. Most Albertans are aware of the disease, although uncertain about its impact. They are willing to fund programs to reduce the perceived threat of CWD; however, they are uncomfortable with many of the options available. While there is support for the mandatory testing of harvested animals and provision of educational materials, there is less support for culling (reduction of herds).

More data is needed to better understand the social and economic impacts and risks associated with CWD. In addition, there are a number of variables that need to be considered, including: perceived human health risks, stakeholder knowledge of CWD, effect of management actions on outbreak/spread, and regional/local effects, and others. Human behaviour, of course, is a significant variable.

The question of risk threshold needs to be considered: Is there an acceptable level of infection or incidence of CWD that would not lead to economic impact or a change in non-market values? The answer could help determine whether the best management approach is control or eradication.





Public Awareness and Economic Impacts

7. Canadian and American Public Awareness of and Concerns about Chronic Wasting Disease

Dr. Ellen Goddard, Co-operative Chair, Agricultural Marketing and Business, Department of Rural Economy, University of Alberta

At the current time there is very limited understanding of public concerns about chronic wasting disease. The public may come into contact with animals potentially affected by CWD through hunting and through purchases of farmed elk and deer for home and restaurant consumption. The public may also have passive use values associated with wild elk and deer.

National surveys were conducted in 2009 (1,500 Canadian respondents) and 2010 (1,000 American respondents) to assess awareness, risk attitudes (willingness to accept the risk) and risk perceptions (interpretation of the chance to be exposed to risk) about CWD. Key findings included:

- In both countries, awareness of CWD is very low (39% of Canadians and 22% of Americans surveyed had heard of CWD prior to the survey).
- 59% of the Canadian population (75% of the American sample) have never (or on only one occasion) eaten venison (meat from deer, elk or moose) from a hunting trip and 79% of Canadians (89% of Americans) have never (or only once) ordered venison in a restaurant.
- In both countries, risk perceptions associated with venison are statistically significantly higher than those for beef and risk attitudes are much lower.
- In both countries, people do not see CWD in wild and farmed deer and elk as a significant potential risk to human health, ranking it above GM foods, below other food safety issues (e.coli, listeriosis, allergens) and similar to bovine spongiform encephalopathy (BSE) risk.
- Canadians believe that responsibility for food safety rests with industry, while Americans tend to believe that the safety of food products cannot be controlled, but is mainly determined by coincidental events or chance.
- Canadians are more concerned with genetically modified meat/poultry/dairy production, antibiotic use in meats, and animal diseases than are Americans.
- The humane treatment of food animals is of greater concern to Americans than it is to Canadians.
- Canadians do not believe that eating elk and deer meat will cause CWD in humans. Americans are less sure.
- Americans, especially those in Colorado and Wyoming, strongly disagree that the threat of CWD has been exaggerated.
- Canadians strongly agree that steps should be taken to eliminate CWD from the country, while Americans, although in agreement, are less sure.

Overall, there is less familiarity with meat from cervid animals than other meats. There are higher risk perceptions and lower risk attitudes related to meats from cervid animals as compared to beef. However, there is consumer support for research on CWD and management options, such as traceability, animal testing and other market interventions and strong support for management of the disease in the wild.





First Nations Perspectives

8. Crisis and Opportunity: Chronic Wasting Disease, Indigenous Peoples, and Cross-Cultural Research and Communication Regarding Wildlife and Environmental Health

Dr. Stéphane McLachlan, University of Manitoba

Many Indigenous communities in western Canada are concerned about increases in disease and contamination of wildlife that threaten their longstanding consumption and use of moose, elk and deer. A major interdisciplinary research project is underway to help identify the social, environmental, and health implications of chronic wasting disease and to develop effective responses to these challenges. This project links university researchers with Indigenous collaborators in western Canada. It involves veterinarians, social scientists, wildlife biologists, health scientists and communications experts on one hand and community hunters, Elders and leaders on that other hand. The project is holistic in approach, bridges Western science with traditional and cultural knowledge, and is shaped and controlled by the community partners at all stages. As a result, our project resonates strongly with both a science-based “One Health” approach and with Indigenous perspectives on wildlife and environmental health.

The goal of the first phase of the project was to achieve a better understanding of the implications of CWD as well as the role of cervids in the diets and culture of Indigenous people. The second phase looked to identify the reasons for ongoing declines in the health of cervids, and to assess to what degree these declines have been associated with CWD and the adverse effects of oil and gas extraction, agriculture and deforestation.

The third phase has explored a wide diversity of culturally appropriate and community-based risk communication. This process was initiated with a systematic review of media coverage and government outreach surrounding CWD. The process has also included interviews with academics, government staff, NGOs and Indigenous leaders. Results indicate that there has been little effective communication with or inclusion of Indigenous peoples in government risk communication strategies, even though these communities are at increased risk due to their consumption and use of moose, elk and deer. What communication did exist was generally found to be culturally inappropriate, inaccessible, and ad hoc, and, in many cases, generated much fear. This, along with widespread and long-standing distrust of government and scientists, undermines attempts to understand and manage risks associated with CWD as they affect Indigenous people.

However, our project has also shown that Western scientists can work effectively with Indigenous communities to better understand and communicate risk associated with CWD. A number of effective approaches to knowledge exchange have also been created through this collaboration, including an interactive website (<http://www.inlandandlife.ca/>), plain-language newsletters that include stories from communities, participatory video and culture campouts on the land.

With these holistic and inclusive approaches, Indigenous communities, scientists, and other actors will be able to better work together to adapt to the challenges of CWD.





First Nations Perspectives

9. Isga Wiya Wildlife Harvesting Techniques: Implications of Chronic Wasting Disease on Isga Ways of Knowing

Misty Potts-Sanderson, Environmental Conservation Lab, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba

Isga Wiya are Stoney women who continue to live a traditional lifestyle of vegetation and wildlife harvesting in and around their traditional territory, located within Alberta's Rocky Mountains and foothills. Moose, elk and deer are harvested and processed traditionally by Isga Wiya. The harvesting techniques practiced today have been taught through Isga ways of knowing such as oral history and, more importantly, practical hands-on experience.

Chronic wasting disease has implications for how Isga applies their ways of knowing, and there is concern from the Isga Nation surrounding CWD. With CWD causing the health of moose, elk and deer to be at risk, Isga Wiya's wildlife harvesting techniques and ways of knowing are also at risk. The impact on Isga identity will be profound.

It is important that a proactive, rather than reactive approach be taken on CWD in order to protect the Isga lifestyle and lessen cultural impacts. When something affects wildlife, it affects people. Inclusion and participation of Isga people in forums such as this workshop is positive. When government, communities and others work together in a spirit of ongoing and open dialogue and respect, we will find solutions.

10. Chronic Wasting Disease from a First Nations Perspective: CWD Affects Me and My Way of Life

Helen Cote-Quewezance, Cote First Nation, Saskatchewan

Although First Nations peoples were not included in the early investigations about chronic wasting disease, it was clear that wildlife was becoming sick. The same was true of the land, forests, rivers and vegetation, where deforestation, chemical contamination and soil erosion are threatening wildlife and the culture and lifestyle of Indigenous peoples. Moose, elk and deer are integrated in the culture, as they are used for food, clothing and medicine. Western science is increasingly looking to traditional medicine for insight on natural treatments and cures.

A cultural understanding and relationship with First Nations is needed to develop effective and respectful ways to address CWD. First Nation's perspectives on "how the deer, moose and elk heal themselves" and agricultural practices can provide direction and insight. Reforestation, stopping of chemical spraying, and the closing of elk farms are some of the measures that should be taken.

First Nations communities welcome the opportunity to share our knowledge and develop strong, positive and friendly relationships with individuals and organizations so that we can all work together on CWD.





Molecular Biology and Public Health

11. Chronic Wasting Disease Strains

Judd Aiken, Ph.D., Professor, Centre for Prions and Protein Folding Diseases, University of Alberta

CWD is a highly contagious brain disease that is always fatal and for which there is no treatment or cure. It is spread animal-to-animal and animal-to-environment. Detection of CWD is complicated and infected cervids appear healthy for a long time. The disease appears to spread slowly. The disease persists in the environment for decades, and in some cases it becomes more infectious in the environment.

Little is currently known about interspecies transmission; at this time, CWD appears to be restricted to cervids. Although both CWD and BSE, a known zoonotic, are prion diseases, there is no direct evidence of transmission of CWD to humans.

Prion strains are prion disease variants that can exhibit unique clinical symptoms, disease incubation period, biochemical characteristics of the prion protein, and transmission characteristics. Prion strains have been identified in virtually every species affected by these transmissible neurological disorders. The implications of prion strains relate to detection, tissue distribution of infectivity and inter-species transmission.

Studies have identified prion protein gene variants in white-tailed deer. Genetic analysis of hunter harvest data as well as experimental CWD transmission studies in deer demonstrate that two of the prion protein variants are linked to disease prolongation. Prions isolated from these variants exhibit unique biochemical characteristics indicative of unique CWD strains in white-tailed deer. There is also evidence of amino acid changes that indicate increased susceptibility to CWD. Other studies have indicated that there are differences in CWD between regions.

A study published in January 2011 suggests that CWD has the potential to transfer to humans. Using protein misfolding cyclic amplification (PMCA), a means of replicating prions in a test tube, CWD prion strains were shown to have the ability to convert to human prions.

Although it is known that CWD strains exist, they have not yet been fully characterized. The biology of CWD remains unknown.





12. Are We Prepared for Human Chronic Wasting Disease?

Zheng Wang, M.D., Canadian Creutzfeldt-Jakob Disease Surveillance System, Public Health Agency of Canada (presenter); Michael B. Coulthart, PhD, Canadian Creutzfeldt-Jakob Disease Surveillance System, Public Health Agency of Canada

The risk to human health of chronic wasting disease is poorly known. The current risk profile is drawn from results of animal and *in vitro* studies, including the following:

- Studies in transgenic mice expressing human PrP failed to demonstrate that CWD prions can induce prion disease after intracerebral inoculation. One study showed that the species barrier between cervids and humans may be strain-dependent. This suggests that other CWD strains, either naturally occurring or adapted in cervids from other species, could be highly transmissible to humans.
- In studies on non-human primates, squirrel monkeys succumbed to the prion disease following intracerebral and oral inoculation of CWD prions.
- *In vitro* studies using cell free conversion (CFC) experiments have suggested that transmission risk to humans is low as a result of incompatibility of the donor and recipient PrP sequence; however, it has not been ruled out.
- *In vitro* studies using PMCA have shown that CWD PrP^{Sc} may have the potential to trigger conversion of human PrP^C after *in vitro* or *in vivo* adaptation and stabilization.

Assessment of these studies suggests that while a strong species barrier exists between cervids and humans, there is insufficient evidence to rule out a potential risk of CWD transmission to humans. Human surveillance to monitor occurrence of potential human CWD is needed, and reduction of the risk of human exposure to CWD remains strongly recommended.

More than twelve years of national Creutzfeldt-Jakob disease (CJD) surveillance in Canada has not detected any cases of human CWD. The appearance of CJD in CWD endemic provinces (Saskatchewan and Alberta) from 1998 to 2009 was consistent with known CJD characteristics worldwide. Available results from detailed case investigations do not suggest that any cases were causally linked with CWD.

Although the comprehensive national surveillance of CJD can reveal unusual disease phenotypes, instances of transmission could be missed due to imperfect case detection, unknown phenotype or subclinical infection. Improved collection and sharing of data on harvested (wild and farmed) CWD-positive animals and on CWD-positive cervid meat consumption would enhance the Canadian CJD surveillance program. New and/or improved collaborations are needed between animal and human health authorities within and between provinces, between federal and provincial authorities, and across federal departments and agencies.

Risk tolerance for human CWD is extremely low: a single case could create a crisis (e.g., regarding safety of the Canadian blood supply). Ongoing assessment of the magnitude of this risk and its potential downstream consequences is crucial. Given the likelihood that occasional human exposure to CWD is likely to continue and even increase as CWD spreads in cervid populations, maintenance of appropriate public health precautions therefore remains warranted.





13. Challenges in Managing Emerging Prion Risks:

Applications to Chronic Wasting Disease Management in Canada

*Dr. Margit Westphal, McLaughlin Centre for Population Health Risk Assessment,
University of Ottawa*

Lessons learned from bovine spongiform encephalopathy (BSE) and Creutzfeldt-Jakob disease (CJD) can be applied to management approaches related to chronic wasting disease.

The first North American case of BSE was found in Canada in May 2003, leading the US and many other countries to close their borders to Canadian beef. The socio-economic cost of the outbreak was estimated to be in the range of \$10 billion. It was also determined that vCJD can be transmitted through blood transfusion.

An integrated risk management framework for BSE and vCJD was developed over a five-year period. It drew from case studies from 27 countries and regions around the world and looked at risk management approaches and interventions, international trade policy, and lessons learned.

In Canada and the US, animal health practices have been implemented to control the spread of BSE, including bans on specified risk materials in fertilizers and feed and guidelines for handling risk materials. Canada is the first country in North America with a National Cattle Identification System, which supports the containment and eradication of BSE through its trace-back capabilities. Effective safeguards have also been implemented in the food chain and for blood donation.

As of March 5, 2010, there have been 18 reported cases of BSE and one case of vCJD in Canada (the person is believed to have consumed the contaminated meat in the U.K.). A mathematical probability model suggests that there are 200 undetected cases of BSE in Canada, but they would be older animals and not used for meat consumption.

In 2009, an expert panel on transmissible spongiform encephalopathy (TSE) was convened to evaluate the knowledge gaps related to prion disease risk using a structured elicitation procedure for weighting and pooling expert judgment. When asked, "What is the likelihood that chronic wasting disease can transmit to humans?", panel members responded that it is possible.

Another expert elicitation exercise will take place in May 2011 and will focus on knowledge gaps associated with CWD, including those related to disease transmission, species barriers, environmental exposure, prion resistance, infectious periods, diagnostic test development and vaccine development. A key objective will be to obtain the values needed for accurate mathematical modelling of CWD environmental transmission and spread.

CWD disease exists in 18 U.S. states and two Canadian provinces in both free-ranging and farmed cervids. Effective management of CWD requires the development and application of an integrated risk management framework based on sound principles of risk assessment and management, the harmonization of regulations across jurisdictions, and continued surveillance. A key goal should be the prevention of CWD from entering new provinces/territories and species.



Part 2: PANEL DISCUSSION



Panel members provided a brief overview of their perspectives on the way forward, including tools and capacities needed for CWD managers and suggestions for achievable management objectives. An open forum discussion followed the panellists' comments.

Greg Douglas, Saskatchewan Ministry of Agriculture

Policies are needed to prevent the catastrophic spread of CWD in Canada, in terms of both geographic spread and infection of other species, in particular caribou in the North. It is also important to recognize and protect the cultural significance of cervids to Indigenous peoples. Although criteria still need to be developed, zoning appears to be an effective management tool for preventing disease spread. Economically viable cervid farms should be maintained, as they can be an important source of surveillance information and management practices. Other tools needed include live animal tests and biosecurity measures.

Lyle Saigeon, Saskatchewan Fish and Wildlife

Increasing public awareness of CWD and its risks will improve support from governments. It is difficult to secure funding when the public is not expressing concern. The breadth of issues important to wildlife, agriculture and human health needs to be brought to the forefront. Understanding sources that may accelerate the rate of disease spread, as well as increasing surveillance in targeted areas believed to be not yet affected, are different approaches of interest to Saskatchewan. The Ministry's existing policy and regulatory tools should be reviewed to determine their current effectiveness. The Ministry is looking to other jurisdictions for discussion on a longer-term strategic approach to determine management actions that are feasible and more effective than past eradication efforts.

Herman Bulten, Alberta Elk Commission

All farmed cervids in Alberta are traceable and certified by Alberta Agriculture. Alberta Agriculture and cervid producers diligently maintain records of animal movement. All animal movements must be pre-approved by the CFIA. The Alberta Elk Commission is actively working with producers across Canada to establish a national elk registry, which will be a key step in maintaining disease-free herds. Understanding the transmission of CWD is crucial: it will enable management practices to be put in place, for example to prevent exposure from outside sources and to reduce stressors on the herd that may make animals more susceptible. Producers should be consulted by CWD researchers, as they can provide valuable anecdotal evidence. A live animal test, preferably a blood test, would be an extremely valuable tool for the industry. A vaccine against CWD would also be very useful.

Stephen Woodley, Ecological Integrity Branch, Parks Canada

With a highly uncertain situation such as CWD, the best option is to put efforts and resources into research. The CWD scientific and stakeholder community needs to work together across jurisdictional and institutional borders in a multi-dimensional research approach that looks at soil types, the presence of wolves, ratio of mule deer to white-tailed deer, and other variants. Other research priorities include the role of the CWD protein in cell metabolism and vaccine development. Eradication of CWD is not a realistic objective. Best practices for detection and response would be valuable, including protocols for moving from early infection with a focus on stopping spread to controlling spread in areas of established disease, as well as information on high-risk activities, such as baiting, mixed cervids farming, and slaughter on uneconomic cervid farms. A surveillance network that includes First Nations communities could provide information not only on CWD but on other wildlife diseases; perhaps this could be coordinated by the Canadian Cooperative Wildlife Centre.





Panel Discussion

Michael Miller, Colorado Division of Wildlife

Further international collaboration and information sharing would provide a framework for developing realistic objectives. It is important to investigate the opportunities and challenges of the management and surveillance programs that have been used, including those tied to recreation and sport. Research should look to develop alternative intervention tools with the goal of disrupting the CWD process at its outset, such as ways to prevent the uptake of prions in animals, to stop prion persistence and propagation in the environment, or to inactivate prions; this research should build on previous studies on natural substances, such as tannins.

Nathan Clements, Canadian Wildlife Federation, Western Canada representative

The Canadian Wildlife Federation (CWF) is one of the oldest and largest non-profit conservation organizations in Canada. We are committed to helping maintain healthy wildlife populations; therefore, CWD is a key concern for CWF members as it has the ability to degrade the intrinsic value of wildlife. CWD is a national issue and all provinces/territories, even jurisdictions where there is no CWD at this time, need to be concerned and need to be engaged in future management decisions.

Trent Bollinger, University of Saskatchewan

There is a need for government policy and legislation that facilitates response to CWD and other similar disease threats, including access to private land and mandatory surveillance requirements. Better understanding of how CWD is transmitted, including animal-to-animal on farm and in the wild and environmental transmission, is needed. A tool that enables the rapid and inexpensive identification of prions in the environment would be valuable for identifying sites and implementing appropriate management measures. Eradication is not a realistic objective. A key research goal would be the identification of manageable disease levels that minimize the impact on cervid populations and ecosystems.

Zheng Wang, Public Health Agency of Canada

From a public health perspective, the priority of the Public Health Agency of Canada (PHAC) is to protect human health. To help accomplish this, including mitigating potential impacts of CWD on human health, PHAC has a comprehensive national CJD surveillance system in place. There is no evidence that any individual CJD case was linked to CWD from our 12 years of CJD surveillance in CWD endemic provinces. In addition, baseline data of CJD, such as annual mortality, age/gender profile and disease phenotypes in CWD endemic provinces, has been established. PHAC will continue to conduct CJD surveillance in CWD endemic provinces. Obtaining more detailed animal surveillance data is a realistic objective: the data exist, and PHAC will collaborate with provincial and federal animal health and agriculture agencies to see if there is a possibility of sharing these data. Based on the BSE/vCJD experience, surveillance for CWD in animals is a key component to assess the species barrier between cervids and humans. Another achievable objective is to reduce human exposure to CWD. The precautionary principle to reduce the exposure to CWD prions should be emphasized and communicated effectively to hunters and the public. A study has shown that nearly 40% of hunters surveyed do not wait for CWD testing results before they eat or share venison with others. On the other hand, when a subset of the same group of hunters was surveyed a second time, none reported that they would eat and share venison before receiving CWD test results. Improved communication seems necessary.





Open Forum Discussion

Open Forum Discussion

Discussion centered on issues related to scientific approaches and focus; First Nations contribution; collaboration and leadership; and communication. Highlights of the open forum discussion included the following comments, and are not meant to imply consensus on any of these points.

Scientific Approaches and Focus

- It is important to compile the work that has already been done and then to build on it. A mechanism to facilitate collection and information sharing is needed.
- Risk assessment results would provide the basis for a national strategy for dealing with CWD, one that would both address wildlife and human health risks and provide the necessary impetus for funding and action. Suggested risk assessment areas included:
 - effects of the decline in the availability of cervids on the traditional lifestyle and therefore the health of First Nations people;
 - risk of human infection occurring at some time in the future;
 - impact of CWD on the hunting and farming industries;
 - risks related to international trade; and
 - impact of CWD on ecosystems and other wildlife species.
- The existing science needs to be looked at in new and different ways, for example to:
 - identify movement patterns;
 - demonstrate how to use culling programs at the early stages of an outbreak in a new area; and
 - determine the influence of soil, environmental/ecosystem factors, small vs. large cervid ranges, gender, wild vs. farmed cervids.
- Other suggested research areas included:
 - introduction sources, especially feed;
 - soil content so that decisions can be made regarding where cervid farms could be located, to identify high risk areas, etc.;
 - transmission and spread; and
 - vaccine development.

Policy Approaches

- There is enough theoretical potential for human infection to indicate that we need to be building on the precautionary principles in dealing with CWD.
- Eradication is not currently feasible; CFIA will be shifting to a focus on control. The objective for Canada is to prevent the spread of the disease, both to new geographic regions and to new species.
- The challenges are not scientific: they are financial, social and political.
- There is some urgency for developing a cohesive and strategic policy plan: CFIA (and other government departments) are entering a period of cost-cutting. A compelling story will be needed to secure funding.





Open Forum Discussion

First Nations Contribution

- First Nations peoples have an important role to play in increasing understanding of CWD. First Nations traditional understanding of wildlife diseases, wildlife behaviours and the environment including soils and plants, as well as their understanding of the bridges between humans and animals, need to be part of the data pool. First Nations communities are a vital source of information in surveillance programs. It would be helpful to improve testing and storage sites and facilitate more rapid test results.

Collaboration and Leadership

- The 2005 CWD National Strategy was significant; however, there was no leader to carry it forward. Leadership is needed that encompasses all aspects – agriculture, wildlife and human health.
- The “One Health” concept provides the framework to move CWD issues forward.
- The undertaking of risk assessments on various CWD issues would require a cooperative, collaborative and integrated approach that would bring together the current research and understanding.
- The CWD Forum, an ad hoc group of representatives of federal, provincial, and territorial agriculture, wildlife and environment organizations, could provide a platform on which to build a robust collaboration mechanism, with expanded membership.
- The Canadian Animal Health Surveillance Network (CAHSN) is a network of federal, provincial and university labs across the country. It is linked with the Canadian Public Health Laboratory Network (CPHLN) and seeks to improve the capacity to detect emerging animal disease threats in real time. CAHSN’s TSE project has been expanded to also include scrapie and CWD, so it will now also have a wildlife surveillance component.

Communication

- To enable collaboration, there must be agreement on direction. Currently, there are opposing views: while some promote the precautionary principle, others claim there is no basis for it. Mixed messages must be avoided in order to gain public and political support. A cohesive policy is needed.
- CWD has been primarily associated with farmed cervids. It may be time to re-characterize CWD in light of what it really is: an exotic, alien, invasive disease with the potential for long-term ramifications, a disease that crosses economic, agricultural, environmental and wildlife lines, and a disease that may possibly pose risk to human health.
- The Public Health Agency of Canada tells hunters to avoid eating sick animals, to wear gloves when handling the animals, and to avoid exposure to CWD prions. However, many hunters don’t believe there is a risk. In Alberta, hunters are provided with information so they can make an informed decision. At this time, the decision rests with the individual.



Part 3: PARTICIPANT FEEDBACK



Building on the presentations and the panel discussion, participants worked in small groups to discuss the following questions:

- A. *What are currently achievable management objectives for CWD in Canada (wildlife, live stock, human health, well-being)?*
- B. *What tools or capacities currently are most needed by CWD managers (wildlife, live stock, human health, well-being)?*

These small group discussions were followed by plenary reporting.

The comments, ideas and suggestions that emerged during the plenary discussion and those that are contained in the table report books have been organized here to reflect the six goals of the 2005 National Chronic Wasting Disease Control Strategy, in order to facilitate further discussion and updating of the strategy, including the development of action plans.

The comments are not meant to imply consensus.

The six goals of the 2005 National Chronic Wasting Disease Control Strategy are:

1. Prevention of further emergence of CWD in Canada.
2. Early detection of CWD in cervid populations.
3. Planned responses to CWD.
4. Effective management of CWD in cervids through valid scientific approaches.
5. Education and training required to achieve goals 1 through 4.
6. Communications, both internal and external, to assure coordination, collaboration, integration and accurate risk communication.

A. Currently Achievable Objectives

Discussion Overview

Participants agreed that eradication is not an achievable option: the focus needs to be on controlling the spread to new areas and new species. A key objective is the development of a national surveillance system, including standardized information collection and reporting protocols. For wild cervids, surveillance needs to be done in all areas, not only CWD-positive areas; surveillance of farmed cervids must be mandatory. Zone management is a currently achievable objective, along with control and tracking of movement of farmed cervids, and banning of practices such as baiting and feeding. A “One Health” approach should be adopted that promotes collaboration across agriculture, wildlife, ecosystems and human health sectors to develop a clear understanding of CWD as a disease and its implications from multiple perspectives.

Prevention

- Minimize the spread of CWD into new geographic areas, the environment and new species.
- Prevent known TSEs from entering the food system.
- Prevent CWD infection in Canadians.
- Minimize exposure of traditional land harvesters.
- Minimize rate of spread to allow time for the development of new tools (e.g., vaccines).





Participant Feedback

Early Detection

- Establish an effective and efficient national surveillance system, with standardized information collection and reporting protocols.
- Mandatory surveillance of farmed cervids in all provinces; this will contribute to maintaining international trade of cervid products.
- Wildlife surveillance in all areas, not just where CWD is present.
- Include First Nations in surveillance programs; make participation easy.
- Monitor human population for any protein misfolding events.
- Criteria for surveillance:
 - ecosystem landscape considerations;
 - land use;
 - geographic location;
 - harvest rate;
 - density;
 - species;
 - time of year;
 - animal behaviour;
 - age; and
 - sex.

Planned Responses

- Develop strategies/action plans (response and surveillance) for the various risk scenarios (at risk, newly detected, and enzootic) for both farmed and wild cervids.
- Ban activities in high risk areas that impact environmental spread, such as feed and baiting.
- Zone management is achievable for farmed cervids (no animals allowed out of an infected CWD zone).
- Reduce risk through best practices related to control the movement of live and dead animals across jurisdictions, feed, multi-ungulate farms, transmission sites, etc.

Effective Management

- Adopt a “one health” approach. Collaboration across agriculture, wildlife, ecosystems and human health sectors to develop a clear understanding of CWD as a disease and its implications from multiple perspectives.
- Understand the distribution and transmission of CWD in captive and wild cervid populations across Canada.
- Control existing areas of infection.
- Incorporate new scientific knowledge as it becomes available for surveillance prevention and control of CWD.
- Establish an effective integrated management plan across jurisdictions and stakeholder interests.
- Risk assessments need to be done to support management option selection and to identify specific risk areas (e.g., prevent introduction of CWD into vulnerable human populations).
- Ensure inclusive processes, diverse participation, and grassroots involvement.
- Maintaining market access for the cervid industry is important. Need to review compensation and incentive programs in terms of effectiveness and costs (private vs. public).
- Understanding impact of non-cervids on CWD and the effect of CWD on other wildlife (e.g., effect of scavengers in terms of spread and the effect of CWD on scavengers).
- Hunting and herd management: hunting quotas, licensing, restrictions and limits (e.g., bucks only).





Participant Feedback

Education and Training

- Training for staff in diagnostic labs in order to improve turnaround time for test results.
- Review of regulations to ensure they are in line with current science, e.g., access to private lands, requirements for double fencing, compliance with testing requirements, etc.
- Training program to increase the number of people doing surveillance.
- Develop partnership program with First Nations in relevant areas – training, learning, sharing, and food safety.

Communication

Internal:

- Develop a national mechanism/secretariat to facilitate collaboration across all jurisdictions and organizations. The CWD Forum could potentially provide an initial platform.
- Develop a national strategy and plan that identifies each jurisdiction's responsibilities based on outcomes.
- Establish a national forum to set research priorities.
- Collaboratively use the resources of each group in order to have the most effective impact possible.
- Communication between jurisdictions should be an objective across Canada.

External:

- Educate and inform Canadians regarding the importance of CWD to cervids and ecosystems (agriculture, wildlife and people).
- Education on safe handling practices (gloves, minimize contact with risk materials, boning out, minimizing cross contamination during processing, etc).
- Education for rural communities in general and especially in CWD positive areas.
- Education to promote reporting of sick animals.
- Need to strike a balance between education and fear mongering/sensationalism.
- Ensure messages are common, consistent and in plain language.
- Need to convince political decision makers of risks associated with CWD and the need for appropriate management approaches, including cross jurisdictional collaboration, in order to secure funding.

B. Tools and Capacities

Discussion Overview

Participants noted that a toolkit of various practices and approaches is needed: live animal testing; vaccines; culling; zoning; hunter management through incentives, quotas; surveillance; and modelling. Some tools require legislation/regulation, while others could be less prescriptive; however, enforcement and compliance monitoring is needed. It is important for best practices and lessons learned to be shared. The creation of a forum/secretariat would facilitate information sharing across disciplines, jurisdictions and organizations. Federal leadership is needed to support funding, legislation/regulation, and ensure emergency response measures are in place. First Nations engagement and involvement is crucial.





Participant Feedback

Prevention

- Vaccines:
 - There is a proof of concept vaccine for prion-based disease. Elk would be the target species. The technology has been licensed and is currently in the “commercialization pipeline.” That involves manufacturing, clinical and field trials, and CFIA oversight. It will take two to three years to reach full licensure. The vaccine would be administered through injection, not orally, so therefore it would not be as suitable for wild animals.
 - Even if not 100% effective, a vaccine would be valuable.
 - Vaccine should be cost effective and easy to administer (oral).
- Mechanism that would “turn off” infectious prions or prevent shedding of prions.
- Better understanding of prion propagation.
- Prophylactic that prevents transmission (could be a vaccine).

Early Detection

- Improved diagnostics:
 - effective, rapid, convenient and inexpensive tests to determine pre-clinical presence (live animal blood test);
 - tests of live animals’ saliva, feces to detect CWD;
 - test to determine presence in environmental samples.
- Increased and improved surveillance tools.
 - Surveillance in all provinces/territories.
 - Surveillance in high-risk yet currently uninfected areas.
 - Use First Nations Contaminants Program to source and train samplers.
- Model to depict transmission.
- Genotyping – should be done on non positives and all captive cervids.

Planned Responses

- Integrated wildlife management at the international level (Canada and the U.S.) to develop common experiment design, long-term approaches, etc.
- Create a Secretariat to manage a forum to facilitate and integrate collaborative, multi-disciplinary, multi-stakeholder information exchange.
 - Need a champion to lead.
 - Need integration of farmed side and wild side.
 - Central database and geomapping system/modelling for scenario building.
 - Compile and share best practices and lessons learned.
 - Ensure consistent messaging.
 - Coordinate development of a risk-threat assessment.
 - Coordinate research projects and results dissemination.
- Response strategy for the first human case of CWD.
- Assessment of liability.





Participant Feedback

Effective Management

- Uniform set of risk management roles and regulations – federal and provincial levels.
 - Review provincial regulations and regulatory instruments regarding game farming and hunting for consistency with national policy and enforcement (import, export, movement);
 - Develop appropriate instruments (legislation, guidelines) as required;
 - Ensure compliance.
- Federal leadership; funding to provinces.
- Increased resources (people and funds) to better use currently available tools and create new tools.
- Improved/increased facilities and capacity to handle large animals.
- Jurisdictional controls on movement of offal and carcasses.
- For First Nations:
 - Sustained interaction and involvement with First Nations to develop improved surveillance practices.
 - More efficient access to testing and faster delivery of test results.
- For producers:
 - Enable CWD-positive cervid farms to become hunting farms (to remain viable).
 - Introduce incentives to promote compliance and use of biosecurity measures; tie compensation to level of biosecurity.
 - Practical biosecurity/biosafety tools: double fencing, electric fences, control of movement of animals, feed testing.
- For hunters:
 - Engage hunters in the solution through stewardship programs and education.
 - Hunter management programs: for specific management areas, develop target lists (age, sex) and issue corresponding hunting licenses; incentives (e.g., earn a buck, increased quotas); convenient testing locations.

Education and Training

- Increase research capacity: create post-graduate chair for CWD research.
- Development and use of models to track CWD spread and identify areas of risk.
- Surveillance:
 - Training of samplers in rural, northern and First Nations communities.
 - Templates and guidelines.

Communication

Internal:

- Communication and cooperation at all levels.

External:

- Public:
 - Monitor effectiveness of communication messages (are messages reaching target audiences (hunters, public, politicians), level of understanding, etc.).
 - Clarify what is known and what is not known; uncertainty and risks.
 - Ensure consistency of messaging.
 - Identify best practices for engaging and communicating with First Nations; highlight success stories (e.g., opportunities for sharing Indigenous knowledge, school programs, use of social media).
- Political:
 - Need to communicate risk.



Part 4: NEXT STEPS



About this Report

This “as heard” summary report was provided to participants, who were invited to identify any serious errors or omissions.

Workshop Presentations

Copies of the presentations given at the workshop will be available to participants once speakers have approved the material for circulation.

Next Workshop

A follow-up workshop with a small group of practitioners with experience in planning and implementing disease control programs will be convened April 5-6, 2011, in Saskatoon. The goal of this workshop will be to propose updates to Canada’s National Chronic Wasting Disease Control Strategy that was prepared in October 2005 for the Federal-Provincial and Territorial Resource Ministers Council, available at <http://wildlife1.usask.ca/en/Publications/NCWDCS2005.pdf>

Other Related Events

The University of Ottawa will be hosting an expert panel on CWD in May 2011 (contact Margit Westphal for information).



Appendix A

Edmonton CWD Workshop — Participant List



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Appendix A Edmonton CWD Workshop — Participant List



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Appendix B

Edmonton CWD Workshop – Agenda



PROGRAM

WEDNESDAY, FEBRUARY 9, 2011

8:00 – 8:30	Breakfast buffet
8:30 – 9:00	<p>Welcome</p> <p>Kevin Keough Alberta Prion Research Institute</p> <p>Elder Angela Jones Alexis Nakota Sioux Nation, Alberta</p>
9:00 – 9:25	<p>Michael Miller Colorado Division of Wildlife</p>
9:25 – 9:50	<p>Vic Adamowicz University of Alberta</p>
9:50 – 10:15	<p>Michael Samuel University of Wisconsin</p>
10:15 – 10:30	Q&A Period
10:30 – 10:50	Break
10:50 – 11:15	<p>Greg Douglas Saskatchewan Ministry of Agriculture</p>
11:15 – 11:40	<p>Stéphane McLachlan University of Manitoba</p>
11:40 – 12:05	<p>Misty Potts-Sanderson Alexis Nakota Sioux Nation, Alberta</p>
12:05 – 12:30	<p>Helen Cote-Quewezance Cote First Nation, Saskatchewan</p>
12:30 – 12:45	Q&A Period
12:45 – 1:45	Lunch
1:45 – 2:10	<p>Judd Aiken University of Alberta</p>
2:10 – 2:35	<p>Ellen Goddard University of Alberta</p>
2:35 – 3:00	<p>Margo Pybus Alberta Sustainable Resource Development</p>
3:00 – 3:25	<p>Trent Bollinger University of Saskatchewan</p>
3:25 – 3:40	Q&A Period
3:40 – 4:00	Break
4:00 – 4:25	<p>Michael Coulthart Public Health Agency of Canada</p>
4:25 – 4:50	<p>Margit Westphal University of Ottawa</p>
4:50 – 5:15	Q&A and Closing Remarks



Appendix B Edmonton CWD Workshop – Agenda



PROGRAM THURSDAY, FEBRUARY 10, 2011	
8:00 – 8:30	Breakfast buffet
8:30 – 10:00	<p>PANEL INTRODUCTIONS, COMMENTS and DISCUSSION Facilitator: Barry Stemshorn</p> <p>TOPICS</p> <p>What tools or capacities currently are most needed by CWD managers (wildlife, livestock, human health, well-being)?</p> <p>What are currently-achievable management objectives for CWD in Canada (wildlife, livestock, human health, well-being)?</p> <p>PANEL MEMBERS</p> <p>Stephen Woodley Ecological Integrity Branch Parks Canada</p> <p>Lyle Saigeon Saskatchewan Fish & Wildlife</p> <p>Michael Miller Colorado Division of Wildlife</p> <p>Nathan Clements Canadian Wildlife Federation - Western Canada representative</p> <p>Greg Douglas Saskatchewan Ministry of Agriculture</p> <p>Trent Bollinger University of Saskatchewan</p> <p>Michael Coulthart Public Health Agency of Canada</p> <p>Misty Potts-Sanderson Alexis Nakota Sioux Nation, Alberta</p> <p>Herman Bulten Alberta Elk Commission</p>
10:00 – 10:30	Break
10:30 – 12:30	FACILITATED OPEN DISCUSSION
12:30 – 1:30	Lunch
1:30 – 3:30	FACILITATED OPEN DISCUSSION CONTINUES...
3:30 – 4:00	<p>Closing</p> <p>Kevin Keough Alberta Prion Research Institute</p> <p>Elder Angela Jones Alexis Nakota Sioux Nation, Alberta</p>

