



Northern Plains Ecosystem Chronic Wasting Disease Workshop

September 27-28, 2016

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Welcome Remarks

Kevin Keough, Alberta Prion Research Institute

The decision to host this workshop arose from a workshop the Prion Institute co-hosted in April with an international group looking at upcoming threats and challenges. There is a need for better policy related to CWD for which workshop participants will be responsible. This workshop is focused on surveillance and control, one of the four research funding themes of the Prion Institute.

Travis Ripley, Alberta Environment and Parks

Chronic wasting disease is of importance to the Government of Alberta. Environment and Parks has been working on CWD for quite some time and is interested in policy and management options related to preventing the spread and how herd management can control CWD. It is necessary to communicate with public stakeholders in order to develop CWD policies that will be more accepted.

Regional Updates

Regional updates were provided from the participating jurisdictions to provide attendees information about the history of CWD, policy and current status.

Saskatchewan

Betty Althouse, Chief Veterinary Officer, Government of Saskatchewan

Big game hunting adds \$108 million to the Saskatchewan economy. The province implemented a game farm policy in 1997 to foster growth of the industry and to regulate licensing, fencing, tagging, inventory and mandatory CWD testing. Since 2002, there has been a 50 per cent decline in game farm operators (~600 to ~300) and a 67 per cent decline in animals (~45,000 to ~15,000). Much of that is related to CWD, which was first detected in 1996 in an imported farmed elk. Canada has had 87 cases of CWD in farmed cervids with 83 being in Saskatchewan.

The current focus is on control rather than eradication. There has been a minimal amount of funding for testing. Saskatchewan has a CWD working group made up of various ministries, wildlife groups and outfitters, but there is no representation yet from the game farming group. They've had a meeting with the Saskatchewan Cervid Alliance. The group is evaluating game farm programs and regulations. They would like to work towards a regional approach.

Saskatchewan Discussion

Communicating with the public, particularly hunters, to look for strange behaviour in the wildlife population is important because this is an effective way to identify CWD. Baiting was mentioned as a potential problem. Hunter head testing is voluntary, but there is local advertising in areas that the province is interested in sampling. The department would like 100 heads from each of these target areas, but that is probably being optimistic. There was a brief discussion about talks with Aboriginal groups. Some meetings were held early on, but Aboriginal hunters tend to prefer moose over deer.

Alberta

Margo Pybus, Provincial Wildlife Disease Specialist, Alberta Environment and Parks

The Alberta approach involves inter-agency cooperation that integrates management and research with the purpose of taking a proactive approach. Surveillance has been ongoing since 1998. Public education and surveillance increased in 2001 after the first CWD case in a wild deer, particularly near the Saskatchewan border. Proactive reduction methods in high-risk areas were undertaken in 2005-2008 (inclusive) with removal of deer and increased hunting opportunities.

Since 1998, the province has tested more than 56,000 heads of wild cervids with mandatory submission in selected areas since 2006. There have been 413 cases thus far (362 mule deer, 50 whitetail and one moose) with the distribution in east, central and SE Alberta. CWD is increasing in prevalence and is spreading westward along specific watersheds.

The province is considering the potential value of experiments in managing the harvests by focusing on male mule deer and winter mule deer groups. Harvest treatments would be limited in the overall scope. We would also need to gather stakeholder input from hunters and the public. Long term commitment is needed to deliver any such experimental harvest.

Alberta Discussion

Susceptibility is similar between mule deer and whitetail deer, but the prevalence and disease occurrence are significantly higher in mule deer. This might be due to ecology or different CWD strains. It was noted that there are no mule deer in Wisconsin and Illinois, but there is CWD in the whitetail population. The disease is spreading farther west in Alberta with an outlier case 100 km west of the infection zone (samples between the outlier and the enzootic area are negative for CWD).

Wyoming

Mary Wood, Wyoming Wildlife State Veterinarian, Wyoming Game and Fish Department

The state began surveillance in 1982. They currently test 1,500-2,000 annually, hunter harvested, road-killed and targeted. They've tested approximately 52,000 samples thus far, mostly mule deer. Federal funding was available 2002-2011. Testing has subsequently dropped. Hunter fatigue also led to a drop in submissions.

Prevalence rates are increasing. It's believed CWD was well established when the disease was first discovered. CWD will spread across the entire state without active management. The prevalence rate is as high as 40 per cent in some regions. The disease is progressing slower in elk than in the whitetail and mule deer populations.

Two recently-completed studies on CWD population effects show a 10 per cent annual decline in a whitetail population at approximately 30 percent prevalence and a 19 percent annual decline in a mule deer population at approximately 40 per cent prevalence. The mule deer study also identified a shift in codon 225 genetics towards alleles that lead to longer incubation.

The goals of the CWD management plan are to decrease the rate of spread and prevalence of CWD, monitor distribution and spread, support research and public education. The state continues to do

surveillance, restrict carcass movement, target removal of clinical suspects (at the feed grounds) and plans to increase research and education.

For future regional management, Wyoming would like to share resources with other jurisdictions and focus on consistent public messaging and information across states/provinces. They would also like to have a discussion about collaborative disease management and a harvest management system.

Wyoming Discussion

While genetic shift does appear to be occurring, all genotypes are still susceptible to CWD. It appears that while animals may live longer with certain genotypes, they are also likely shedding CWD prions into the environment for a longer period of time and contributing to greater environmental contamination. There was a general discussion on genetics and CWD and relying on genetics alone for managing CWD is likely not the answer – particularly when you look at current knowledge on genetic factors in scrapie.

Hunter fatigue and loss of federal funding has led to a drop in submissions for testing. Governments and wildlife agencies need to look at different channels such as social media to increase knowledge about CWD and the population effects, especially with younger hunters. Public education should focus on a deer management program, not just a CWD management program.

Montana

Emily AlMBERG, Wildlife Disease Ecologist, Montana Fish, Wildlife & Parks

Montana has yet to detect any CWD in wild cervids, although they detected and depopulated a positive game farm in 1999-2000. Testing began in 1996 with the most samples being tested between 2000 and 2010 when federal funding was available. The state has targeted symptomatic animals (two per cent) and road kill (five per cent), but 93 per cent of samples are voluntary hunter submissions. They have created priority surveillance areas for CWD and has two ongoing radio-collar studies on the northern border of the state to identify movement of deer between Montana and CWD enzootic zones in Alberta and Saskatchewan. The state banned the formation of new game farms, but they still have ~31 licensed game farms left.

The state conducted a public survey in 2013. At that time, the public was more interested in increased surveillance than population control. There was no support for sharpshooters. Twenty per cent of those surveyed knew nothing about CWD. As a result, Montana has identified public education as a priority.

The current plan bans the feeding of big game animals, bans the transport of carcasses from states and provinces with known CWD cases, and prohibits the movement of live (wild) cervids within the state. Surveillance will be focused on high-priority areas. Montana also has a ban on the use of attractants or baits. The post-detection plan is to reduce concentrations and densities in high risk areas through hunting and increased surveillance. There is a new CWD action team that is focused on increased public outreach and education, agency awareness and is planning for immediate and long-term management responses to detection.

Regional responses are believed to be key to success. There is no dedicated budget for CWD (previously USDA funding), so they are designing a lower cost weighted surveillance program. The department needs to secure long-term funding for the plan to be effective.

Montana Discussion

There was a nine-year national effort from the US government to support CWD surveillance in captive and wild cervids. Since the elimination of that funding in 2012, it has been hard to get the necessary funds. The winter control program in Alberta was \$1 million per year for three years, which appeared to reduce the prevalence rates; however, more time was needed to validate the conclusion. Montana is focused on continuing to improve public awareness of CWD. Montana has one of the highest per capita rates of hunting in the US (around 20 per cent), which probably explains why a large portion of the public has at least herd of CWD. Outreach is currently largely passive through check-stations.

Manitoba

Richard Davis, Big Game Health Program Manager, Manitoba Sustainable Development

Manitoba's CWD prevention program focuses on live wild cervid transportation restriction, ban of unprocessed carcasses, ban on substances and cervid attractants containing body fluids, mandatory hunter sample submissions in certain areas and ban of import of live wild native/exotic cervids. Elk farms (~15 farms and 600 animals) have to test all deaths and have strict record keeping.

For public awareness, highway signs warn about not importing unprocessed big game from Saskatchewan. Hunters along the Manitoba/Saskatchewan border have to submit heads. MB tests around 300 samples per year and have had no positives to date. Surveillance flights are done to look for baiting sites and animals crowding in farmyards

Manitoba Discussion

The department will assist the farmer with bale fences if necessary, but if a farmer consistently practices bad farming, they will charge him/her. Most tickets have been issued when an officer sees someone harvest an animal in a mandatory area and the hunter doesn't submit a sample to the testing facility.

Canada

Penny Greenwood, National Manager, Disease Control and Animal Welfare, Canadian Food Inspection Agency

The Canadian Food Inspection Agency (CFIA) focuses on captive cervids, but the CFIA can't reduce CWD occurrence as animals and people cross fences. A province must submit a declaration of the infected location for a positive sample from an abattoir or farm, which will lead to a quarantine and testing of the location. All exposed animals are destroyed. That has led to difficulties with establishing a market value for whitetail deer and elk to compensate the farmer. If processed by a federally licensed abattoir, elk (but not deer) can be tested and non-infected animals can be sold as meat.

The number of captive cervids is decreasing, but the number of CWD cases is increasing. Farmed whitetail are used more for hunt farms in Saskatchewan and Quebec than for meat. There is difficulty in eradicating infected hunt farms in Saskatchewan; 29 are under permanent quarantine.

CWD voluntary herd certification program (VHCP) is a voluntary program that provides cervid owners with a means of mitigating the risk of CWD in their herds, but it is not being taken up by Saskatchewan farmers. Possible reasons are the expense to implement, farmers cannot export outside Saskatchewan and it has not been totally successful in preventing spread. The program is being reviewed for possible changes. Next steps are to update the disease response program and update the VHCP standards

Canada Discussion

The increased risk of hunt farms is due to the problem of containing cervids inside fences and wild animals jumping fences. Wild cervids are not allowed to move through Ontario anymore, so most of the imported animals on Saskatchewan hunt farms come from Alberta.

Compartmentalization is a biosecurity quarantine from one farm or hatchery, whereas zonation is the declaration of a zone where CWD is considered enzootic. The emphasis then becomes one of slowing the spread from these zones. The CFIA cannot handle the number of cases of contaminated premises. The current approach has been ineffective because CWD often reappears after the farm has been decontaminated.

Given the complexity of the issue, it is not helpful for the provinces and states to work independently. Unless all the provinces/states work together, it will be impossible to control the spread. The CFIA might be able to help implement a multi-province zonation system. The disease is so complex that it takes so much effort to bring a group of people up to the level of understanding that they can have a meaningful conversation about the disease.

Cervid Wildlife Management

Introductory Remarks from Rob Corrigan, Wildlife Game Management, Alberta Environment and Parks

Alberta has general licences to cover bucks and does across most of the province and special licences on a priority-based draw system for a specific species in a specific area. Special licences are used to either limit the harvest or the number of hunters. The province relaxed the mule deer special licence in response to CWD. Alberta has increased hunting opportunities through winter hunting, quotas, landowner licences and decreased licence fees.

Currently, the number of permits allocated is higher than the optimal level suggested by the population model in order to reduce the population and spread of CWD. The department estimates the submission rate as 50 per cent in mandatory submission zones. The department has never ticketed anyone. It is unknown what the hunting public would accept as a management program. In Alberta hunters who get a CWD positive deer are given a replacement licence if they choose not to consume the meat. They are not charged if they dispose of an animal that has tested positive.

Cervid Wildlife Management Discussion

In Alberta, there are so many opportunities to hunt that hunting alone will not reduce the deer population over a large area. Hunters also have to use all of the meat, and buy in from outfitters is difficult because they need to protect their livelihood.

In Alberta, approximately three per cent of the population hunts. This percentage is fairly stable, which results in an increasing number of hunters as the population increases. Quota licences haven't been effective in removing enough infected deer. Hunters are usually more interested in harvesting a large buck every three years than a small deer every year.

Wisconsin saw an initial decline in whitetail deer hunting licence sales for three years, but the numbers rebounded. Alberta hasn't seen a decline in hunter numbers in CWD zones. A participant brought up increased natural predation as another management option. There aren't any recent studies to determine the proportion of trophy hunters versus meat hunters.

Alberta is doing a survey on mule deer hunting to see what the hunters prefer. The survey could include information on the fact that the larger deer are more likely to be infected with (and therefore spread) CWD.

Jurisdictions need to determine what the end goals are related to prevalence, population impact, management and spread. Food safety and landowner rights also need to be considered. The cost of achieving these goals needs to be weighed against the benefits. A regional collaboration also needs to take into account different policies e.g. Manitoba allows hunting in provincial parks whereas Alberta only allows it in one.

More research is required into management strategy to reduce the spread. A strategy needs to consider environmental contamination in high-prevalence areas. The group questioned whether there would be an urgency from policymakers unless it is determined that CWD can be transmitted to humans. Regardless of management strategy, it is important to have an appropriate communication strategy.

Communication Strategies for Public Awareness

Introductory Remarks from Vic Adamowicz, Professor, University of Alberta

We need to be careful about using communication in a broad sense as a tool because people use shortcuts and their own biases to make decisions. People also tend to underestimate large risks and overestimate small risks. Information processing is also affected by personal and societal influences and norms.

Surveys suggest there is more knowledge of CWD in Canada than in the US. People want to take action against CWD without the usage of culls. Pesticides are perceived as a greater health risk than CWD. Hunter interest in CWD depends on perceived risk of CWD to wildlife populations and the perceived efficacy of management approach. There is significant heterogeneity in hunter response and opinions.

A recent survey paper of expert opinion on control mechanisms ranked communication as the least effective; vaccines were listed as most effective. Communication cannot be a stand-alone strategy; it

should be used in conjunction with a particular management tool. Communications should also take into account confirmation bias and where hunters get their information and whom they trust.

Communications Discussion

A CWD communications strategy needs to target hunters, policymakers, stakeholders, landowners and industry. The hunting and agriculture associations might not necessarily represent the grassroots hunters, landowners, etc. Surveys could help get more general opinions. The strategy also needs to have a champion who will help convey the information.

Given the limited resources available for communication, it might not be valuable to put resources into reaching the general public. The most momentum will come from the targeted special interest groups, and it is from these groups that the champions will come. The champions will meet with the policymakers to build a case for funding and/or policy changes.

The communications focus could be more on why it's important to manage CWD rather than how. Sustainable deer populations are important for the environment and the future of the hunting industry. There is now science that gives us mortality rates to show the negative impact on the mule deer population. Differential mortality has been established, but the impacts on populations depend on compensatory nature of disease, age structure and age/specific infection rates in the short term. CWD might then become more important to hunters, and they might be willing to change their behaviour.

Wyoming is a good example of what happens when CWD is not managed and can be explained in plain language i.e. 30 per cent prevalence means that one out of three deer will die of CWD within 24 months. On the other side, Montana is already following the approach of a younger age class of deer and has no CWD.

It would be beneficial for the different jurisdictions to collaborate on a messaging strategy if the message is about deer sustainability and not about the disease. All the jurisdictions have the same goal, but they have differing levels of CWD.

Another issue that needs to be addressed is there isn't a national champion on CWD. The previous Canadian strategy was perhaps too broad and diverse. It is hoped that this smaller group might be able to be more specific and applicable.

Cross-jurisdiction Activities

Introductory Remarks from Craig Stephen, Executive Director, Canadian Wildlife Health Cooperative

The Canadian Wildlife Health Cooperative serves as the national watchdog for wildlife health. It focuses on facilitating a harmonized approach to national wildlife disease issues. A collaborative regional effort that targets CWD will provide benefits and economies of scale: healthy deer populations; efficiency; harmonize programs; communication of regional status and information; regional strategies; and workforce development.

Collaboration leads to innovation by connecting people and ideas. This will lead to increased preparedness by reducing territorial behaviour, choosing a leader, making CWD a priority, building trust and having effective support. Collaborating will also help to reduce inequities in technical capacity and expertise.

CWD cannot be easily eradicated because it is caused by a persistent organic pollutant. The regional plan needs to focus on reducing the social, ecological and environmental impact of CWD. The goal is to preserve the optimal health of the cervid population. The harm reduction model combines health promotion (habitat protection, connectivity, etc.) and hazard control (cull, movement restrictions, etc.).

In order for a regional plan to be effective, ownership needs to be assigned within the group. There also needs to be a recognition that collaboration does not happen organically and for free. There also needs to be a strategic focus with increments of tangible success. The 2005 CWD strategy was not realized because of these issues along with the lack of a champion to keep the strategy going.

Cross-Jurisdiction Discussion

There might be a role for the Canadian Wildlife Health Cooperative (CWHC) to help with collaboration since it is non-governmental. One example given was the TB Task Force with Parks Canada taking the leadership role. Even though there was a good deal of adversity within the task force, it was a powerful generator of ideas and plans.

Large-scale solutions are not realistic or attainable. One idea is to develop a one-year work plan with concrete action items that will move the collaboration forward. This plan needs to be sensitive to the fact that CWD crosses borders and jurisdictions. It might be necessary to appoint a lobbyist that can engage different levels of government.

Given that it won't be feasible to attack the disease on all fronts, it might be better to do local management strategies that are closely monitored to see what works and what doesn't. A key component will be to set up these local management strategies as experiments in order to learn from the process and evaluation. Setting up the management strategy as experiments allows for the potential of research funding from agencies. These results should be shared amongst the jurisdictions. This will benefit the communications strategy as well.

A positive about this type of a health plan is that it might be easier to get buy-in from Aboriginal communities because it deals with more than just the disease. It will look at environment, animal health, habitat, etc.

The difference between the TB situation and the CWD situation is that there were more champions within government and more resources allocated. If we want to follow a similar collaborative plan, it would be important for each of the jurisdictions to document what they can do to address the issues.

There are three factors that make it more difficult to convince governments to allocate resources to CWD: there is no evidence of transfer to domesticated animals or humans; we don't have a solution that can generate a very positive outcome; and the outcome of any management strategy won't be known for several years.

It is also a problem that the provinces are hard-pressed to fund these management strategies, so it might be better to get these smaller research projects funded through outside funding agencies. The CWHC also has the potential to leverage some funding to make CWD data part of a larger wildlife health data platform that it is currently developing. It might be possible to have Environment Canada list CWD as an environmental pollutant because this would at least get the disease on the radar.

The group discussed working with funding agencies and associations to communicate the impact of CWD and the importance of management. Some state departments can't get enough funding for surveys, so it is vital to have a communications strategy to convey the importance of surveillance and management. It was stated that nobody is telling the public that CWD can't be eradicated. The CWD Alliance and Canadian Wildlife Service were other groups mentioned as potential partners.

Future Activities and Next Steps

The group felt it is important to start with smaller tasks that are achievable. Working in smaller groups will allow time to see how the various jurisdictions can collaborate and move towards a regional CWD management plan.

One participant plans to write a paper that legally examines CWD as a persistent/resistant organic pollutant. Other participants will help write research proposals and facilitate collaborative research with respect to different experimental management strategies involving hunting harvest. A small-scale experiment with participation from multiple jurisdictions will make it easier to get funding approval. Another participant will pull together a CWD business case that could be used to communicate the importance of CWD strategies and priorities.

Workshop Participants

Last	First	Title	Organization
Adamowicz	Vic	Professor	University of Alberta
Almberg	Emily	Wildlife Disease Ecologist	Montana Fish, Wildlife & Parks
Althouse	Betty	Chief Veterinary Officer	Government of Saskatchewan
Anderson	Jay	Research Associate	University of Alberta
Ball	Mark	Wildlife Diseases Specialist	Alberta Environment and Parks
Besko	Matt	Section Head, Wildlife Game Management	Alberta Environment and Parks
Bollinger	Trent	Associate Professor	University of Saskatchewan
Clarkson	Ron	Director, Prion Programs	Alberta Prion Research Institute
Copeland	Shelagh	Manager, Regulatory Compliance	Saskatchewan Ministry of Agriculture
Corrigan	Rob	Provincial Big Game Specialist	Alberta Environment and Parks
Davis	Rich	Big Game Health Program Manager	Manitoba Sustainable Development
Farnese	Patricia		University of Saskatchewan
Greenwood	Penny	National Manager, Disease Control and Animal Welfare	Canadian Food Inspection Agency
Harrington	Noel	Veterinary Program Officer, Domestic Disease Control (CWD)	Canadian Food Inspection Agency
Keough	Kevin	Executive Director	Alberta Prion Research Institute
Lehman	Keith	Chief Provincial Veterinarian	Alberta Agriculture and Forestry
LeSueur	Peggy	Corporate Business Process Manager	Alberta Innovates - Bio Solutions
Lieu	Cindy	Communications Manager	Alberta Prion Research Institute
Merrill	Evelyn	Professor	University of Alberta
Pettitt	Trevor		Alberta Environment and Parks
Pybus	Margo	Provincial Wildlife Disease Specialist	Alberta Environment and Parks
Rauscher	Ryan	Region 4 Wildlife Biologist	Montana Fish, Wildlife & Parks
Ripley	Travis	Executive Director, Fish and Wildlife Policy	Alberta Environment and Parks
Stephen	Craig	Executive Director	Canadian Wildlife Health Cooperative
Thompson	Scott	Region 6 Wildlife Manager	Montana Fish, Wildlife & Parks
Wood	Mary	Wyoming State Wildlife Veterinarian	Wyoming Game and Fish Department