

WHY ARE WE CONCERNED ABOUT CWD?

CWD poses serious problems for wildlife managers, and the implications for free-ranging deer and elk are significant

- Ongoing surveillance programs are expensive and draw resources from other wildlife management needs.
- Impacts of CWD on population dynamics of deer and elk are presently unknown. Computer modeling suggests that CWD could substantially reduce infected cervid populations by lowering adult survival rates and destabilizing long-term population dynamics.
- Where it occurs, CWD may alter the management of wild deer and elk populations, and it has already begun to do so.
- Ultimately, public and agency concerns and perceptions about human health risks associated with all TSEs may erode hunters' confidence and their willingness to hunt in areas where CWD occurs.

WHAT IS BEING DONE ABOUT CWD?

Efforts to address CWD are continuing across the U.S.

- Several state wildlife agencies are aggressively collecting and testing wild elk and deer for the presence of CWD and have instituted surveillance programs to examine hunter-harvested deer and elk.
- Some state wildlife agencies are considering adopting or have adopted regulations regarding the transportation of hunter-harvested deer and elk carcasses out of known CWD areas. Colorado has implemented regulations that allow only boned meat, quarters (without spinal column or head) or processed meat from deer or elk to be transported out of certain CWD areas.
- Jurisdiction over commercial captive cervid operations varies from state to state. In some states the regulatory authority resides with the state agricultural or animal health agency, in some with the state wildlife management agency, and in some the authority is shared between agricultural and wildlife management agencies. When CWD is detected in a captive cervid facility, generally that facility is quarantined, and all captive cervids in that facility are killed.

- Several states have recently implemented a moratorium on the importation of live cervids. Some states have also halted intra-state movement of deer and elk and banned supplemental feeding programs.
- CWD surveillance of captive cervid farming operations is not yet regulated by the federal government, but some states, in cooperation with the industry, conduct CWD surveillance and have captive herd certification programs. A cooperative surveillance program began in 1997 among some states and the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). APHIS and the North American Elk Breeders Association have proposed a cooperative federal-state-private sector program to eradicate (CWD), from captive elk herds in the United States.
- A proposed federal rule was published in the Federal Register and was open for public comment until June 1, 09. The rule addresses the potential for eradication of CWD from captive cervid farms.
- Federal legislation has been introduced to provide additional funding for CWD research and control efforts, upgrade diagnostic laboratories, and create a National Chronic Wasting Disease Clearinghouse. The proposed legislation would also clarify the jurisdictional lines of responsibility for the departments of Interior and Agriculture, which share federal responsibilities for CWD.

WHAT PREVENTIVE MEASURES SHOULD HUNTERS TAKE?

Do not shoot, handle, or consume an elk or deer that is acting abnormally or appears to be sick. When field-dressing game, wear rubber gloves and minimize the use of a bone saw to cut through the brain or spinal cord (backbone). Bone out the meat. Minimize contact with and do not consume brain or spinal cord tissues, eyes, spleen, or lymph nodes. Always wash hands thoroughly after dressing and processing game meat.

WHERE CAN I LEARN MORE ABOUT CWD?

Additional information is available on the Chronic Wasting Disease Alliance website (www.cwd-info.org), including a number of links to other websites providing credible information about CWD. The links to state wildlife agencies provide considerable in-depth information regarding the status of CWD in those states.

IS THE MEAT SAFE TO EAT?

Hunters are recommended to not eat meat from animals known to be infected with CWD or exhibit signs of any disease. Hunters in CWD areas are also advised to bone out their meat and to not consume those parts where prions likely accumulate.

In the absence of complete information on risk, and in light of similarities of animal and human TSEs, public health officials and wildlife management professionals recommend that hunters harvesting deer and elk in the endemic area, as well as meat processors and taxidermists handling cervid carcasses, should take some common sense measures to avoid exposure to the CWD agent and to other known zoonotic pathogens.

In 2009, KDWP will once again sample the Kansas deer population in order to try and detect CWD at 1 percent prevalence with 99 percent confidence. Testing is free of charge for those hunters wishing to have their deer tested. Hunters wishing to test their deer may take their deer to an approved CWD contractor or to a KDWP wildlife biologist for collection of sample and incisors, and data card completion.

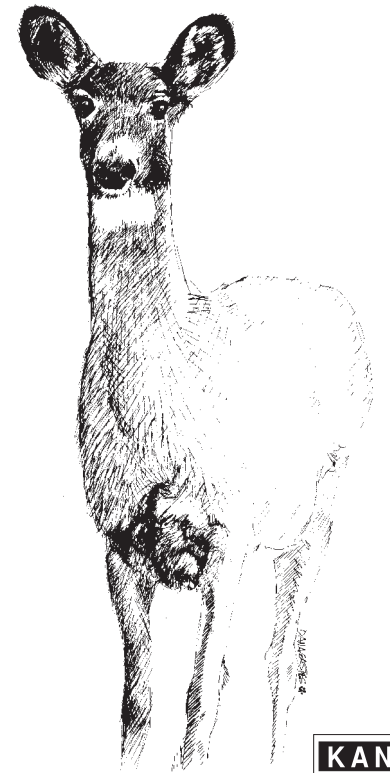
CWD testing is coordinated by KDWP in cooperation with Kansas State Veterinary Diagnostic Laboratory (KSVDL), funded by USDA-APHIS, and is done to monitor the health of the wild deer herd in Kansas. It is not a food safety test, and no samples may be tested after the target number of samples have been obtained. Therefore, if hunters desire quicker results or to ensure that their deer is tested, they can either 1) extract and directly submit the fresh retropharyngeal lymph nodes to KSVDL and pay shipping plus the \$32 test fee or 2) have a Kansas veterinarian extract the samples and submit the tissues to KSVDL. Veterinarian charges, shipping, and \$32 testing fee will apply in this case.

*Produced by
Kansas Department of Wildlife & Parks
and
Chronic Wasting Disease Alliance.*

Equal opportunity to participate in and benefit from programs described herein is available to all individuals without regard to race, color, national origin, sex, age, disability, sexual orientation, gender identity, political affiliation, and military or veteran status. Complaints of discrimination should be sent to Office of the Secretary, Kansas Department of Wildlife and Parks, 1020 S Kansas Ave., Topeka, KS 66612-1327. 07/09

CHRONIC WASTING DISEASE

QUESTIONS AND ANSWERS



**Kansas
Department of
Wildlife & Parks**



WHAT IS CHRONIC WASTING DISEASE?

Chronic Wasting Disease (CWD) is a contagious neurological disease affecting deer and elk. It causes a characteristic sponge-like degeneration of the brains of infected animals, resulting in emaciation, abnormal behavior, loss of bodily functions, and death.

CWD belongs to a group of diseases known as transmissible spongiform encephalopathies (TSEs). Within this family of diseases, there are several other variants that affect domestic animals: scrapie, which has been identified in domestic sheep and goats for more than 200 years; bovine spongiform encephalopathy (BSE) in cattle (also known as "mad cow disease"); and transmissible mink encephalopathy in farmed mink.

Several rare human diseases are also TSEs. Creutzfeldt-Jakob disease (CJD) occurs naturally in about one out of every one million people worldwide. Variant Creutzfeldt-Jakob disease (v-CJD) has been associated with the large-scale outbreak of BSE in cattle herds in Great Britain.

WHAT CAUSES CWD?

The most widely accepted theory is that the agent is a prion, an abnormal form of cellular protein that is most commonly found in the central nervous system and in lymphoid tissue. The prion "infects" the host animal by promoting conversion of normal cellular protein to the abnormal form.

The CWD infectious agent is smaller than most viral particles and does not evoke any detectable immune response or inflammatory reaction in the host animal. Based on experience with other TSE agents, the CWD infectious agent is assumed to be resistant to enzymes and chemicals that normally break down proteins, as well as resistant to heat and normal disinfecting procedures.

WHAT WILDLIFE SPECIES ARE AFFECTED BY CWD?

Only four species of the deer family are known to be naturally susceptible to CWD: elk, mule deer, white-tailed deer and moose. Susceptibility of other members of the deer family (cervids) and other wildlife species is not known although ongoing research is further exploring this question.

CAN LIVESTOCK GET CWD?

Cattle and other domestic livestock appear to be resistant to natural infection. There are no reported cases of natural transmission of CWD from infected elk or deer to domestic livestock. However, the disease has been experimentally reproduced in cattle by the direct injection of the infectious agent into their brains. Several investigations are currently underway to further study this question.

CAN HUMANS GET CWD?

Although many observers try to compare CWD with "mad cow disease," The two are distinctly different. Currently, there is no evidence that CWD poses a risk for humans; however, public health officials recommend that human exposure to the CWD infectious agent be avoided as they continue to evaluate any potential health risk.

The World Health Organization has reviewed available scientific information and concluded that currently there is no evidence that CWD can be transmitted to humans. During the period 1997-1998, three cases of sporadic Creutzfeldt-Jakob disease (CJD) occurred in the U.S. in young adults. These individuals had consumed venison. This led to speculation about possible transmission of CWD from deer or elk to humans. However, review of the clinical records and pathological studies of all three cases by the Centers for Disease Control and Prevention in Atlanta, Georgia, did not find a causal link to CWD.

Nonetheless, health and wildlife officials advise caution. Hunters are encouraged not to consume meat from animals known to be infected. In addition, hunters should take common sense precautions when field dressing and processing deer or elk taken in areas where CWD is found.

HOW DOES CWD SPREAD?

It is not known exactly how CWD is transmitted. The infectious agent may be passed in feces, urine, saliva, or from the environment, mainly soil. Transmission is thought to be lateral (from animal to animal). Although maternal transmission (from mother to fetus) may occur, this appears to be relatively unimportant in maintaining epidemics. The minimal incubation period between infection and development of clinical disease appears to be approximately 16 months. The maximal incubation period is unknown, as is the point at which shedding of the CWD agent begins during the prolonged course of infection.

Because CWD infectious agents are extremely resistant in the environment, transmission may be both direct and indirect. Concentrating deer and elk in captivity or by artificial feeding probably increases the likelihood of both direct and indirect transmission between individuals. Contaminated pastures appear to have served as sources of infection in some CWD epidemics. The apparent persistence of the infectious agents in contaminated environments represents a significant obstacle to eradication of CWD from either captive or free-ranging cervid populations. Once CWD prions bind to soil, they become highly infectious.

The movement of live animals is one of the greatest risk factors in spreading the disease into new areas. Natural movements of wild deer and elk contribute to the spread of the disease, and human-aided transportation of both captive and

wild animals greatly exacerbates this risk factor. The apparent spread of CWD between captive and wild cervids is a matter of hot debate. Although strong circumstantial evidence suggests that CWD has spread from positive captive elk to wild cervids in some instances, it may never be proven which group of animals represents the source of infection. It is likely that the disease has been passed in both directions (from captive to wild animals, and from wild to captive animals).

WHERE AND HOW DID CWD ORIGINATE?

The origin of CWD is unknown, and it may never be possible to definitively determine how or when CWD arose. It was first recognized as a syndrome in captive mule deer held in wildlife research facilities in Colorado in 1967, but it was not identified as a TSE until the 1970s. Computer modeling suggests the disease may have been present in free-ranging populations of mule deer for more than 40 years.

Scrapie, a TSE of domestic sheep, has been recognized in the United States since 1947, and it is possible that CWD was derived from scrapie. It is possible, though never proven, that deer came into contact with scrapie-infected sheep either on shared pastures or in captivity somewhere along the front range of the Rocky Mountains, where high levels of sheep grazing occurred in the early 1900s.

It may be possible that CWD is a spontaneous TSE that arose in deer in the wild or in captivity and has biological features promoting transmission to other deer and elk.

WHAT ARE THE SYMPTOMS OF CWD?

Symptoms almost always appear in older animals, but incubation (prion accumulation) times are likely the driving factor. That is, did the animal contract the disease as a fawn, yearling, or adult? As more fawns or yearlings become infected, the chance of seeing older, wild deer with symptoms should increase. This seems to be the case with states that have had the disease for a longer time. However, predators often see, kill, and eat these vulnerable, symptomatic animals long before they are seen by humans.

The most obvious and consistent clinical sign is weight loss over time. CWD-affected animals continue to eat but amounts eaten are reduced, leading to gradual loss of body condition and an emaciated appearance. Excessive drinking and urination are also common in the terminal stages.

Behavioral changes also occur in the majority of cases, which may include decreased interactions with other animals, listlessness, lowering of the head, wide stance, blank facial expression, and repetitive walking in set patterns. In elk, behavioral changes may also include hyper-excitability and nervousness. Excessive salivation, drooling, and grinding of the teeth also are observed.

Clinical signs of CWD alone are not conclusive. There are other maladies or diseases that have symptoms that mimic those of CWD, such as epizootic hemorrhagic disease (EHD) and brain abscesses. Currently, the main conclusive diagnosis involves an examination of the brain or lymph nodes performed after death of the animal. Tonsil biopsies can be performed on live animals, but this is impractical for management of wild deer and is not a reliable method for testing live elk.

HOW IS CWD DETECTED?

Clinical signs of CWD alone are not conclusive, and there is currently no practical live animal test. Currently, the only conclusive diagnosis involves an examination of the brain or lymph nodes performed after death. When mass testing is conducted, the retropharyngeal lymph nodes are used.

A definitive diagnosis is based on examination of the brain for the characteristic microscopic spongiform lesions and/or accumulation of the CWD associated prion protein in brain and lymphoid tissues using a technique called immunohistochemistry (IHC). Gross lesions seen at necropsy reflect the clinical signs of CWD, primarily emaciation. Aspiration pneumonia, which may be the actual cause of death, is also common in animals affected with CWD.

