

2011 Chronic Wasting Disease Surveillance Progress Report

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Background

Chronic Wasting Disease (CWD), a progressive fatal neurological disease of deer and elk, is a serious threat to the health of wild deer and elk populations. CWD belongs to the family of diseases known as transmissible spongiform encephalopathies (TSEs). CWD is characterized by loss of body condition, behavioral abnormalities and eventual death. There is no scientific evidence that the disease can infect humans, but as a precaution, people are advised not to eat a known CWD- infected deer or elk.

CWD is endemic in wild deer and elk areas of Colorado, Wyoming and Nebraska and is found in limited numbers of wild deer in Illinois, Kansas, Maryland, Minnesota, New Mexico, New York, North Dakota, South Dakota, Utah, Virginia, Wisconsin, West Virginia and in the providences of Alberta and Saskatchewan, Canada. CWD has also been diagnosed in farmed elk and/or deer in eleven states (Colorado, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, Oklahoma, South Dakota, and Wisconsin) and two Canadian providences (Alberta and Saskatchewan). CWD was first observed in 1967 in captive deer at a research facility in Colorado, and in 1978 was definitively identified as a TSE. In 1981 CWD was first diagnosed in free-ranging wild deer and elk in north-central Colorado and southeastern Wyoming. CWD entered the game farming industry in the late 1980s or early 1990s.

Only four species in the deer family are known to be naturally susceptible to CWD: mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), Rocky Mountain elk (*Cervus elapus nelsoni*; subspecies of *C. elapus* are very likely susceptible to CWD), and moose (*Alces alces*). The origin of CWD is unknown and may never be definitely determined. Ongoing research suggests that cattle and other livestock are resistant to natural infection, although these studies have not yet been completed.

Information on the transmission of CWD is limited, although experimental studies provide strong evidence that lateral transmission through body fluids (urine, saliva and feces) and/or environmental contamination play a primary role; while maternal transmission may occur, it probably plays a minor role. The minimum incubation period is 15-17 months, and clinical signs can appear at any age from 17 months to 15 years of age.

California is considered a "low risk" state for CWD since the farming of cervids is limited to fallow deer (not known to be susceptible to CWD), importation of elk was banned in 1980 by the State legislature, and the importation of captive deer is strictly limited. Few deer have been imported into California during the past 25 years. The feeding of big game species (deer, elk, antelope, black bears, and bighorn sheep) was banned in 1996 (CCR, Title 14, §351.3). Due to the

uncertainty of transmission by a CWD-contaminated carcass, in April 2003 the Fish and Game Commission adopted regulations restricting the importation of whole cervid carcasses (CCR, Title 14, §712). In 2004 transmission of CWD by contaminated carcasses was demonstrated experimentally by a team of researchers.

The CWD Surveillance in California consists of the following four components:

1) Sampling and testing of CWD “suspect” deer or elk; 2) Contacting California hunters who harvested a CWD-positive deer or elk out-of-state and assisting in the disposal (incineration preferred) of the contaminated venison; 3) Outreach to meat processors on the handling recommendations for deer/elk harvested out-of-state; and, 4) CWD training of DFG volunteers to assist at Law Enforcement District check stations near the California border targeting residents returning to California with harvested cervids. In addition, the CWD Response Plan developed in draft from in 2005 is being updated.

CWD Surveillance in California

The California Department of Fish and Game (DFG) has been conducting CWD surveillance on wild, hunter-harvested mule deer and elk since 1999. As of December 2011, approximately 4,420 deer/elk samples have been collected and CWD tested from free-ranging cervids, primarily mule deer. All tests have been negative for the presence of the CWD prion. The DFG’s management goal for Chronic Wasting Disease is prevention of the disease in California free-ranging cervids.

Prior to the 2010 deer and elk hunt season, harvested cervid carcasses were sampled opportunistically either at cooperative meat processors or at the Wildlife Investigations Lab (WIL) in Rancho Cordova. The samples collected from deer and elk included: tonsils (deer), brain stem (deer & elk), and retropharyngeal lymph nodes (deer & elk). A portion of each tissue was placed in a uniquely labeled container with no media and chilled; the remaining tissues were placed in whirlpaks®, labeled, and frozen. Samples were submitted to the California Animal Health and Food Safety Lab (CAHFS) for testing using the diagnostic test Bio-Rad ELISA. Frozen tissues collected were archived at the DFG’s WIL for future disease research. In 2011, these archived tissues were being tested for the presence of adenovirus utilizing a new-developed diagnostic test. The results should determine whether mule deer is the natural reservoir for adenovirus; results are pending.

Due to continuing limited resources (funding and personnel) and the absence of CWD risk factors, the sampling and testing of hunter harvested cervids was discontinued after the 2009 hunt season. In years past, DFG sampled approximately 400 free-ranging cervids per year, primarily hunter-harvested requiring great effort and expense.

Since January 2010 only CWD “suspect” deer and elk are sampled and tested. These CWD “suspects are any deer or elk exhibiting clinical signs of wasting or weight loss (emaciation), lack of fear of humans, rough and dull haircoat, and those deer carcasses from a population which has a history of clinical disease and increased mortality. Approximately ten deer and elk are sampled and CWD tested each year.

Some hit-by-car cervids (HBC) will be sampled opportunistically and tested as CWD-infected mule deer are relatively more vulnerable to vehicle collisions (2005, Krumm et al) than those harvested by hunters.

Deer and Elk Harvested Out-of-State by California Hunters

California residents who hunt out-of-state often have their harvested cervid sampled and tested for CWD by the state wildlife agency. DFG receives notification of all CWD positive cervids harvested out-of-state (primarily, Wyoming, Utah and Colorado) by a California resident. These hunters are contacted by DFG to discuss the CWD disease concerns and assist with the proper disposal of the contaminated venison if the hunter opts to dispose of the meat. The recommended method of disposal is incineration. The CWD-positive venison is incinerated at a state- or county-operated incinerator. The average number of notifications received for the 2010 and 2011 hunt season include are ten. DFG contacts the hunters to determine whether the meat will be disposed.

CWD Outreach to Meat Processors

DFG has developed an outreach program to increase awareness among the meat processors of CWD and introducing them to new guidelines for the handling and processing of out-of-state cervids. This protocol, developed in collaboration with California Department of Food and Agriculture and the U.S. Department of Agriculture, minimizes the risk of CWD-contamination of other meat processed at the facility. The guidelines are outlined on an laminated informational brochure (*Practical Guidelines for the Processing of Deer/Elk Harvested Out-of-State & Imported into California*; refer to the attachment) which is updated and distributed to meat processors throughout the State each year one month prior to the hunt season.

In addition, trained DFG volunteers will visit meat processors during the hunt season to answer any questions or concerns that the meat processor may have regarding the handling guidelines and CWD.

CWD Training of DFG Volunteers

DFG volunteers receive updated information on epidemiology and current State regulations on CWD a regular basis. Many volunteers will be assisting at Law Enforcement District check stations near the California border during the hunt season. Out-of-state harvested deer and elk transported into California illegally (whole carcasses) are confiscated and transported to the state lab in Davis for incineration.