



Pennsylvania Game Commission Wildlife Disease Reference Library

Chronic Wasting Disease (CWD)

Cause

Chronic Wasting Disease (CWD) is caused by a prion, which is an abnormal protein that behaves like an infectious agent. CWD is a neurological disease of cervids (deer, elk and moose) categorized as a transmissible spongiform encephalopathy (TSE). Other known TSE's include scrapie in sheep, bovine spongiform encephalopathy (mad cow disease) in cattle, and Creutzfeldt-Jakob disease (CJD) in humans. CWD was first reported in captive mule deer in 1967 in Colorado, but was not recognized as a TSE until 1978.

Significance

Chronic Wasting Disease has had a major impact on hunting and cervid farming in affected states. Pennsylvania has a large free-ranging white-tailed deer population and the second largest captive cervid industry in the country. In 2012 CWD was found in captive deer in Pennsylvania, and most recently in free-ranging deer; more testing will be required to determine the prevalence and distribution in the wild population.

Species Affected

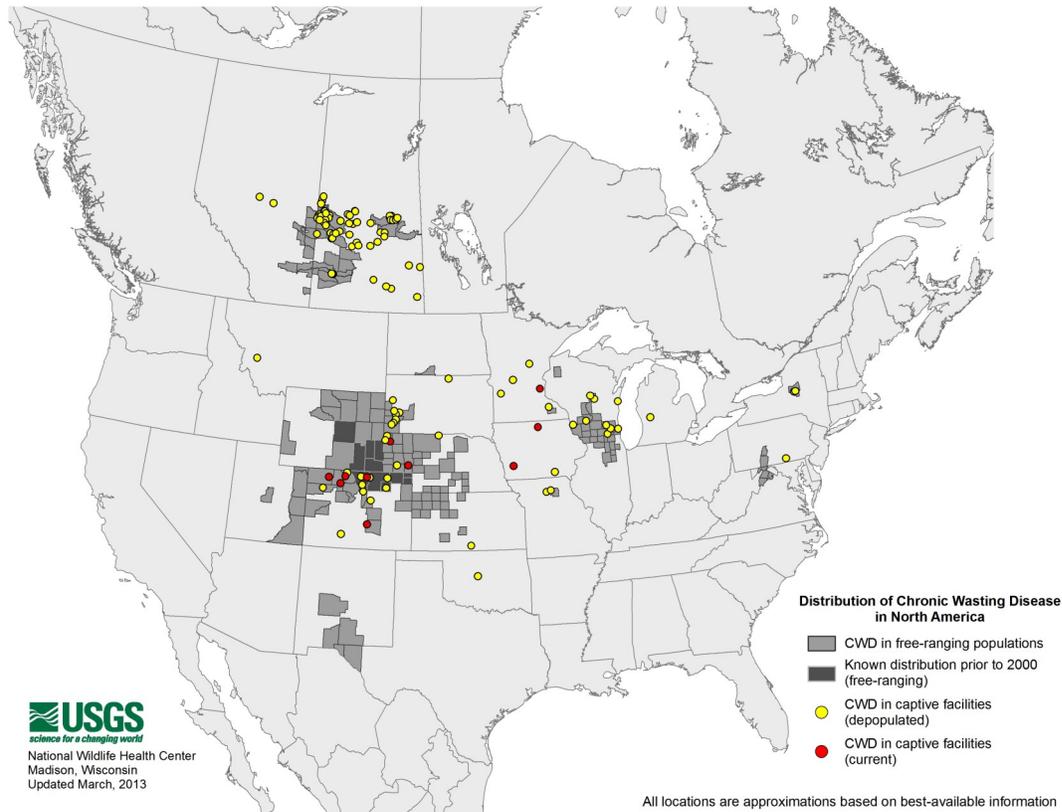
CWD is known to affect free-ranging and captive white-tailed deer, mule deer, Rocky Mountain elk, moose, and red deer. This disease is not known to infect humans or domestic animals.

Distribution

Chronic Wasting Disease was originally found in a captive mule deer herd in Colorado and was reported in Wyoming soon thereafter. The disease has since become established in free-ranging deer and elk in these states and has spread to other states and 2 Canadian provinces (see map on the following page for the 2012 distribution of the disease). CWD has also been reported in South Korea following importation from Canada.

Transmission

CWD is transmitted both directly via contact with infected animals and indirectly through contaminated feces, urine, saliva, infected carcasses or environments. Infected animals can begin shedding prions as early as 11 months prior to showing any



symptoms of the disease. The prions that cause CWD are very difficult to kill and can remain infective in soil for many years.

Clinical Signs

Clinical signs usually appear 24 to 48 months following exposure to prions, but the amount of time can be much longer. Clinical signs include loss of body condition, depression, and excessive salivation, drinking, and urination. Neurological signs of CWD include stumbling, trembling, and lack of fear of humans and predators. Most animals will die within several months following the onset of clinical signs.

Diagnosis

Special laboratory techniques are used to diagnose CWD from postmortem samples of brain, lymph node, or tonsil tissue. It is important to distinguish CWD from the many other diseases that have similar clinical signs. An animal can be infected with CWD at the same time as other diseases.

Treatment

There is currently no treatment for CWD.



Photo By Dr. Mike Miller, Colorado Division of Wildlife

Management/Prevention

Management of chronic wasting disease has proven difficult and eradication of this disease is unlikely. Many agencies are working together on a national management plan in hopes of containing CWD and preventing its further spread. The Pennsylvania Department of Agriculture has developed a Herd Certification Program for captive cervid farms. Pennsylvania has been conducting active surveillance for CWD in captive and hunter-killed deer since 1998, and has developed a plan of action that is being followed now that positive cases have been found. Like other states, Pennsylvania prohibits importation of certain cervid body parts that are more likely to harbor prions. Other possible management actions to control the spread of CWD include depopulating captive herds that test positive for the disease, prohibiting import of cervids from states with confirmed cases of CWD, and prohibiting feeding of wild cervids.

There is currently no vaccine for CWD.

CWD is not currently believed to cause disease in humans, though hunters are encouraged to take routine precautions when handling their deer or elk. Hunters should not shoot, handle, or consume any animal that appears sick. In order to prevent exposure to any disease causing organism, including the prion of CWD, hunters should wear gloves while dressing game and should wash hands and instruments thoroughly after field dressing. Hunters should also minimize handling of brain and spinal cord tissues. For more information about precautions hunters should take in relation to CWD go to:

http://www.portal.state.pa.us/portal_server.ptopen=514&objID=587240&mode=2.

Suggested Reading

Centers for Disease Control and Prevention (CDC). 2011. Chronic Wasting Disease (CWD). <<http://www.cdc.gov/ncidod/dvrd/cwd/>>.

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Chronic Wasting Disease Response Plan. July 2011. Commonwealth of Pennsylvania.

Gilch, S., N. Chitoo, Y. Taguchi, M. Stuart, J. E. Jewell, and H. M. Schatzl. 2011. Chronic Wasting Disease. Topics in Current Chemistry. Springer-Verlag Berlin Heidelberg.

National Wildlife Health Center. Chronic Wasting Disease (CWD). United States Geological Survey. <http://www.nwhc.usgs.gov/disease_information/chronic_wasting_disease/>.

Plan for Assisting States, Federal Agencies, and Tribes in Managing Chronic Wasting Disease in Wild and Captive Cervids. June 2002. United States Department of Agriculture.

Williams, E. S., J. K. Kirkwood, and M. W. Miller. 2001. Transmissible Spongiform Encephalopathies. Pages 292-301 *in* E. S. Williams and I. K. Barker, editors. Infectious diseases of wild mammals. Iowa State University Press, Ames, Iowa, USA.