

Chronic Wasting Disease (CWD): Just the Facts

Chronic Wasting Disease (CWD) has appeared widely in the media lately, but has actually been around for a while. It was first recognized in Colorado in 1967, in a captive research herd of mule deer. Its rapid expansion, to include eight states and two provinces by the year 2002, has created a crisis.

- In 1977, scientists suspected that CWD was caused by a transmissible spongiform encephalopathy (TSE). TSEs constitute a small group of fatal neurological disorders affecting humans and animals, including: Scrapie in sheep, Bovine Spongiform Encephalopathy, or “Mad Cow Disease,” in cattle, and Creutzfeldt-Jakob Disease in humans. TSEs are diseases of the nervous system that have distinctive lesions in the brain. The causative agent may be a modified protein (prion) that is resistant to degradation. All mammals have normal cellular prion protein (PrP), but we do not know what is the transmissible agent that causes the transformation from cellular PrP to the resistant PrP.
- By the year 2000, surveillance of wild deer and elk by the Colorado Division of Wildlife showed up to 15% prevalence of CWD in deer and 1% in elk in some hunting districts.
- Prior to 1997, CWD was infrequently found in white-tailed deer in Wyoming and Colorado. Since that time the disease in white-tailed deer has been identified in South Dakota, Nebraska, and Wisconsin. In the white-tailed deer game farm where a Nebraska outbreak occurred, CWD prevalence was over 50% in the ranch and almost 7% outside the ranch fence line within a five-mile radius.
- The high prevalence in Nebraska, and the discovery of CWD in white-tailed deer fawns, suggests a shorter incubation period in white-tailed deer and perhaps a particular sensitivity of this species to CWD. CWD has also been documented in elk yearlings.
- In 2001, the U.S. Department of Agriculture (USDA) declared a CWD national emergency and began testing captive deer and elk on ranches and farms in several western states. The declaration of a national emergency allowed USDA to authorize indemnity payments for



White-tailed deer

herds slaughtered as a consequence of CWD.

- In 2002, CWD spread over the Continental Divide in Colorado, and has been identified in four mule deer inside an elk game farm and six mule deer outside the game farm. The game farm had no known animals introduced from the endemic area. CWD has also been found in wild mule deer in Wyoming, Nebraska and Saskatchewan. In June, 2002, a mule deer in New Mexico tested positive for CWD.
- Due to the rapid spread of the disease, stop-gap radical control experiments are being conducted in three states. In Colorado, control consisted of killing as many deer and elk as could be found within five miles of the epicenter of the West-slope outbreak in late April (Colorado estimates it will need to kill 5000 deer in the infected area of the Western Slope). In Wisconsin, starting May 6, 2002, state agencies are attempting to kill 15,000 to 18,000 deer within the CWD affected area, and as many as 100,000 deer in adjacent deer management units over the next few years. And in Nebraska, control efforts are underway to kill from 2500 to 3500 deer within ten miles of the disease outbreak.

Who does this Disease Affect?

- Elk, mule deer and white-tailed deer are affected. An ante mortem test for CWD in deer has been recently developed, but no studies have been conducted yet to determine whether every infected animal dies. There is no treatment for CWD at present, and affected animals may take years before they show signs of the disease. Once signs of the disease are present, CWD is fatal.
- The recent discovery of CWD east of the Mississippi River is significant because of the dense population of white-tailed deer in the eastern United States. The perception by hunters that venison may be tainted with CWD could reduce the hunting effort for white-tailed deer, with negative impact on management strategies for this species. In a poll of Wisconsin hunters (June 2002), over one-third of hunters indicated they may not participate in deer hunting in the fall.



A target population of 7,500 elk is maintained with natural forage and supplemental feed on the National Elk Refuge from October to May

- Conservation efforts conducted by State agencies that rely on hunting as a source of revenue may be negatively impacted.
- The potential exists for profound ecological consequences related to changes in ungulate populations. These could occur as hunting and management flexibility decrease, or occur directly to affected populations through CWD-induced mortality and productivity changes; one model predicts adverse population effects at CWD prevalences above 5%.
- Eradication of the disease through massive killing of deer and elk has the potential for significant ecological consequences.
- The negative economic effect of reduced hunting could be staggering. Many businesses depend heavily on hunting activity.
- Variant Creutzfeldt-Jakob Disease (vCJD) very likely represents a cross-species transmission of Bovine Spongiform Encephalopathy (BSE), and a recent review of human mortality using UK data confirmed its emergence coincident with BSE. If CWD is ever found transmissible to humans, then there will be significant human health implications.

What is the currently being done?

- Many Federal and State agencies and universities have been involved for years with CWD, with considerable research and diagnostic capabilities.
- A National Task Force of state and federal agencies has developed a National CWD Response Plan, which includes funding for Communication, Scientific and Technical Information, Diagnostics, Disease Management, Research and Surveillance.

- CWD is a complex disease requiring integration of state, federal, and academic wildlife health resources. Geographically, the disease is distributed primarily on state and private lands in resident game species and alternative livestock.

What is USGS doing?

- The USGS supports and augments state and USDA efforts in research, technical assistance and wildlife management with its wildlife health resources. Thus far, CWD has affected DOI stewardship resources on only one National Park and has been found in ranched elk on private property adjacent to another park.
- USGS is the DOI lead for information, contingency planning, coordination, technical assistance and research. The primary focus is to prevent CWD spread to DOI sites.
- The USGS expertise includes on-the-ground assistance to Montana in CWD sites with depopulation, pathology, epidemiology and control; providing regional and national briefings; assistance with setting up a state-wide monitoring program; and assisting FWS with developing guidelines. USGS is also represented on the National CWD Task Force.

Want more information?

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