



CHRONIC WASTING DISEASE (CWD)



Michigan State University is partnering with the Michigan Department of Natural Resources (MDNR) to address chronic wasting disease (CWD). Although first detected in free-range deer in Michigan in 2015, CWD was identified in the U.S. in captive deer in 1960 and wild deer in 1981.

What is CWD?

CWD is a fatal neurological disease that affects cervids (deer, elk and moose). It causes a degeneration of the brain, resulting in emaciation, abnormal behavior, loss of bodily functions and death. Most deer do not exhibit these signs until later stages of the disease and can be infectious much earlier.

What causes CWD?

It is caused by a prion, an abnormal form of cellular protein that is most commonly found in the central nervous system and in lymphoid tissue. Prions are smaller than most viral particles and don't evoke any detectable immune or inflammatory response. Current research suggests that prions are resistant to enzymes and chemicals that normally break down proteins, as well as heat and normal disinfecting procedures.

How does CWD spread?

CWD can be passed directly from one animal to another and indirectly through the environment. Transmission is thought to be lateral, from animal to animal, but maternal transmission, from mother to fetus, may occur. Movement of animals across the landscape is perhaps the greatest risk factor for disease spread, given that prions are extremely persistent in the environment and can stay infectious for years.

How is CWD detected?

Currently, the only conclusive diagnosis for CWD involves an examination of the brain, tonsils or lymph nodes performed after death to detect the presence of CWD prions.

Why should I be concerned about CWD?

- Michigan has a proud hunting heritage, with nearly 600,000 licensed hunters who pursue white-tailed deer annually.
- Hunting generates around \$2.3 billion in economic impact each year, ranking Michigan third in the nation in hunter participation.
- White-tailed deer license sales account for more than 50 percent of the funding for Michigan conservation efforts across all species.
- Studies continue to evaluate the potential human health effects of CWD. Hunters are currently advised to avoid eating meat of deer known to be infected.

What are we doing about CWD?

MSU researchers Drs. William Porter, David Williams and Sonja Christensen with the Boone and Crockett Quantitative Wildlife Center are partnering with the MDNR to tackle critical CWD issues.

- **Early Detection** - As CWD remains emergent in Michigan, scientists are using quantitative modeling techniques to address risk factors that include both natural deer ecology and human interactions with deer, such as movement of harvested or captive cervids. This helps inform where and why disease may be spreading.
- **Sharpen Focus of Removal Actions** - Researchers are working with management agencies to evaluate and develop cost-effective options and understand how to minimize direct and indirect transmission of CWD.
- **Assess the Role of Deer Behavior in Michigan** - Researchers are placing location-tracking collars on white-tailed deer in and around Meridian Township where the first case of CWD in wild deer was found. As part of a multiyear study, data on deer movement, survival and distribution patterns will inform how disease may be spread among deer.
- **Evaluating a Multi-Disease Landscape** - In 2012, thousands of deer died due to epizootic hemorrhagic disease (EHD). EHD is caused by a virus transmitted by insect bites. Researchers want to know how the timing and distribution of EHD and CWD are interacting and affecting deer populations.