

Story by Shannon Callahan



Myths surrounding chronic wasting disease (CWD) abound among wildlife enthusiasts and in misinformed corners of the internet. If you believe the headlines, these so-called “zombie deer” are poised to take over. This article dispels rumors and gives you the need-to-know facts about what CWD is and how you can help manage it.

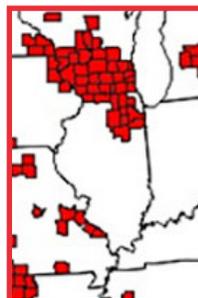
TO START, CWD is always fatal and affects animals in the cervid family. It is a prion-caused disease, which is different from bacterial, viral and fungal diseases. Prions are a type of abnormal infectious protein, which, once introduced to the body, can cause healthy cellular protein to fold incorrectly and cause neurological damage. There is no immune response because the immune system does not recognize prion proteins as an infectious agent. The lack of response makes it difficult to develop diagnostic tests. Currently most CWD tests sample lymphatic or neurological tissue, such as the lymph nodes or brain stem. Prions accumulate first in these tissues which makes it possible for trained diagnostic specialists to look at slides under the microscope and diagnose the animal as “positive” or “not detected.” Deer with CWD can shed the prions in feces, saliva, urine and blood. Shedding of prions is greater in advanced stages of the disease. Other susceptible animals that interact with the affected individual then pick up the prions. Deer can also become infected through the environment in places like bait piles or watering holes where both infected and healthy animals are interacting and exchanging fluids. Prions accumulate and persist in the soil for long periods of time; infected deer can eat (and drool) at a bait pile, and many months later a healthy deer can pick up the prion that leads to disease.

Herd animals, such as deer and other cervids, live and feed close to one another, which is why this disease can be more widespread in captive herds than in the wild free-ranging population. Proper management of the wild Illinois deer herd in CWD infected areas is a must. It is imperative to decrease the

potential for animal to animal interactions by reducing deer densities in infected areas to reduce the spread of CWD—which has negative impacts on the health of the herd.

CWD is of concern to humans because other prion diseases in animals, such as bovine spongiform encephalopathy (mad cow disease), have crossed the species barrier to infect humans. Currently, there are no documented cases of this happening with CWD but research is ongoing to determine if this is possible. The delay between the initial infection of prion diseases and the manifestation of symptoms further complicates the issue. This means that it may take years or even decades for humans who have acquired prion protein diseases to show symptoms of infection, and they still may not be reliably diagnosed until after death. So, the big question is, can humans get sick from eating an infected animal with CWD? The best answer we have right now is: we do not know. Prion disease researchers all over the world are working on this question, and for now, their best advice is to have deer from CWD positive counties tested, and not to eat meat from CWD positive deer (cdc.gov/prions/cwd/prevention.html).

As of August 2019, there were 277 counties in 24 states in the United States with CWD. In the U.S. there are two main concentrated hotspots—one in the Nebraska/Colorado/Wyoming/Kansas area and the other around the Illinois/Wisconsin border. You can find a full list of CWD positive counties and map at the Center for Disease Control’s website (cdc.gov/prions/cwd/occurrence.html). In Illinois, there are currently 17 counties



Chronic Wasting Disease Among Free-Ranging Cervids by Illinois County, November 2019

Boone, Carroll, DeKalb, DuPage, Grundy, Jo Daviess, Kane, Kankakee, Kendall, Lake, LaSalle, Livingston, McHenry, Ogle, Stephenson, Will, Winnebago

As of November 2019, there were 281 counties in 24 states with reported CWD in free-ranging cervids. This map is based on the best-available information from multiple sources, including state wildlife agencies and the United States Geological Survey (USGS).

in which CWD has been detected in free-ranging deer, all of which are in the northern third of the state.

The most valuable management tool the state has is our hunters' collaboration. Hunters contribute to the identification of infected areas, removal of deer in these areas, and to decreasing the deer population density on a scale and with a disease-management focus that is not otherwise possible with large carnivores alone. During deer hunting season, hunters have the option of providing tissue samples to Illinois Department of Natural Resources (IDNR) to be

tested and used in CWD surveillance and monitoring. The tissue samples volunteered by hunters help IDNR to monitor the disease's movements in and across counties, identify CWD hotspots, and inform IDNR on where to conduct localized sharpshooting in highly infected areas. To learn more about IDNR's CWD management program visit dnr.illinois.gov/programs/CWD/Pages/default.aspx.

For over a decade, protecting the deer herd from CWD has been one of IDNR's top priorities. Select IDNR biologists go through a rigorous yearly qualification process to participate in CWD management programs and to conduct sharpshooting, which removes deer from small target areas confirmed as CWD positive. I had the opportunity to accompany an IDNR biologist during a 2019 sharpshooting effort. These biologists go to sites on public and private lands (with landowner permission) to decrease the overall deer density, remove infected deer, and collect tissue samples. The goal of this is to monitor and control the disease

by reducing population density in areas known to contain infected deer

Sharpshooting missions are just that, a mission to control CWD, not a hunting trip; this is a scientific and data-driven tool used by trained and qualified professionals to slow the spread of CWD. Illinois is currently the model across the country for CWD management largely because of the success of our program. The prevalence (number of positive samples among all those tested) of CWD in Illinois remains at or lower than 2 percent. The slow progression of the disease, which has been contained to

the northern third of the state for over a decade, is a reflection of IDNR's success in controlling CWD.

Hunters are important in managing Illinois' deer herd. Without enough hunters and other predators in the region, there is potential for the population to grow to unsustainable numbers in some areas. Forests with high deer populations lose their understory plants, meaning seedlings are eaten before they grow up to replace dying trees. Loss of the understory not only disturbs beautiful forests but also destroys critical nesting habitat for ground-nesting birds. Wildlife native to Illinois forests depend on a diverse range of habitats to survive. Overgrazing by deer leads to habitat homogenization by eating everything under browse height, leaving behind open woodlands that are unsuitable for many species. Forests also slow down the movement of water during flood events and sequester carbon from the atmosphere, which reduces greenhouse gasses. Additionally, a large deer population leads to more deer-vehicle collisions, which is dangerous for all

parties involved. Historically, humans have hunted deer in concert with other predators, including wolves, bobcats, and bears, but today in many areas, the responsibility is ours alone.

You can help by getting involved in, or supporting, ethical hunting. The Illinois Learn to Hunt program offers free workshops and other resources to help people get started (publish.illinois.edu/hunttrapillinois/). In addition, both hunters and non-hunters can purchase hunting licenses that support conservation work.

If you are a landowner in or near CWD positive counties with deer on the property, contact your local IDNR wildlife biologist for options on how to assist in CWD management. Landowners need to be aware of the deer population on their land, especially in and around CWD positive areas. If you are acting as a refuge for deer in CWD positive counties you are most likely acting as a reservoir for the disease, as well. Lastly, you can read and educate yourself, friends, family and neighbors on CWD from reliable science-based sources such as scientific peer reviewed journals and governmental agencies that conduct wildlife management:

- (ncbi.nlm.nih.gov/pubmed/?term=cwd)
- (<https://www2.illinois.gov/sites/agr/Animals/AnimalHealth/AnimalDiseases/Pages/cwd.aspx>)
- (<https://www.dnr.illinois.gov/Programs/CWD/Pages/default.aspx>). ■



A healthy deer herd equates to quality habitat for ground-nesting birds. Photo by Michael Jeffords.



BIO

Shannon Callahan is a senior at the University of Illinois-Urbana Champaign studying resource conservation and restoration ecology. She works for Dr. Nohra

Mateus-Pinilla and Dr. Jan Novakofski at the Illinois Natural History Survey's Prairie Research Institute, Wildlife Veterinary Epidemiology Laboratory. She plans on continuing her education in graduate school where she hopes to obtain a PhD in forest ecology.