

# MISLEADING

BY COURTNEY COLLEY

# MISUNDERSTOOD

# MISINFORMATION

# MISSING THE POINT ON CWD

Unlike other deer diseases that are easy to identify and quick to cause damage, Chronic Wasting Disease is subtle, infecting deer without them showing any signs of disease for many months.

And because it takes even longer for CWD to begin negatively affecting deer populations, many people might dismiss the threat CWD poses.

But whether the effects of CWD are easily seen or not, decades of research show the disease has real impacts on deer that aren't to be taken lightly.

Still, many questions about CWD remain unanswered.

And those questions, along with CWD's slow-moving nature, provide a stage for falsehood and skepticism about CWD.

Simply put, there's a lot of misinformation out there. And we'd like to address some of the common miscon-

ceptions about CWD.

## MISS

**CWD has always been in Pennsylvania; the Game Commission just didn't find it until recently.**

While it is possible CWD has a longer history in Pennsylvania than is known, the distribution of CWD in other states, as well as in Pennsylvania, suggests otherwise.

Like a wildfire, CWD starts with a single spark, or single infected deer, and slowly grows outward radially into a fire. As this fire grows, it moves across the landscape, burning hottest near its core.

Similarly, CWD cases concentrate near the first infection and radiate outward as deer encounter one another. Just like a wildfire, sparks can leap into new areas, starting fires nearby.

But new cases of CWD can leap

## WE CAN DEBATE THE UNKNOWN, BUT WE CAN'T ESCAPE THE FACTS

much greater distances when people transport deer or deer carcasses from CWD-infected areas to uninfected areas.

Take Pennsylvania for example. The Game Commission began monitoring CWD in 2002, but the disease wasn't detected until 2012, first in captive deer, then in wild deer. Over 35,000 captive deer and over 34,000 wild deer were tested prior to the first detection.

The first wild cases of CWD in Pennsylvania were detected in three deer in Bedford and Blair counties. Since then, CWD-positive wild deer have been detected in nine of Pennsylvania's 67 counties. However, over half of Pennsylvania's wild positives have been detected in Bedford and Blair counties.

If CWD always was in Pennsylvania, we would expect more cases to be found statewide, not solely in isolated areas. A similar pattern of infection appears in other states.

**MISS**

**CWD is not a common disease in the U.S., so it's not a threat.**

Out of the millions of deer that have been tested for CWD nationwide, less than 2 percent have tested positive.

Many people use this statistic as grounds to justify a perception that CWD is not serious threat to the deer herd. But the statistic, while true, is misleading because CWD, like other diseases, does not evenly distribute itself across the nation, or even within states themselves.

To date, CWD has been found in 26 states and three Canadian provinces, and prevalence varies within each state. As with most diseases, the prevalence

in a given area increases with time. Areas in Wyoming and Colorado where CWD first was found report prevalence levels upward of 30 percent, while some counties in southern Colorado have yet to detect CWD.

CWD prevalence also varies within our own state, with the majority of CWD detections occurring in Disease Management Area (DMA) 2. CWD prevalence also varies within the DMAs themselves.

Studies show that deer populations with high prevalence of CWD have lower survival rates, resulting in annual population declines.

Even though CWD has a low prevalence nationwide, CWD should not be dismissed as insignificant. CWD always is fatal to the deer and elk it infects and, unfortunately, there is no cure or vaccine yet.

**MISS**

**CWD is caused by bacteria.**

The hypothesis that bacteria could be the cause of CWD and other Transmissible Spongiform Encephalopathies (TSE) such as mad cow disease and scrapie has been around for some time now, but it recently has resurfaced.

Bacteria and viruses were dismissed as the cause of TSE diseases in the 1980s, when researcher Stanley Prusiner discovered the prion in 1982 while studying the infectious agent of scrapie in sheep.

Prusiner was surprised to find that when he inactivated all DNA or RNA in scrapie-infected samples, animals still were able to become infected from the sample material. Since DNA and RNA are necessary components of bacteria

and viruses, this led Prusiner to search for alternative sources of scrapie.

Prusiner then found that if he removed all proteins from sample material, animals were unable to become infected from the sample material suggesting scrapie must be caused by a protein.

Prions are misfolded or distorted versions of proteins. In their normal shape, the proteins are not harmful to the body and most likely help with cellular function. When misfolded, however, they cause disease that results in the formation of tiny holes in the brain.

Since Prusiner's initial findings, a wealth of research has been published to support the idea prions cause TSE diseases, and all TSE diseases are believed to be caused by prions.

When a pathogen, such as a bacteria or virus, enters the body, an immune response is triggered because the pathogen is not recognized as part of the body, but as an invader. To fight these invaders, the immune system quickly induces fever and inflammation, which is the body's way of inactivating pathogens.

If the body has been infected with a pathogen previously, the immune system is able to recognize the pathogen and produces antibodies, which attach to and neutralize the pathogen.

TSE infections have not been found to induce fever, inflammation or antibodies, suggesting the immune system either recognizes the infectious agent as being part of the body or does not notice the infectious agent at all.

Since prions are commonly found in mammals, it makes sense that the immune system does not recognize prions as invaders.

All of these findings and more sug-

gest that TSE diseases are not caused by a bacteria or virus.

Whether CWD is caused by a prion or bacteria doesn't change the Game Commission's need to manage the disease and try to limit its spread to new areas. But the distinction does matter in relation to CWD vaccines and field tests that are said to be nearing completion. Those vaccines and field tests are built on the idea that CWD is caused by bacteria.

**MISS**

### **EHD is a bigger threat than CWD to our deer herd.**

It is true that Epizootic Hemorrhagic Disease (EHD) can have significant impacts on deer populations locally where the disease hits. But CWD has the potential to reach farther and become a more-permanent problem.

EHD is a virus that is spread by tiny biting midges, or "no-see-ums." Pennsylvania has been impacted only about once every five years, with outbreaks occurring over small areas during the summer. The midges then die off after the first hard frost.

Even though EHD quickly can kill large numbers of deer, it is not always fatal.

Many deer that contract EHD survive and develop resistance to the disease. Even in those areas where EHD causes large deer die-offs, those local populations can rebound quickly.

One of the most dangerous things about CWD is that its effects are not easily visible.

Instead, CWD picks at a population, one deer at a time. Then, over time, the disease takes an increasing number of

deer. Due to its slow-moving nature, it can take years for CWD to begin negatively affecting deer populations. However, no matter how slow CWD moves, CWD always is fatal. Its effects are real.

CWD can be spread by deer-to-deer contact or indirectly through contaminated environments. And once in the environment, CWD can remain infectious for several years.

Because of this environmental contamination, once CWD is established in an area, it's nearly impossible to eradicate and will continue to infect deer for years.

**MISS**

**CWD does not kill deer.**

If you can't see it, it doesn't exist – right?

Despite decades of research on CWD, many people believe CWD isn't a threat, simply because they can't see it.

With the current low prevalence of CWD statewide, it's unlikely for anyone to see CWD-positive deer displaying symptoms, let alone watch a CWD-positive deer die. Whether you can see CWD or not, CWD is a serious threat to Pennsylvania's deer herd.

As CWD slowly progresses in the body, it creates holes in the brain, often causing infected deer to become more susceptible to other threats. Therefore, infected deer often die from causes like hunting, predation, or vehicle collisions, before outward signs of the disease are apparent.

Studies looking at the average survival rates of CWD-infected deer, show that deer can die solely from CWD.

Not to mention that studies have

found that CWD-infected deer are two to four times more likely to die annually than non-infected deer. And whether a CWD-infected deer dies directly from disease or it gets hit by a car first, CWD likely is contributing to that animals' death.

As the number of deer with CWD increases, deer-population declines will follow, and as a result hunting opportunity could be reduced.

**MISS**

**Nothing has been found to slow or stabilize the spread of CWD.**

There is no evidence that shows CWD will burn itself out naturally.

Unfortunately, options are limited when it comes to managing CWD. However, culling has proved effective in other states.

New York detected two wild cases of CWD in 2005, just after CWD was detected at a nearby captive deer facility. Within weeks, deer managers used a combination of hunter harvest and culling to reduce deer populations in the local area.

No more CWD cases have been found in the state since.

New York's success story, along with experiences from other states, provides hope that culling, if conducted quickly and effectively after CWD is detected in a new area, can be used to combat CWD.

Illinois also began culling efforts in 2003, soon after CWD was detected in the state. Illinois targeted culling around CWD detections and has been able to hold CWD at bay, maintaining a low CWD prevalence – about 2 percent – ever since.

Wisconsin also detected CWD in 2002 and began culling deer in 2003, but due to public pushback, ended culling efforts in 2007. CWD has spread and increased in the state since, with some areas showing 50 percent of adult bucks being infected.

While reducing deer populations often is opposed by hunters and wild-life enthusiasts who enjoy seeing large numbers of deer, it is currently the best management strategy known to slow the spread of CWD.

The question is would you rather reduce deer numbers in hopes of managing CWD or do nothing and watch CWD spread?

**MISS**

#### **Some deer are resistant to CWD.**

All deer can become infected with CWD, however, recent studies show that certain genotypes can make a deer more or less susceptible to CWD.

Even those deer with the less-susceptible genotype are not immune to CWD, though they have been found to live months longer than other infected deer.

Unfortunately, this also means deer with the less-susceptible genotype can spread CWD for a longer period.

More research is needed to fully understand these genotypes and how they affect the spread of CWD.

**MISS**

#### **CWD can infect humans.**

CWD is closely related to mad-cow disease, which was found to infect humans in 1996.

However, since CWD first was discovered in 1967, there have been no known reports of CWD infecting

humans. While no link between CWD and human illness has been identified, the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) advise people to avoid exposure to CWD-infected meat.

The CDC states, “some animal studies suggest CWD poses a risk to certain types of non-human primates, like monkeys, that eat meat from CWD-infected animals or come in contact with brain or body fluids from infected deer or elk. These studies raise concerns that there may also be a risk to people.”

The Game Commission recommends hunters who harvest deer in Disease Management Areas (DMAs) take advantage of the free CWD-testing offered within the DMA. It’s important to note this is not a food safety test. Failure to find prions in the examined tissue does not indicate the harvested animal is CWD-free.

But the tests are valuable in identifying CWD-positive animals that should not be consumed.

### **TELLING FACT FROM FICTION**

Unfortunately, in our technology-driven world, misinformation is easy to find, and it can be spread by individuals or groups.

While information provided on social media can be accurate, the Game Commission recommends double-checking information from a variety of reputable sources, as well.

Many nonprofit conservation and health organizations and most state wildlife agencies provide on their websites reliable information about CWD that reflects the best available science. **Gn**