Senate Agriculture and Rural Affairs Committee

&

Senate Game and Fisheries Committee

Joint Public Hearing on Chronic Wasting Disease
February 9, 2022

Pennsylvania Department of Agriculture Testimony

Deputy Secretary Greg Hostetter
Deputy Secretary for Animal Health and Food Safety

&

Dr. Kevin Brightbill, DVM
Director of the Bureau of Animal Health and Diagnostic Services

Good evening to our chairs, Senator Vogel, Senator Laughlin, Senator Brewster, Senator Schwank, and all the Members of the Senate Agriculture and Rural Affairs and Game and Fisheries Committees. Thank you for calling this hearing today to discuss Chronic Wasting Disease (CWD), and to provide the Department of Agriculture (the department) with the opportunity to share with you our direct and shared roles and the scientific methods the department is utilizing to manage this challenging disease. The department recognizes there are profound implications to Pennsylvania's economic health and the environment with CWD, including and beyond a sustainable healthy deer herd. Collaboration between agencies and other partners has been effective in addressing animal disease, whether it originates domestically or in the wild.

Outbreaks of any type are devastating to animal agriculture. These events can close borders, shut down agricultural operations and related businesses, and drive up the cost of food for consumers. The Pennsylvania Department of Agriculture's Bureau of Animal Health and Diagnostic Services (BAHDS) is responsible for regulatory animal disease programs within the commonwealth and is specifically charged with monitoring, detecting, preventing, responding to and removing agents threatening the health and safety of Pennsylvania's livestock resources. This authority is provided by the Domestic Animal Law at 3 Pa.C.S. Chapter 23. This work, performed by a network of 12 veterinarians and 17 animal health inspectors throughout the state, relies on the testing capabilities of the Pennsylvania Animal Diagnostic Laboratory System, or PADLS. PADLS is a tripartite system which joins together the department, the Pennsylvania State University, and the University of Pennsylvania.

In addition to its standard regulatory work, the bureau plays an active role in the commonwealth's emergency preparedness network. This is an important connection, as it brings together state and local public health, emergency response and agriculture officials on topics such as the Avian Influenza Response Plan, the Pennsylvania Animal Response Team and other groups with first-responder roles in an agricultural emergency.

PADLS provides rapid and accurate diagnostic services to protect animal health and consequently has an important impact not only on animal health but also human health, food safety and the economic well-being of Pennsylvania residents. The Pennsylvania Animal Diagnostic System is recognized as a Tier 1 National Animal Health Lab Network (NAHLN) laboratory system and has the authority and ability to respond to disease threats arising from foreign animal diseases (FAD) like foot and mouth disease (FMD), a devastating disease of cattle and swine; highly pathogenic avian influenza (HPAI), a disease of serious concern for the poultry industry; or African swine fever (ASF), causing high mortality and losses in pigs. The tripartite laboratory system has primary responsibility for testing diseases of high concern important to agriculture stakeholders. These important diseases are called dangerous transmissible diseases (DTD) and include rabies; equine infectious anemia (EIA) in horses; Pullorum and avian influenza in poultry; Brucellosis, leucosis, "Mad Cow" disease (BSE) and bovine viral diarrhea in cattle; and Chronic Wasting Disease (CWD) in deer. The laboratory system annually tests more than a half million samples and supports most of Pennsylvania's livestock industries.

The PADLS-Pennsylvania Veterinary Laboratory (PVL) and PADLS-New Bolton Center (NBC) are two of only 31 national labs offering CWD testing. PADLS is very robust in providing

testing support for animal disease diagnosis and in supporting trade and export of animals nationally and internationally.

Chronic Wasting Disease

PADLS-PVL helped diagnose the first case of CWD in Pennsylvania's deer population in 2012, although surveillance for the disease, carried out by the department and the Pennsylvania Game Commission (PGC) in Pennsylvania, has been ongoing since 1998. Since this first detection, due to continuous testing and rigorous surveillance measures, CWD infections have continued to be detected with increasing frequency in recent years.

CWD is caused by a misfolded protein called a prion. All mammals produce normal prions that are used by cells, then degraded and eliminated, or recycled, within the body. When disease-associated prions contact normal prions, they cause them to refold into an abnormal shape. These disease-associated prions are then deposited in tissues and cause damage and disease. CWD is one of a group of diseases called Transmissible Spongiform Encephalopathies (TSEs), or prion diseases. CWD is closely related to, but different than, other TSEs, including Scrapie in sheep, Bovine Spongiform Encephalopathy (BSE or "Mad Cow" disease) in cattle, and Creutzfeldt-Jakob disease and variant Creutzfeldt-Jakob disease in humans. The prion is found in greatest concentrations in nervous and lymphatic tissues and can accumulate in brain tissue, giving it a sponge-like appearance. There is scientific evidence CWD is spread through body fluids, feces and contaminated environments.

Laboratory diagnosis and detection of this slow infection rely on techniques detecting the abnormal form of protein, testing mostly infected tissues collected post-mortem. As endemic areas have expanded, so has the need for rapid, sensitive and cost-effective diagnostic

tests—especially those taking advantage of samples collected antemortem. Over the past two decades, strategies have evolved from the recognition of microscopic spongiform pathology and associated immune-histochemical (IHC) staining of the misfolded prion protein to enzyme-linked immunoassays (ELISA) capable of detecting the abnormal prion protein in post-mortem samples. PADLS-PVL and PADLS-NBC offers IHC and ELISA testing for regulatory and diagnostic testing. The two labs also explore the application of RT-QuIC (real-time quaking-induced conversion) on antemortem samples (3rd eyelid and feces) with the help of United States Department of Agriculture (USDA) CWD research funding.

It is important to note there have been no reported cases of CWD infection in humans according to the Centers for Disease Control and Prevention. Animal studies suggest CWD poses a risk to some types of non-human primates, like monkeys, that eat prion-spiked samples of meat to simulate CWD-infected animals or come in contact with brain or body fluids from infected deer or elk. The department supports the World Health Organization's recommendation to keep agents of all known prion diseases from entering the human food chain, essentially meaning hunters and others consuming the meat of CWD-susceptible animals should use common sense and never eat any meat from an animal that does not appear to be healthy. CWD-susceptible species include black-tailed deer, elk, moose, mule deer, red deer, sika deer, reindeer, white-tailed deer and hybrids of these species.

As with other diseases, CWD testing methods have seen major advancements with the advent of new technology. Currently, CWD is receiving much attention from researchers and newer methodologies are being developed. With the development of these more sensitive and semi-quantitative approaches comes a greater understanding of the pathogenesis and

epidemiology of this disease. These newer techniques have not yet been deployed in control programs due to pitfalls identified during routine testing and scalability problems they present. However, the problems these newer technologies present are being addressed and these methods are set to change CWD diagnostics in the near future. The two most studied new techniques for CWD detection are Protein Misfolding Cyclic Amplification (PMCA) and Real-Time Quaking-Induced Conversion (RT-QuIC). Both techniques have yet to receive USDA approval, but PADLS has already begun investigating their usefulness and accuracy. PVL was awarded $80,000 from USDA Veterinary Services to study RT-QuIC. Additionally, the department (by virtue of the foresight of the Pennsylvania General Assembly to allocate research funding for CWD in FY19-20) awarded Dr. Davin Henderson of CWD Evolution LLC nearly $197,000 to study this method.

Managing Chronic Wasting Disease in Pennsylvania

Pennsylvania has the second largest domestic cervid (a cervid is any animal in the deer family) industry in the country. There are currently 717 domestic cervid breeding farms, hobby farms and hunting preserves in the Commonwealth.

CWD was listed as a dangerous transmissible disease in July of 2000 by the department due to its potential negative impact on cervid herd health. By designating CWD as a dangerous transmissible disease, any cervid owner, veterinarian or diagnostic laboratory suspecting a case of CWD is obligated to report it to the department immediately. Suspect animals include all cervids exhibiting signs of staggering, drooling, wasting or other unusual behavior. It is important to note clinical signs are not predictable and may only be seen in the end stages of the disease.

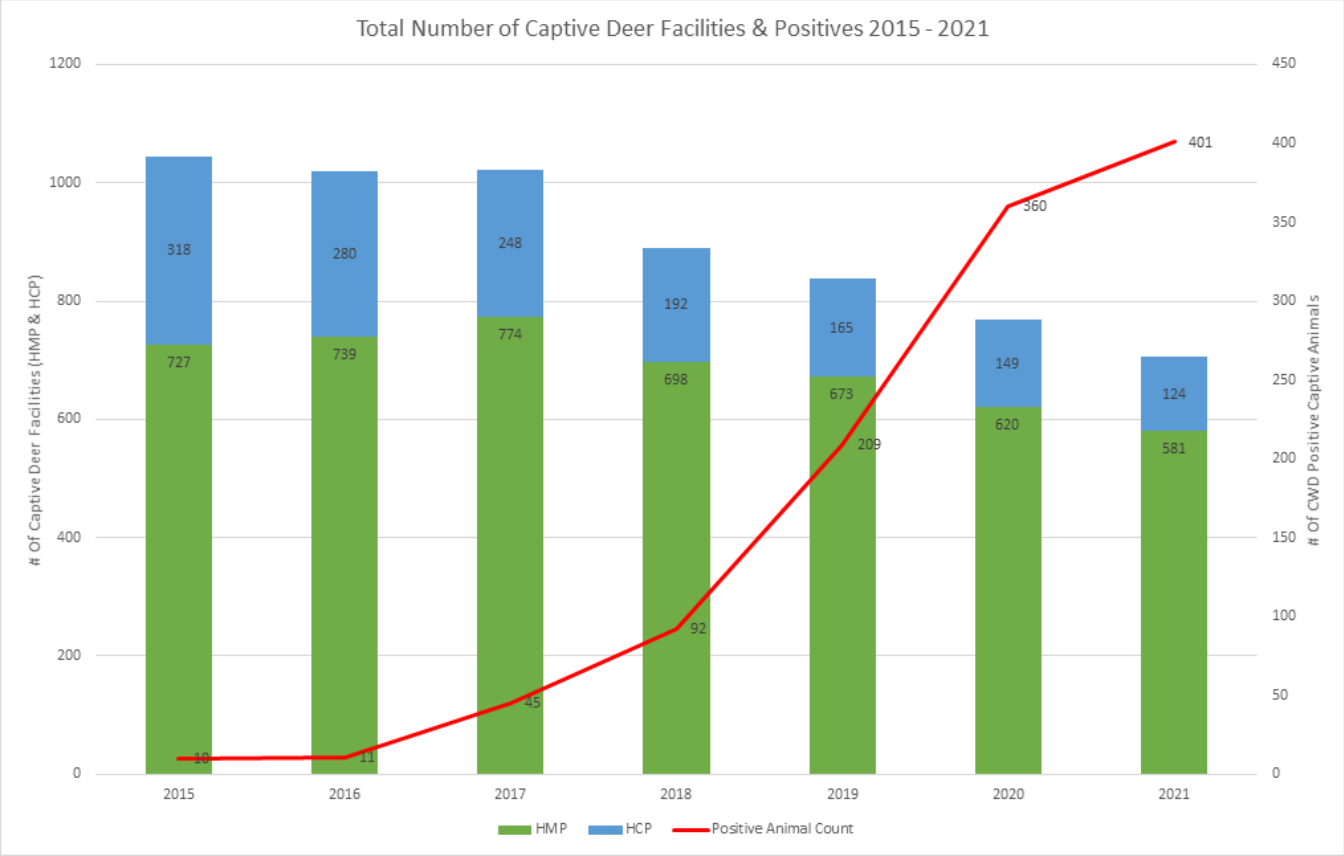
The department currently enforces a 2014 Quarantine Order, CWD Program Requirements for the Herd Certification Program (HCP) and the Herd Monitored Program (HMP), and the 2019 USDA Chronic Wasting Disease Program Standards. These regulatory documents strictly delineate: 1) annual herd inventory reporting requirements; 2) fencing requirements; 3) identification and testing requirements and 4) guidelines on how infected herds and herds that may have sold into them or purchased from them must be quarantined to mitigate disease threat. These requirements are designed to detect the status of CWD within a herd and to promote healthy cervids (both farmed and wild populations) with a reduced risk of CWD. The department is tasked with protecting the whole herd (all domesticated livestock), taking reasonable precaution to mitigate the disease threat on an individual premises while not jeopardizing the health status of all other captive premises and surrounding susceptible species in the wild.

Since the inception of testing in 1998 by PVL, more than 100,000 captive deer have been tested for CWD with 401 confirmed positive. To date, 42 positive premises have been identified and 15 of those premises have been depopulated. The 27 remaining farms continue under quarantine with mandatory monthly facility inspections, strict requirements to test 100% of all cervids 9 months and older for CWD that die for any reason and movement restrictions onto and off the farm for all cervids and potentially contaminated equipment. Any time a positive is detected on a quarantined facility the five-year quarantine period is reset to count down an additional 5 years.

Today, 117 cervid breeding farms are enrolled in the Herd Certification Program, a federally guided, state-administered voluntary program of surveillance and related actions

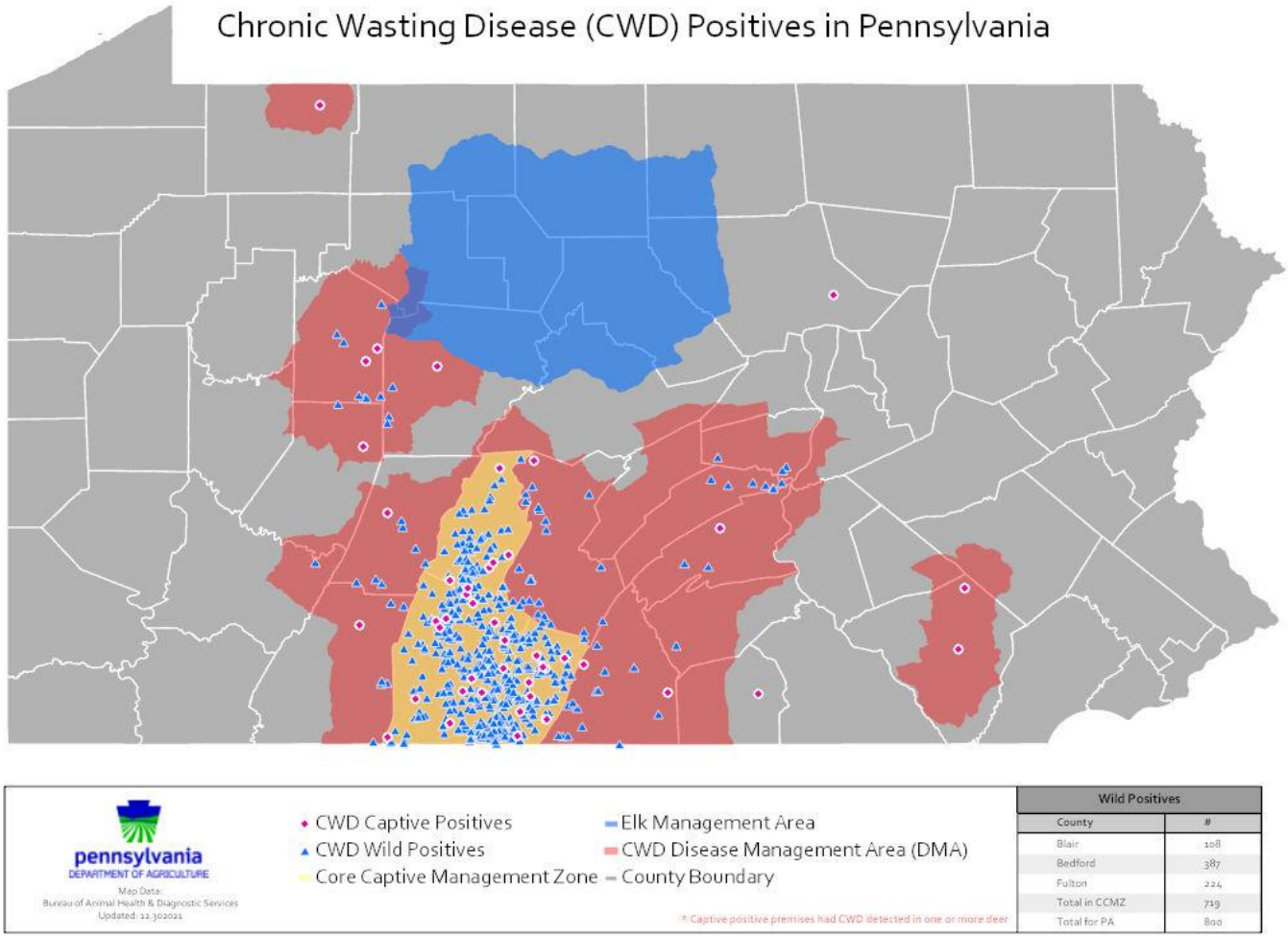
designed to determine the CWD status of farmed or captive deer and elk herds. Herds that have completed five years of compliant participation in the program with no evidence of CWD are designated “Certified.” Participation in this program allows for interstate movement of cervids. The remaining 600 herds are enrolled in the Herd Monitored Program, a mandatory program of surveillance and related actions designed to monitor farmed or captive deer and elk herds for CWD. This program restricts movement of cervids to within Pennsylvania.

Please see the bar graph below showing number of HCP versus HMP farms since 2015.



In August 2020, the bureau (through a General Order of Quarantine signed by Secretary Redding, published in the Pennsylvania Bulletin (pacodeandbulletin.gov) and advertised in Lancaster Farming) established a CWD Core Captive Management Zone (CCMZ). To date nearly 90 percent of known cases in wild deer and 85 percent of CWD positive cases in captivity have originated from Blair, Bedford and Fulton Counties, comprising the geographic area designated by the department as the CCMZ. These counties are in PGC's Established Zone for CWD, meaning we will likely never eradicate CWD from this zone altogether and regulatory resources must focus on slowing disease spread out of the zone and work to establish a deer herd less susceptible to CWD. The department's focus in the CCMZ is working with facilities to institute genetic selection and breeding to develop deer less susceptible or resistant to CWD while maintaining regulatory authority and oversight to reduce likelihood of herds outside of the CCMZ contracting CWD. Facilities in the CCMZ are no longer able to sell deer to any county outside of the CCMZ but may continue to buy from anywhere in PA or across the nation. If a facility in the CCMZ goes positive, they may continue to operate as normal – breeding deer, selling hunts and selling live deer within the three-county zone if their annual CWD herd positivity rate stays under 5%. Should the herd's CWD positivity rate reach 5%, the facility may continue to sell hunts but must separate their bucks from does. This separation step is critical for herd participants to initiate a genetic selection process for a less susceptible breeding stock and subsequently cull stock predicted to be highly susceptible.

Please see the map below showing number of domestic and wild CWD cases to date, with outlines of both PDA's CCMZ and PGC's Established Zone for CWD.



Dr. Chris Seabury, a geneticist at Texas A&M University, discovered that through using machine learning to analyze a combination of 50,000 areas of the genome of white-tailed deer, computer algorithms can predict the susceptibility of individual deer to CWD. The results from this assay are in the form of a genomic estimated breeding value (GEBV), a numerical value rating susceptibility to CWD. The department was awarded a $250,000 grant from the USDA to

deploy this testing for Pennsylvania captive deer herds. Cervid owners who participate will receive this test, normally valued at $75 per animal, for an out-of- pocket cost of $25 until funds are exhausted. The results will give the herd managers an idea of the genomic susceptibly of their breeding stock and will include a cut-off assigned by Dr. Seabury indicating which deer should not be bred as they may contribute to increased susceptibility. This grant goes a step further and assigns funds to supplement $500 of the cost of replacement of low-scoring deer with embryos, semen or breeder deer with favorable GEBV scores to help kickstart improvement of herd resistance to CWD.

Building a strategic plan to manage CWD

In 2011, Pennsylvania established an interagency CWD Task Force to implement its CWD Response Plan. The task force is currently comprised of the department, PGC, the Pennsylvania Department of Health, the Pennsylvania Department of Environmental Protection, the Pennsylvania Department of Conservation and Natural Resources and both USDA's Veterinary Services and Wildlife Services. The management of the "collective herd" (i.e. all wild and captive cervids alike) is critical to the preservation of our valuable Penn's Woods.

The department continues to work closely with PGC to monitor this disease and to help educate deer farmers and hunters alike about how to recognize the signs of CWD, where to report it and how to have deer tested. The department is responsible for oversight of domestic deer while monitoring for CWD cases outside of farms is the responsibility of PGC. Our two agencies are partners in the challenging fight against CWD and work cooperatively as our jurisdiction intersects at the intersection between captive and wild deer against a disease that knows no bounds, recognizing that this is an issue both inside and outside of the fence.

As the Bureau Director, State Veterinarian and Executive Director of the Animal Health and Diagnostic Commission (AHDC), I am charged with judiciously utilizing finite resources to safeguard livestock health, public health and the food supply. Pennsylvania has a diverse, vibrant and robust $34 billion livestock industry. With the very real threat of African Swine Fever in the Western hemisphere, Highly Pathogenic Avian Influenza in the Atlantic Flyway and continuous management of the captive cervid Chronic Wasting Disease Program in Pennsylvania, demands are high. The bureau invests roughly $1.5 million in total personnel and operating investment annually on CWD, reflected by 70% of veterinary staff time being spent on captive cervid CWD compliance, enforcement, disease response and mitigation efforts.

This disease transcends every jurisdictional, agency and physical barrier known to humankind – we can only mitigate it if we are permitted to work across agencies to address the threat. There is growing complacency by some in the captive cervid industry for CWD; rhetoric has pivoted towards arguing the disease itself is not a substantial threat, but rather increased regulations are. This mindset is propagated by a lack of scientific understanding and some producers' beliefs that CWD is an abstract threat unlikely to affect their herds.

Moving forward

It is more important than ever that as a Commonwealth we come together collaboratively to slow the spread of CWD, implementing uniform mitigation standards and working cooperatively across commonwealth agencies to lessen the odds of disease spread. Scientific advancements including genetic predictive modeling, which forecasts an individual animal's susceptibility to CWD, combined with selective breeding is our best hope of control.

Ensuring genetically unique animals and their offspring are officially identified and monitored for CWD throughout their lives is paramount to validating this strategy as a long-term solution.

The bureau is currently in process of hiring a CWD Program Manager to coordinate program management and uniform and timely response to all issues related to CWD, ensuring consistent outreach, education, compliance and enforcement across the commonwealth. The bureau continues to update and looks forward to publishing an updated CWD Order of General Quarantine which was last published in 2014. This update is necessary for effective disease mitigation by ensuring animal disease traceability is maintained and non-compliant entities adapt and come into compliance.

It is mission-critical to educate cervid farmers, hunters and wildlife enthusiasts alike not to transport high-risk parts out of endemic areas to prevent disease spread. In addition, we must continue to educate the public about the downside of feeding wild deer since it congregates animals and makes prion spread more likely.

In closing, Chronic Wasting Disease is a clearly documented and pernicious disease that is expanding in Pennsylvania and will continue to expand if unchecked. The approach to addressing CWD must be comprehensive, and inclusive, and must use the best available science – both short-term and long-term solutions across Commonwealth agencies will be required.

Thank you and I look forward to your questions.