

Andrew Beck

Dr. Gurarie

EFB 390-01

14 December 2022

An Assessment of the Captive Cervid Industry

Introduction

Game farms are often held as being controversial in the wildlife management and scientific community. They are even becoming controversial more and more among hunters. Much of this debate stems from a healthy fear of chronic wasting disease (CWD), and the effects it can have on wild deer populations. Although there many aspects of deer farms, both good and bad, CWD seems to relate in some way to the vast majority of them.

Ecological Impacts

Today, when the phrase “deer farm” or “game farm” is spoken, the first thing to jump to most people’s mind is CWD. It is to the point that the terms “CWD” and “deer farm” are practically inseparable. This is, however, not an illogical association. There is strong evidence to suggest that CWD in the wild deer populations of several states came from the captive cervid industry (Ricci et al. 2017). This has led many to speculate that CWD could have originated from deer farms. The first time CWD was described outside of research facilities was in captive cervid (mule deer, blacktail deer, elk) facilities in Colorado and Wyoming in the 1970s (Texas A&M n.d.). The more crowded conditions present ideal circumstances for the spread of this disease. The first instance of CWD occurring in the wild was in portions of Colorado and Wyoming in the mid-1980s (USDA APHIS 2020). This has led to its presence in the wild cervid populations of twenty six states and six Canadian provinces (Hedman et al. 2021).

Although there are many ecological factors related to game farming, the largest impact comes from CWD. Chronic wasting disease is a form of transmissible spongiform encephalopathy (TSE). This roughly translates to “contagious spongy brain”, and is due to the condition CWD leaves the brain in. It creates many small “holes” in the

brain, causing the deer to slowly lose neurological function, and die (Waddell et al. 2018). This type of disease is not caused by a virus, bacterial infection, fungi, or protist. It is caused by a non-living infectious agent known as a prion. A prion is a misshapen protein that, when it contacts other proteins of the same type, causes them to become misshapen as well (Waddell et al. 2018). This misshaping phenomenon is what causes the aforementioned “spongey brain”. The tiny holes caused by the prion proteins cause a sponge like appearance under a microscope (Waddell et al. 2018).

Currently, chronic wasting disease is only known to affect Members of the family Cervidae (the deer family) (Waddell et al. 2018). Despite this, concern that it will become a zoonotic disease is always present. The risk posed to humans by this disease is best described as uncertain. Transgenic human prion protein expressing mice resisted CWD infection, but some non-human primates have proven susceptible (Kurt et al. 2015). Therefore, there is evidence to suggest that cross-species infection to humans is unlikely but, because of the infected primates, risk cannot be totally ruled out. Although there is not much evidence to suggest that CWD would spillover to humans, exposure heightens the risk which warrants further research and precaution (Hedman et al. 2021).

Economic Aspects

Despite the ecological negatives, deer farming can be a very profitable business when done efficiently. These farms can offer a myriad of products that are even used by non-hunters, and hunters who do not utilize game farms directly. The products that a deer farm may produce are breeding stock (for other game farms), meat, urine (scent attractant), antler velvet, hard antler, hide, and “trophy” bucks/bulls among other lesser products (Coon 2015). This means that venison, elk meat, antler, deer/elk leather, and deer urine products sold in stores most likely came from a game farm¹.

According to the retired game farmer Mike Sheppard, the most profitable product from his farm was live animals (Sheppard pers. comm. 2022). This is logical due to

¹ Some states, such as New York, allow the sale of wild-caught non-meat deer products. Such products include antlers, hide, taxidermy etc. (NYSDEC 2022). This means that not 100% of deer products sold to the public come from deer farms.

state game agency regulations regarding deer breeding. Typically, the only way a game farmer can obtain game to farm is from another captive source (NYSDEC n.d.). This means that in order to maintain animal numbers and genetic diversity (sometimes also species diversity), game farms are constantly buying deer from other farms. This would mean that some farms, like Mike Sheppard's, placed a focus on breeding animals for sale. Mike Sheppard also indicated that meat was a major product. He said that he sold meat for "awful great big dollars" (Sheppard pers. comm. 2022). This implies that meat sale is likely to be profitable to any game farm with access to a USDA certified processing facility. Hunts are another major product for deer farms. Mike Sheppard indicated that he made significant money off hunts (Sheppard pers. comm. 2022). This makes sense as some hunters simply want a trophy for their wall, and are willing to pay handsomely for it.

All of these potential economic benefits do come at a cost. These costs mainly arise from the ecological impact of CWD. Between 2000 and 2021, federal agencies², paid out \$284.1 million on CWD related expenses (Chiavacci 2022). The federal government is not the only one on the line for CWD related costs, however. State fish and game agencies paid \$25.5 million, and state agricultural agencies paid \$2.9 million in the year 2020 (Chiavacci 2022). These costs logically come back on the taxpayer, whether through Pittman Robertson act taxes or other tax channels. Among the taxpayers who finance these expenditures are game farmers themselves. These individuals have their own CWD related costs to consider. In 2020, the captive cervid industry paid out \$307,950 on testing alone (Chiavacci 2022). Although this is a lesser cost, it does not include the devastating economic loss that occurs when an entire facility is depopulated in the event of a positive CWD test.

Management Issues

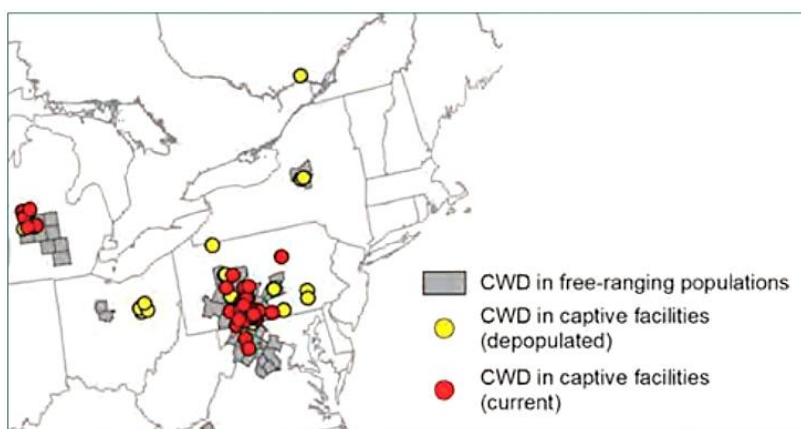
When it comes to farming cervids, there are many wildlife management implications. One management concern is who can farm deer, and how they can do it. For example, to deer farm in NY, a prospective deer farmer needs to apply for a special

² Primarily United States Department of Agriculture's Animal and Plant Health Inspection Service (USDA APHIS) (Chiavacci 2022).

license from the NYSDEC³. The commercial version of the license costs \$200 and allows licensees to sell live animals to other farms, or deer products to the public (NYSDEC n.d.). Licensees are subject to regulations and/or inspections from the NYSDEC, USDA, and United States Fish and Wildlife Service (USFWS) (NYSDEC n.d.). This is to ensure that wildlife managers, in this case the NYSDEC, have at least some idea of what is happening in the captive cervid industry. This can help them to make better management decisions and try to spot disease outbreaks before they leak to wildlife.

These wildlife managers must consider the danger to local wildlife that comes from housing large numbers of the same species in captivity. The main concern that exists today, as mentioned before, is CWD. Unfortunately, to effectively control CWD in a captive population requires an almost literally “scorched earth” policy (kill all the deer). The figure below, furnished by the NYSDEC, shows CWD outbreaks and the culling status of each facility.

Fig 1



(NYSDEC 2022)

As illustrated by the map, CWD in wild herds (grey boxes) is usually (but not always), adjacent to a captive facility with CWD. There are a small number of culled facilities (yellow dots) with no detected spillover to wild populations. This shows promise that, when caught early enough, CWD could be contained to the facility. The issue, however, is that it involves culling a deer farmer's whole herd, which is a significant loss to say the

³ To apply for a NYS deer farming license visit: <https://www.dec.ny.gov/permits/25011.html>

least. Wildlife managers do often need to weigh the socioeconomic impacts of their management decisions, and are frequently left to compromise.

Another aspect of deer farms that wildlife managers closely monitor is their security. This comes primarily through fencing the facility securely. Fence is not cheap, however. According to Mike Shepard, 12 foot fencing was \$86 per panel, not including barbed wire (Shepard pers. comm. 2022). This is not cheap considering many properties would require hundreds of yards of fencing. This fence also requires constant maintenance and repair. Mike Sheppard made reference to some boars (which he farmed in addition to deer) escaping the facility (Sheppard pers. comm. 2022). Although boars are more destructive than deer and thus more likely to escape, this still helps illustrate the difficulty in maintaining the security of long fence lines. Even a totally secure fence does have some problems where CWD is concerned. One potential problem is the level of effectiveness the fence has at keeping captive deer (and bodily fluids of captive deer) out of contact with wild deer (and vice versa). In a study that monitored the fence line of deer facilities, in over 77000 hours of footage, only twice was there direct contact between captive and wild deer (Vercauteren et al. 2007). This would normally indicate that the fence was effective, and probability of disease spread was very low. The issue here is CWD spreads easily enough that, in theory, one infected deer could spread it to the whole herd (either into or out of the farm). This would indicate that some sort of double fence is in order. The issue is that wildlife managers need to consider the feasibility of doing this. Since fence is very expensive and hard to maintain, it would not be feasible for some farms to do. Should a new regulation come out mandating the use of a double fence in all deer farms, some game farms may be forced to close their doors. This would obviously have tremendous economic impacts on the owners, which would best be avoided (within reasonable risk parameters). Situations like this have unfortunately led to instances of game farmers suing the wildlife managers for decisions they deemed unfair (Hunter 2019).

Social Concerns

There are many social implications surrounding the farming of deer. These come from many different groups, for many different reasons. Some are simply emotional

concerns, some are ethical concerns, and others are stigmas that are largely arbitrary in origin. One major social factor of deer farming is the public perception of hunters and hunting. Hunting quasi-domesticated animals within a fence for large sums of money can cause a souring of hunters' public perception (Brown 2016). This may contribute to opinions that game farm hunts are "classist" or "unethical". Even the NYSDEC inadvertently plays into this stigma. They urge people to not illegally import cervids for the "fee-based shooting of confined animals" (NYSDEC 2022). Although this statement is accurate, it is blunt, with the exact wording drawing a negative connotation. Obviously, wildlife management agencies are leery of game farms, but this shows just how deep stigmas can go. Retired game farmer Mike Shepard stands against the demonization of game farm hunters. He insists that people did not pay it much mind years ago (Sheppard pers. comm. 2022). Sheppard also maintains that his facility was large enough (250 acres) to ensure it was a hunt rather than a harvest (Sheppard pers. comm. 2022). To be fair, the idea that shooting a fenced animal is ethically questionable is totally arbitrary. After all, most people eat meat that once was a caged animal with little to no regard for this fact. At least those who hunt on game farms typically understand that an animal is dying for the food on their plates.

Concluding Thoughts

Deer farming is a complicated pursuit with many ecological, economic, management, and social factors playing into it. Today, CWD ties into the majority of these factors in at least some way. Even Mike Sheppard insisted that the idea CWD could arrive at his game farm was "scary" (Sheppard pers. comm. 2022). With CWD spreading across the United States like wildfire, wildlife managers will need to keep doing more and spending more to stop the spread. With this in mind, it may be best that deer farms be phased out, especially in areas not yet impacted by CWD. This may help slow the spread enough to give scientists time to come up with an effective treatment for this deadly disease.

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