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Impact of whitetail deer overpopulation with hunting on the decline

By

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Keywords

Hunting decline, whitetail deer, overpopulation, management solutions, game
commission

Abstract

The whitetail deer is a key species for Pennsylvania's forests, but their ecological balance has been disturbed by unregulated growth and urban sprawl. The deer population in Pennsylvania has exploded since the 1880's causing a wide range of damage on the ecosystem, and humans. To reduce deer populations to sustainable levels, the Pennsylvania Game Commission relies heavily on hunters to dedicate time in the fall to go out and fill the tags they issue. Hunter participation all around the world is decreasing for a variety of reasons. Fewer hunters out in the field causes revenue losses for the Game Commission and a decrease in harvest totals. Without a solution the whitetail deer population will soon reach record levels in Pennsylvania, causing a cascade of problems.

Hunting is a key piece to how funding gets rerouted into our parks, wildlife sanctuaries, and open spaces. Keeping land available to hunting and increasing hunter turn out and recruitment is key to sustaining this dynamic and supporting wildlife management for the reduction of negative human-deer interactions. Over the past few centuries, the nation has seen a steady and measurable decline in hunters. This is calculated using state records of hunting license sales each year. This problem is not confined to the United States, as even hunting in Norway is on the decline. This can cause a cascade of events because hunting license sales and fees made up 25 percent of the Pennsylvania Game Commission's income just last year. State game commissions are an invaluable tool for sustaining the health of fractured ecosystems we have today. These ecosystems are under attack from one of the very species key to its existence. The whitetail deer population underwent a dramatic rebound and is currently over its carrying capacity and wreaking havoc on the ecosystem, agriculture and suburbia. Getting control of the situation is only possible with the combined effort of regulatory agencies like the game commission and the dedication of Pennsylvania's hunters.

The whitetail deer is such a problem species in its overabundant state that I would consider it a wicked problem. A wicked problem is complex and unique, as stated by Riddle and Webber(pg.156). Deer are no exception to this, every single aspect of the issue. From the ecology side to the cultural side everything is incredibly unique to this specific wicked problem. Riddle and Webber also mention that wicked problems have no stopping rules. Overpopulation of deer is an endless problem and chased by endless solutions. Once this problem was triggered by urbanization and unregulated logging, and the eradication of large predators, the solutions

have been ever evolving to try and bring things back down to a healthy sustainable equilibrium for the sake of the deer, environment, and us.

Before I get too far into this discussion let me explain a few things about Pennsylvania and wildlife management. Pennsylvania has a dark past with unregulated hunting and logging. Out of 27 million acres, only a few hundred remain today as old growth forests. Out of all the wildlife affected, whitetail deer had a very unexpended rebound. Their numbers dipped to as low as a few thousand in the late 1800's. By the early 1900's the state began to see suburban expansion, the end of the logging boom (because there were so few trees left that logging was no longer economically feasible), the start of forests regenerating, and the virtual disappearance of the whitetail's main predators, wolves and mountain lions. This created a perfect storm for the deer population to rebound exponentially. Contrary to popular belief, whitetail deer actually prefer habitat that is broken up and contains woods edges over a large expansive forest. The more houses and developments we build, the more suitable habitat we create for deer, and the less accessible that habitat is to the whitetail's last significant predator in Pennsylvania: hunters.

We as a society have a moral and ethical responsibility to try sustaining a healthy balance for the ecosystems we have upended. The population of whitetail deer in Pennsylvania is estimated to be over 1.5 million, which can be broken down into deer per square mile. Some areas have more than 30 deer per square mile. This leads to an increase in diseases. Some of these might not effect the deer, but can be easily transferred by ticks to humans. Most famously in humans, Lyme disease. Zoonotic diseases are responsible for large scale die offs commonly referred to EHD which stands for epizootic hemorrhagic disease, caused by a small insect called a midge. Simply put insects carry the disease and spread it easily, once in the deer it causes bleeding and other potentially deadly symptoms. Chronic wasting disease is more of a problem

because it's not caused by a virus or bacteria instead Prions that are incorrectly folded proteins build up in the nervous system over multiple years and deform other proteins into more prions. This causes the deer's brain function to slowly deteriorate over the course of multiple years. These prions can only be destroyed by being denatured which involves being subjected to temperatures higher than 900°F for a sustained period of time. Alcohol and antibiotics will not work, and there is no vaccine, no cure. Prions can remain in the environment for years, and with the deer's communal social structure, they are especially transmissible. While transference to humans is rare, the result is a form of mad cow disease.

Lyme disease is an issue that many people might already know about as it affects almost 30,000 people nationwide every year. The main vector for the disease is the adult deer tick, and as one might guess, a more dense population of deer is directly correlated with increased reports of Lyme disease. The disease has a wide variety of symptoms including but not limited to, fever, chills, headache, random joint pains, weakness in the limbs, and in advanced cases brain swelling can occur. Even after finishing the rigorous antibiotic treatments, the symptoms of Lyme disease can persist for months or even years.

The formation of the Pennsylvania Game Commission in 1895 helped lead the charge for a better and more sustainable future of our ever-changing ecosystems. Currently in Pennsylvania, the Game Commission has split the state up into wildlife management units (WMU's). These units are managed with respect to hunting season length, time, bag limits, and tag allocation. Since Pennsylvania is large and game species populations are not equal throughout the state, these WMU's must be monitored and regulated separately in some cases. For example, 932,000 doe tags were sold in Pennsylvania for the 2020-2021 season. This number may seem large, but they are carefully divided up between the WMU's by the game commissions wildlife biologists

to help decrease the deer population in places and increase or maintain the population in others. This all hinges on hunter participation. For this massive quantity of tags to be used effectively they must first be purchased and most importantly, filled. Without this dynamic for large scale population management the deer population in Pennsylvania would quickly exceed its carrying capacity, destabilizing the ecosystem and weakening the species.

The effects of over population of the whitetail deer are various. Some of the effects are easily overlooked, while others are deeply personal for some people. When you go into the woods and see large trees with a tall canopy, and large patches of ferns covering the hillsides in the summer, this is actually a very unhealthy ecosystem. Deer forage and eat small trees. When the population of deer gets too high, the smaller trees and shrubs get killed before they can grow higher than the deer can successfully browse. They have essentially eaten themselves out of house and home in most parts of Pennsylvania. The damage done to the low to medium sized plants and shrubs means less cover for other animals that rely on thick vegetation for their survival. And for many species of song birds that need trees and shrubs from 2 to 7 feet for nesting, reduced habitat directly results in reduced health and reduced numbers. Reduced biodiversity is the main result of deer over population.

Increased deer population can cause many conflicts with humans as they look for an easy snack in backyards, to the tune of \$250 million in suburban landscape damages nationwide. Crop and orchard damages exceed \$100 million. As deer come closer to the edge habitat inevitably created by urban sprawl, they walk across more and more roadways. Every year 1.5 million deer are hit by cars, causing billions of dollars of property damage and more than 200 deaths nationwide. Pennsylvania is one of the top five states for deer collisions. You have a 1 in 63 chance of hitting a deer according to State Farm Insurance's latest reports. There is a good

chance you or someone you know in Pennsylvania has hit a deer on the road. This chance could be reduced with effective wildlife management using hunting as the primary tool. The decrease in numbers of hunters directly affects the ability to manage the deer population in Pennsylvania, and the nation. In 2003, hunters in Pennsylvania harvested 460,000 deer, but this number has been declining over time, with harvest totals dipping to 315,000 deer in 2019. The ability to keep steady pressure on an overpopulated species is the key to effective management, security of the species, and the health of its ecosystem.

Calculating the license and tag fees for these harvests, Pennsylvania hunters contributed \$35.34 million directly to the Game Commission's budget. Game Commission expenditures show 60 percent (\$79.8 million) spent on wildlife protection and wildlife habitat management. Hunter turn out can have a direct effect on wildlife protection, habitat management and preservation.

One of the reasons for hunter decline is the lack of public hunting grounds in metropolitan areas, which I have witnessed firsthand. Hunting is not an easy pursuit. It requires intense concentration and dedication, not to mention the gear, training, and licenses. But perhaps the biggest challenge to new hunters is finding a place to hunt. Hunters in rural areas might be able to head to the nearest state game land or state park and scout out a spot. But for those who live in a more urban or suburban setting, this is a much greater challenge. I live in West Chester PA, and the only state parks close enough to hunt are Marsh Creek State Park, Ridley Creek State Park, and French Creek State Park. Unfortunately, these are shared by an absurd number of other hunters, as well as non-hunting park goers. The density of hunters on these parks make it challenging to have a successful hunt even for those with experience. But for a beginner the

challenge can be simply too daunting to attempt. Even if you branch out into finding game lands to hunt on, there is virtually none in Chester or Delaware County. I was lucky to get permission from a friend of a friend and was given a spot where I could learn grow and develop as a hunter. Public and private land for hunting is severely lacking, especially in places such as Chester and Delaware Counties where deer populations are abounding. More land should be made available for hunting access where it can be done safely, as to not increase conflict between hunters and the public, while still managing the deer population.

Education is a great solution tool that can be used for both public awareness and engagement, but also a great tool for increasing the numbers of new hunters. Relevant large-scale ecological issues like the whitetail deer are not taught in schools or talked about in today's society. If this changed and more people grasped the wicked problem as a whole and not just a small piece. More headway would be made on improving hunter landowner relations, funding for the game commission, and hunter participation would increase.

There is some hope, as science and technology increase in complexity some form of widespread population management could be developed. Hunting has been the most effective management tool used to date. "Trap, neuter, and release" programs have been attempted with very low success rates. Similar programs have been tried on feral cats and horses with no measurable success for some time now. Hunting is a complex solution that is heavily reliant on the participation of millions of avid outdoorsmen and has proven to be effective when sufficient access to land is available.

Hunting specifically female whitetail deer, according to Decker and Connelly, has been an effective management tool and invaluable in the fight against the explosive whitetail deer population. According to them, deer management in New York is fully dependent on hunter

participation for successful implementation of management solutions. In Pennsylvania, the wildlife management areas are an effective way of targeting specific population inflations across the state and allocating doe tags accordingly. This coupled with precise forecasting of future deer population trends can keep the Game Commission one step ahead in tag distribution.

Something that would be a problem for most became a solution of sorts for hunter turn out, and helped to set harvest total records. COVID-19 is chaotic and destructive and has turned our lives upside down, but out of it has come some good things. According to research collected by Lei Zhang at the university of Maryland, more people are going outside. This does not just stop at local parks and walking trails. Some states have unofficial reports of dramatic increases in hunter license sales and fishing license sales. This was largely speculation until a few days ago when the Pennsylvania Game Commission released the harvest totals for the 2020-2021 deer season. The total was 435,180 deer harvested; this was the highest harvest total in 15 years! The reasons for this have not been fully researched since this is all very recent, but it certainly seems as though COVID-19 had a positive impact on hunter turn out and therefore harvest totals in Pennsylvania.

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