Oxford Ohio Deer Management Policy

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POL 466/566

05/15/25

Executive Summary

Problem Statement

The city of Oxford is currently experiencing an overabundance of deer, which has resulted in significant ecological damage to the local wildlife illustrated by the lack of native flowers and ground-nesting birds. Furthermore, this overpopulation increases the risk of human-deer interactions that result in vehicle accidents, farmland destruction, dangerous interactions between humans and deer, and other smaller deer-human disturbances. Despite no reports of large deer-related diseases in Oxford, the chances that large-scale deer-related diseases such as chronic wasting disease could become common in the population are expected to continue at their current state. Finally, if the deer population persists to increase, then the aforementioned problems would only compound and become significantly more severe.

This dangerous overabundance of the deer population shows that the city's current deer management program is insufficient. In recent years, only 4–5 deer were harvested annually, which is well below the number of deer needed to be harvested to keep the population in check. Furthermore, the number of deer in Oxford cannot be accurately estimated as the last deer census occurred over 10 years ago, with no further data on the deer population collected in Oxford. Nevertheless, the Oxford deer population is well above the healthy population of 75 to 113 deer.

Objective

Thus, this report's objective is to lower the deer population to the recommended 75 to 113 deer for the Oxford Area. This objective can be achieved through various methods, but after researching this topic extensively, this report provides some methods far more effective and

logical than others. Thus, this report outlines a series of short-term and long-term recommendations that will manage the population.

Short-Term Recommendations

This report has compiled some short-term recommendations that would diminish the deer population to acceptable levels within the next year, but will not outright solve the problem of the overpopulation of deer within Oxford. The first recommendation is to conduct a new deer census using the city of Oxford's drone and infrared equipment to establish an accurate population baseline. This is crucial because, without this population data, there would be no way of accurately establishing the deer population. Thus, it would be impossible to create any short- and long-term recommendations to target the deer population. After this estimate of the deer population, Oxford must partner with White Buffalo Inc., a professional wildlife control firm. This firm specializes in humanely culling deer by utilizing sharpshooters and controlled hunts to decrease the population. This entity needs an accurate number of the deer population in the area where their services are used, which requires the new Oxford deer census. Using their culling program also reduces the deer population to acceptable levels, making it manageable for the long-term recommendations to work in providing a sustained, healthy deer population.

Long-Term Recommendations

To ensure that after the culling program performed by White Buffalo the deer population does not rapidly rebound to the current critical levels, it is crucial that changes to the current Oxford Deer Management Program are implemented. Thus, by revising the Oxford Deer Management Program, Oxford-area hunters will naturally control the deer, limiting the need for expensive culling programs. The first revision must remove the disincentives for hunters to use

the program. Such incentives include donating the first deer to the Community Meal Center. Hunters may spend hours or days waiting for a targetable deer and are not likely to utilize the program if their efforts are not rewarded with a deer to take home. Furthermore, the hunting program will be improved by increasing access to private hunting land and rotating the current land usage for the program. Deer are smart and less likely to frequent consistently hunted lands, especially during deer season. By rotating and expanding the used hunting land, there is a greater chance of deer sightings and harvesting opportunities. Lastly, food plots that would attract deer within a hunting concentrated area should be established. Establishing food plots, such as planting clover, is a cost-effective and legal means to attract deer in a certain area to be hunted.

This integrated deer management plan will enable Oxford to restore ecological balance, reduce safety risks, and maintain a sustainable deer population for the long term.

Introduction

Oxford, Ohio, is facing serious ecological and public safety problems due to the large overabundance of deer in the area. This overabundance has resulted in torn Oxford environments, an increased risk of costly or dangerous human-deer interactions, and the increased possibility of spreading deer-related diseases. Therefore, it is clear that the current Oxford deer control efforts have failed, and further actions must be taken. This report seeks to address this problem by examining qualitative and quantitative data, along with case studies of similar areas, such as Oxford, which illustrates the issue. The overall findings, and control methods, and finally short-term and long-term recommendations should be taken to address overpopulation.

Issue Overview

The problem the city of Oxford, Ohio has identified is that there is an overabundance of deer within the city limits, and this is leading to property damage, ecological disruption, and increased risk of diseases. This is an issue that residents of Oxford have mentioned to city council, and the city is looking to take action.

Currently, the number of deer being taken through the city's deer management program is not sufficient to keep the deer population at its recommended level of 10-15 deer per square mile. This is evident through conversations with local ecological expert at Miami University, Steve Sullivan, as he explains there is a lack of ephemeral flowers, which are typically abundant in the area, due to overgrazing from deer. Additionally, there has been a lack of ground nesting birds such as Wood Thrush due to deer eating and trampling their eggs and infants. Another issue that has been discovered through research and discussions with local experts is that there is currently

no accurate count for the amount of deer that are located in the city. This is essential to determine the amount of deer necessary to take and therefore have a healthy deer population within Oxford.

Client Community

The City of Oxford is the main client for the capstone project. This client includes the local government which we have worked with but also the residents of Oxford who are the main stakeholders. With residents experiencing issues arising from possible elevated white-tail deer populations, they have looked towards the local government to solve this issue. These negative experiences have a broad ranging impact from a possible increase in deer-vehicle collisions, which cause significant safety concerns, to destruction of property through the overgrazing of gardens. The Oxford City Council has discussed the need to decrease the deer population as quickly as possible in order to satisfy the requests of the residents. This project's goal is to research and provide case studies and the different possibilities for the City of Oxford to efficiently and effectively reduce the deer population.

Team Assignments

For the report, the group equally contributed to the research, planning specific findings. After the group researched and compiled all the relevant information we all divided the assignment according to sections and assigned the group member to their section.

For the report, Reese contributed by summarizing the reports information and compiling said information into an executive summary.

For the report, Clark Brnilovich contributed by compiling the most impactful data and information gathered from the meetings and other outside sources into a concise summary.

For the report, Violet Sullivan contributed by summarizing and compiling all of the data and information and listing all of the potential options in the findings section that Oxford could utilize to manage the deer population.

For the report, Jack Hille contributed by summarizing the problem that was presented to us by the city of Oxford and translating it into the issue overview. Jack also read through several studies and summarized them into meaningful information within the Case Studies section that the city of Oxford can use.

For the report, Spencer Mandzak contributed by compiling and summarizing information regarding regulations and experience at the ODNR to support possible deer management efforts.

Methodology

The methodology in which the data was collected for the creation of the new deer management plan mostly consisted of meeting with local experts to gain a higher understanding of the overall issue and the barriers surrounding the current deer management program. The individuals that were consulted for this project were Dr. David Gorchov, David Treleaven, Steve Sullivan, and Chief John Jones. Most of the information was gathered through in-person interviews with these individuals or scheduled conference calls. Another notable portion of the data we gained was from analyzing the documents, charts, and graphs that these individuals provided to us from previous projects as well as past data on the current deer management plan. Finally, the last method used to gather data for this project was researching other counties and states who have had similar issues and then comparing and contrasting our deer management plan with these other locations as well as researching current ODNR programs and regulations.

Data Collection

Within the scope of this proposal, the three most impactful sources of information from the interviews would be Dr. David Gorchov, David Treleaven and Steve Sullivan. Specifically, Dr. Gorchov provided access to many different case studies, such as the one conducted in Beachwood, as well as density charts and aerial survey data of the deer population in the past. David Treleaven provided an extensive history of the amount of deer harvested through the current program since the implementation of the management policy and provided maps of the active hunting grounds used within the program. While both Dr. Gorchov and David Treleaven were able to provide extensive quantitative data, Steve Sullivan provided an extensive account of qualitative data in the form of ecological factors and occurrences that can be used to make basic generalizations about the deer population issue.

Before we discuss the data gathered from the meetings it is important to first review some basic information about the study site. In order to address the data and how it is relevant to the issue at hand it is important to understand that the size of Oxford's city limits is around 7.5 square miles (City of Oxford). With this information, the estimated healthy amount of deer that Oxford could potentially carry can be identified as 75-113 deer, due to the knowledge that, according to the Beachwood case study, 10-15 deer should be found for every square mile (Westerfield, 2022). Additionally, the census data from 2011 that was provided showed a population count of 84 individual deer with the Oxford city limits.

In regards to the quantitative data, there is the shortcoming of having no current access to an up-to-date census since the last one was conducted in 2011; however, it is still possible based on the provided past number to extrapolate information. For example, the summary of the last 15

years of the current deer program provided the information that we are harvesting between 5-10 deer on average through the management program. However, based on the same document it can be concluded that this number of harvests is nowhere near enough to prevent a dramatic increase in deer population over the years. Further expanding upon the topic of population would be the discovery that was made as a result of analyzing the deer density charts as well as the active hunting zones. Upon closer inspection of these two images side by side, it can be clearly observed that the location of the majority of the deer population do not overlap with the active hunting areas. Overall, the quantitative data that was provided allowed us to confirm the fact that the deer population has grown out of hand as well as identify the main issues within the program such as inefficient usage of land.

Now that the importance of the qualitative data has been discussed, it is time to analyze the qualitative data presented by Steve Sullivan. The most important pieces of information that Sullivan presented would be the current issues regarding spring ephemerals and the declining population of ground nesting birds such as wood thrush. The importance of these is that they directly reflect that the deer population in Oxford has grown so large that they are able to eat all of these ephemeral flowers that would once cover the ground during spring as well as trample, or eat the eggs, of enough ground nesting birds as to make their presence much smaller in the wild. These ecological factors once again serve to further prove that Oxford has a significant overpopulation of deer within the city limits.

Additionally, both Dr. Gorchov and Steve Sullivan were asked to provide an estimate of how many deer were living within city limits as well as a target culling number. However, both parties responded that due to the lack of a recent census it would not be possible to estimate

either of these numbers. This lack of definitive information once again serves to highlight the importance of ecological evaluation within this study as well as emphasizes the need for more modern data on the issue before definitive actions can be taken.

In conclusion, the lack of a current census has created a large barrier to creating an optimized program to handle the deer population. To try and mitigate this, a variety of basic knowledge of the study area as well as ecological factors were used to create a general overview of what should be expected, as well as what needs to be addressed within the findings and recommendations in order to effectively redesign the current deer management program to efficiently manage the problem at hand.

Case Studies

City of Beachwood, Ohio Deer Management Program:

Beachwood, Ohio is a suburb on the east side of Cleveland, Ohio with an area and population density similar to Oxford's. As mentioned earlier, Oxford is 7.5 square miles in area and Beachwood is 5.2 square miles. In regards to population density, Oxford has 2,813 residents per square mile compared to Beachwood's 2,573 residents per square mile. This data makes this particular case study interesting due to the fact that both cities are fairly similar; therefore, the data listed below can be viewed through the lens of a city facing almost the same issue that Oxford is.

The Beachwood city council felt that their deer population was becoming noticeably larger. This led them to request the United States Department of Agriculture (USDA) to conduct a count of white-tailed deer within their city limits. To carry out the count, the USDA used

thermal imaging equipment at night to get an estimate of the population. The USDA's estimates are expected to be 75% accurate and their count returned a number of 111 deer within the city. Therefore, the expected range of deer is between 111 and 148.

The overall goal of Beachwood's management program was to reduce the deer population to the recommended 10-15 deer per square mile. This means the city was aiming to reduce the population down to 70 deer. Their goal was to have this completed within five years of the plan being put in place.

Two reduction techniques that the city looked into were "widespread targeted deer removal" and fertility control. The document states that the option of widespread targeted deer removal or sharpshooting is the "most efficient and quickest way to reduce the deer population." In their plan they lay out that all suitable public land for hunting is to be used as well as any private land that is volunteered for use. This is similar to the current land use listed in Oxford's deer management plan. Additionally, for the city of Beachwood, every effort is made to make sure no deer goes to waste. Residents of the city are able to sign up on a list if they would like to receive the meat from any harvested deer. If more deer are taken than residents who request the meat, then the rest will be donated to local food pantries. Fertility control is looked at as a secondary option in this report as they state fertility control would be most effective once the deer population is already at a desired level. However, it is difficult and more time-consuming to reduce the population by only using fertility control. Another large challenge with fertility control is the fact that deer move and migrate from city to city, making the effectiveness very minimal in areas that are not closed off to migration in some way.

Association of Fish and Wildlife Agencies (AFWA) Methods for Managing Deer in Populated Areas:

This document was created to assist suburban municipalities by providing several options for managing deer populations. The document lists the problems with having an overabundant deer population. Consistent with the issues listed previously, the AFWA mentions deer-vehicle collisions, diseases such as Lyme Disease from ticks, damage to ecosystems, and potential aggression towards humans. Second, the agency lists options as to how to go about recording a count of the deer within a city. Especially helpful is the listing of pros and cons for all available options. Finally, the AFWA goes into the options for the actual reduction of a deer population. Three of the many options listed include:

Regulated hunting: This is the most efficient way to keep the deer population in check, however it is difficult to rapidly reduce the population when deer are extremely overabundant.

Sharpshooting: Efficacy is very high when performed intermittently over a 2-4 year time period, however this option could get expensive and requires extensive planning by the city.

Live capture: The terrain of the area, cost, and safety concerns dictate whether or not capture is a valid option. Even though this method can be seen as more humane, live capture and relocation is not recommended as a first option because it is inefficient, more expensive, and does not actually increase the life expectancy of deer that are relocated.

Other options are listed within the document although they are not seen as efficient.

An Integrated Approach for Managing White-Tailed Deer in Suburban Environments: The Cornell University Study:

This study took place at Cornell University, which is located in a college town similar to Miami, an area of relatively dense population, and outside of the city limits is fairly rural. Cornell implemented a revamped hunting program as well as a sterilization program. This particular study states that their sterilization program worked however it was very expensive with costs exceeding $1,000 per deer. Plus, extra manpower is necessary to be able to track the deer that have been sterilized. The study recommends sterilization only for small communities where deer do not have the ability to immigrate and emigrate between cities. Overall, the city recommends culling, a regulated sharpshooting program, as the most efficient option.

The University also goes on to provide recommendations for other agencies who may be looking to adjust their deer management programs:

- Create deer management zones for hunting
- Expand deer hunting seasons
- Expand the ability to use dedicated permits and make sure the qualifications for the use of these permits describes the deer management goals
- Consider changing the name of nuisance permits to Deer Conservation Permits to reflect the community's goals
- Allow hunters to take an unlimited amount of deer with these permits
- Make sure that permits are flexible to allow antlered and antlerless deer to be taken
- Articulate management goals to the community to receive more public support
- Explore incentive programs and/or financial match grants to stimulate deer management programs
- Assess program success using ecological indicators paired with social science work

- Consider regulatory structures and management policies that could integrate regular commercial hunting

Findings (Options)

Through analysis of Oxford's current deer management program, various case studies on the issue of deer overpopulation, and communication with local experts, we present four sets of options that the city of Oxford could utilize to address the overpopulation of deer. The first set of options, Options 1a-c, are primarily concerned with expanding the current deer management program. Options 2a-b discuss the local resources that the city could use to address the deer population. Option 3a offers a short-term method to decrease the deer population through a sharpshooting program. The last set of options the group has explored are not recommended as they have shown to be ineffective or are illegal within the state of Ohio but are nonetheless worth mentioning.

According to Oxford's 2023-2024 deer management program (DMP): *"Program participants are required to donate the first deer they harvest to the Community Meal Center, Hamilton, Ohio. The second deer after that may either be donated or kept by the hunter. Oxford will reimburse hunters the cost of the deer tag for all donated deer"* (Oxford Deer Management Program). Oxford's DMP has required the donation of venison to this establishment for most of its hunting program, a requirement that is foreign to most deer management programs, including Miami University's. According to the data, 100 out of 153 deer harvested from 2009-2024 in Oxford's DMP have been donated to this food pantry (Treleaven, 2024). After speaking with local hunters regarding this requirement, this obligation is disincentivizing as they may spend

multiple hours or days attempting to harvest a deer only to have it donated. Therefore, we present the first option to modify the current hunting program:

Option 1a: Eliminate requirement on the current program to donate the meat of the hunter's first deer to Community Meal Center in Hamilton, OH

Through our research, we found that food plots are an excellent tool to attract deer to certain areas. Essentially, food plots serve to increase sightings of deer and increase harvesting opportunities (Sams, 2023); therefore, deer management in Oxford may benefit from the establishment of food plots. Food plots can be installed on city-owned land or private property that is used in Oxford's DMP. Plot size varies according to the local deer population, crops' attractiveness, and the forage planted, but plots range from 0.5-5 acres in size (Sams, 2023). Further, food plots are most effective if they are long and narrow in shape and their width no greater than 100 yards (Sams, 2023). Another benefit of food plots is that their installation is not considered baiting, so the city would not need to obtain a permit from the Ohio Department of Natural Resources (ODNR) to create them. Hence, we present the second option to expand the current program:

Option 1b: Establish food plots within Oxford

According to the Oxford DMP for 2023-2024, "*All hunting will take place on Oxford-owned property, or private tracts of land of five or more acres. All hunting on Oxford property will be limited to isolated areas and determined by the City Manager"* (Oxford Deer Management Program). We found that the usage of more private land within Oxford for the

hunting program would allow for more sightings and harvesting opportunities for hunters. Essentially, the more land, and therefore opportunity, hunters are allowed to utilize, the greater the chances of harvesting success. Moreover, the usage of more private land within Oxford will allow for the rotation of hunting plots, which will circumvent deer avoiding certain hunting areas. Through our consulting Chief Jones of the Oxford Police Department (OPD), we learned that deer remember hunting areas and avoid them; hence, rotating the land used for hunting will prevent their remembrance. Due to this information, we present the third option to modify the current hunting program:

Option 1c: Acquire more private land within Oxford for hunting

To quickly address the overpopulation of deer within Oxford, we found that the OPD and Butler County S.W.A.T. could collaborate for a deer culling program. This program would take place during the hunting months of December through February and would be conducted on Oxford-owned property, such as the municipal landfill. According to a memo distributed by Chief Jones, the estimated cost of this program would be $40,000 due to the overtime of police officers, dumpster rental for deer dressing remains, ammunition, and the construction of a shooting platform (Jones, 2024). After conversing with Chief Jones about this opportunity, he clarified that he did not want to use his resources or his employees' time to conduct this sort of program. Nevertheless, we present the first option utilizing local resources:

Option 2a: Butler County SWAT and OPD collaborate for deer culling program

Through our research, we learned that there has not been a census of the deer population in Oxford since 2011. Due to this, we contacted local experts, such as Dr. Gorchov and Steve Sullivan, to attempt to get an estimate of the deer population and subsequent number of deer to cull. Due to insufficient current data, they could not provide a formal approximation of the number of deer in the city. Therefore, before the city knows how many deer it needs to cull to manage the population, it needs to obtain an official estimate. We learned through discussion with Jessica Greene that the city of Oxford owns drone and infrared technology, which is needed to obtain said estimate. The use of the city's own technology may utilize time and resources more appropriately than hiring a third party; thus, we present a second option:

Option 2b: Use the city's drone and infrared equipment to approximate deer population

The group also learned that the city favored a culling program to manage the deer population and rapidly decrease the population. Through our research, we learned that a culling program was the most effective way to quickly reduce deer populations (Cornell University Study), and we found a company in Ohio that specializes in this. White Buffalo Inc. is a company that has been in operation for the past 19 years, offers various deer population services, and was recommended by Dr. Gorchov. White Buffalo offers sharpshooting and managed hunt programs as well as surveying and census services (White Buffalo Inc.) in the case the city cannot use its own technology. Further, White Buffalo has worked in numerous cities with similar size to Oxford with productive results, such as Iowa City, Iowa and Mount Lebanon, Pennsylvania (White Buffalo Inc.). To manage the Oxford deer population via their culling

services, the pricing would range from approximately $6,750 to $52,500 (White Buffalo Inc.). More specifically, White Buffalo charges $200-400 per deer harvested and $75-125 per deer processed (White Buffalo Inc.). Accordingly, we present the first option regarding the hiring of an external firm:

Option 3a: Hire White Buffalo Inc. to manage the deer population in Oxford

We also researched other deer management strategies, which are not recommended nor possible, but we present them regardless. The first option is sterilization, and it requires the relocation of deer to a veterinarian for surgery, seen as an ineffective use of resources, and has various expenses (anesthesia, surgery, transportation, further monitoring of deer) (White Buffalo, Inc.). Nonetheless, the sterilization of deer within Oxford is not possible as sterilization is illegal in Ohio (City of Worthington, 2022). The second strategy, deer relocation, is also not recommended. Deer relocation requires finding an eligible location to place the deer, and it spreads disease, strains land management, and stresses individual deer and populations (AFWA, 2018). These are not viable options for the city to utilize for deer management but are worth introducing.

It is also important to note that the group researched other external firms that the city of Oxford could hire, besides White Buffalo Inc., for culling/sharpshooting programs. As was suggested, we investigated the United States Department of Agriculture (USDA) to see if they offered any such programs, but they only do so on a case-by-case basis. They do not publicly advertise any deer culling programs on their website, and there are additionally no other private

firms in this region that provide these programs. Thus, White Buffalo Inc. is a single-source provider of deer culling and sharpshooting programs.

Sterilization is a non-lethal option in order to reduce deer population over time by preventing future exponential breeding of deer herds. The idea is to tranquilize and perform surgeries or give them sterilization medication in order to prevent them from reproducing. This option is one of the most expensive because of the costly surgical operations, anesthesia, transportation, and further monitoring of the sterilized deer to make sure it maintains effectiveness. Specifically to Ohio, however, sterilization as a means of reducing population is illegal, while only being allowed for small research studies.

Option 3b: Sterilization to decrease deer population

Relocation is another non-lethal option to reduce the overall deer population by removing them from their herd and moving them to a far eligible location. This option requires finding an eligible location for a large amount of deer to be introduced into the ecosystem rapidly while avoiding negatively affecting the local deer population of the new location. This option can spread diseases, land management, and can be very stressful for the individual deer and therefore their herds in total. There can be a high mortality rate because of the stress a deer may go through from being transported to a different location while heavily medicated by anesthesias.

Option 3c: Relocation of deer to decrease total population

Recommendations

The case studies and options above have provided an extensive history and decades of research about how to effectively reduce the suburban white tail deer population, especially in areas that resemble our client, the City of Oxford. In order to provide the quickest results while still mitigating the chance of the deer population from being a recurring issue, we recommended both a short-term and long-term solution in order to best fit the needs of the City of Oxford and its community.

First, it is important to note we do not recommend the use of sterilization or relocation as a way to reduce deer overpopulation. Besides sterilization being illegal in Ohio as a form of deer population management, it would also be ineffective for Oxford's deer population. Since sterilization would require individual female deer to go under stressful surgeries with the possibility they would migrate to a different area, meaning they could easily be replaced by another doe. Sterilization requires the herd to be isolated and non-migratory, meaning they do not move around often. Oxford's deer population comes from a large radius and outside of the city limits, out of jurisdiction of the municipality. Relocation is also virtually impossible because it is costly and would be disruptive for any habitat the exported deer would be moved to. Relocation would require finding a recipient habitat that does not already have a large deer population that would be open to the rapid increase which would heavily limit the possibility of finding a recipient.

For the short-term solution, we recommend using Oxford Police Department resources for a drone survey and contracting out a sharpshooting culling program to immediately reduce the total amount of deer. Using an OPD or City of Oxford drone with thermal imaging would

allow for a complete census to be taken so we know how many deer are in the area. This would provide a specific number of deer that would have to be culled to reach back to acceptable levels. Using the city's drone would save the money from using a third party to come in and do the census. After getting a definitive census for the population, that would allow White Buffalo, a single-source provider for the area to conduct a culling program on City of Oxford public lands to reduce the population by the required amount.

For the long-term solution, we recommended shifting the hunting program in order to better fit the needs and abilities of the public hunting lands and the city's resources. First, we suggest removing the requirement to donate the first harvested deer. Many hunters in the Oxford area have stated that the requirement is undesirable and they would much rather utilize Miami University's hunting program where they don't force you to donate. In addition, we suggest using food plots on the public lands in order to drive the deer populations to the area for better efficient hunting. While baiting, which is the use of feed piles or salt licks, is illegal on public lands, food plots are not because it is not introducing outside plants or flora into an ecosystem. We recommend using clover, oats, and chicory as they are highly favored by white-tailed deer and do not require any tilling or additional maintenance. Lastly, we recommend working with local private landowners in order to increase the amount of possible land to be hunted. With these three options recommended, there is the possibility for the hunting program to see a maximum efficiency of regulation for the deer population.

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