



Deer Management and the City of Worthington

Updated March 2022

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1 - SUMMARY OF FINDINGS

Per the request of the Worthington City Council, staff has put together a comprehensive report overviewing the background and history of deer in Ohio and Worthington and examining the various population management methods used by other communities throughout the state.

The data contained in this report illustrates the extent of the deer issue in Worthington, including complaints to City Hall, recorded deer-vehicle-collisions, data on dead animal removals in the City's right-of-way, and damage to City trees and plants.

Lastly, included is a list of potential future considerations that can serve as a guide if Council desires to engage the community and determine next steps in addressing deer in the Worthington community.

KEY TAKEAWAYS

- There is no easy solution to manage the deer population in Worthington. In order to decrease the size of the herd, there will need to be a commitment of staff time and financial resources to formulate a deer management program.
- Birth control or sterilization programs are still in a research phase and are not appropriate solutions to manage Worthington's deer herd as it is neither a small nor closed population.
- No-feeding ordinances serve more as an educational opportunity to inform residents not to feed the animals, rather than having any appreciable effect on the size of the deer herd.
- Any lethal program implemented would need to be fully vetted and researched, with general support of the community agreeing that the deer population is a problem for Worthington.
- Decreasing the size of the deer herd will not necessarily decrease the risk of Lyme disease and Chronic Wasting Disease is not a current concern in Central Ohio.
- Before deciding whether a program should be developed and implemented, more information is needed about the size of the herd, broader community attitudes, and what ecological damage is being caused by the deer population in Worthington.

2 - BACKGROUND & KEY CONCEPTS

A Brief History of Deer In the United States and Ohio

Nationally and in the State of Ohio, the resurgence of the deer population has been a conservation success story. It is estimated that the white-tailed deer population in the United States was approximately 300,000 in 1930, however, that population is now estimated to be upwards of 30 million nationwide. Prior to European settlement, the presence of white-tailed deer was widespread, however due to a variety of human-led factors, the population plummeted by the late 1800s.¹

In the early 1800s in Ohio, a vast majority of the state was populated by mature forests with a diverse eco-system. However, by the early 1900s, human actions cutting down the forests for farming activity and non-regulated hunting of the deer population caused deer to generally disappear from the state. But throughout the 20th century, led by a variety of conservation efforts, the deer population has seen a resurgence with the growth of urban and quasi-rural landscapes.

In the present day, the increased population has begun to create conflicts, particularly in urban and suburban areas where the deer have adapted to living in areas of higher human populations. Natural predators of deer are absent from today's environment. Animals such as mountain lions, wolves, and black bear in addition to indigenous people were the primary factors affecting deer population in pre-settlement times. Human influences have caused the landscape to change, and vegetation cover has been transformed from primarily mature forests to present-day urban and quasi-rural landscapes with well-developed residential communities. Deer have successfully found food in these new environments which spurred high reproductive success and survivorship.

With no natural predators to control population growth, continuing urban expansion, local ordinances prohibiting hunting, and an absence of disease and adaptive food habits, deer populations have increased markedly. The Ohio Department of Natural Resources, estimates there are about 680,000 deer in Ohio, with 197,735 "harvested" in 2020-2021 alone.²

Deer Concerns in Worthington

The City has not been immune to the growth of the deer population and continues to receive complaints from some residents. Worthington residents value our community's natural and peaceful landscape, which is just one of the reasons Worthington is a wonderful place to call home. But wildlife also values the same qualities in their environment, which sometimes brings unwelcome visitors to our neighborhoods, creates conflicts, destruction of gardens and landscaping, vehicle accidents, and possible health risks.

Residents have also expressed anxieties about health concerns such as Lyme disease spread by deer ticks or other tick-borne pathogens such as Anaplasmosis, Babesiosis, and Ehrlichiosis. Previously, there have also been some fears voiced about chronic wasting disease (CWD), that can affect deer,

¹ The Association of Fish and Wildlife Agencies. Methods for Managing Deer in Populated Areas. Retrieved from https://www.fishwildlife.org/application/files/7315/3745/9637/AFWA_Deer_Mngmt_Pop_Areas_August_31_2018_version.pdf.

² Golowenski, D. (2021, September 19). *Outdoors: Ohio deer gun harvest numbers will be hard-pressed to match last year's*. The Columbus Dispatch. Retrieved from <https://www.dispatch.com/story/sports/2021/09/19/outdoors-deer-gun-harvest-numbers-hard-pressed-match-last-years/8360742002/>.

however, there have been no reported cases of CWD infection spreading to people since an individual would have to ingest the prions from an afflicted animal. Prions are a type of infectious protein that affects the structure of the brain or other neural tissues. Additionally, CWD has not been broadly reported in the Central Ohio region.

While there has been no proven transmission to humans, deer have been found to be a reservoir for the SARS-COV-2 virus.³ Despite there being no known issues or transmission from deer to humans, it is something that should continue to be monitored as more research is conducted.

During the rutting and fawning seasons, residents have expressed concern about large bucks near people, particularly children, and acting aggressively towards dogs. Rutting season for white-tail deer is usually between October and December, and then deer fawns in Ohio are usually born between April and July. Deer with fawns less than three weeks old will defend their vulnerable babies, especially around dogs. Does often bed their fawns near buildings and houses for safety, yet they have a strong instinct to ward off predators. Domestic dogs are often perceived as genuine predators as much as coyotes.

Population Growth and the Concept of Carrying Capacity

Deer populations have the potential for rapid growth which is an evolutionary response to high mortality often related to predation. Under normal circumstances, does two years old or older produce twins annually, while yearling does typically produce single fawns. Healthy adult does can produce triplets, yearlings can produce twins and fawns can be bred and give birth during their first year of life. In the absence of predation or hunting, this kind of reproduction can result in a deer herd doubling its size in one year.⁴

The biological carrying capacity (BCC) of a wildlife population is defined as the maximum number of animals that an area's native and cultivated resources can support without degradation to the animal's health and the environment over an extended period of time. While this is often an important concept to residents in urban environments, it often isn't the driving factor in wanting a deer population to be managed.

Cultural carrying capacity (CCC) is defined as the maximum density of a given species that can coexist compatibly with the local human population. This term is useful when managing urban deer because it defines when conflicts with deer have exceeded an acceptable level and provides managers with a target for establishing management objectives. This level can be determined by the residents, city council, city administration, or any combination of those.

For any given wildlife conflict situation, there will be varying acceptance thresholds by those directly, as well as indirectly, affected. Factors which may influence the cultural carrying capacity include landscape or vegetation impacts, crop or garden damage, threats to public safety such as deer-vehicle-collisions, the potential for illegal killing of deer, presence of deer scat on their property, uneasy

³ US Department of Agriculture - Animal and Plant Health Inspection Service . (2021, August). *Confirmation of COVID-19 in Deer in Ohio*. Confirmation of COVID-19 in Deer in Ohio. Retrieved from https://www.aphis.usda.gov/aphis/newsroom/stakeholder-info/sa_by_date/sa-2021/sa-08/covid-deer.

⁴ Northeast Deer Technical Committee. (2009, May). *An Evaluation of Deer Management Options*. Retrieved from https://www.state.nj.us/dep/fgw/pdf/deer_mgt_options.pdf.

feelings having deer close to homes, and personal attitudes and values. Therefore, cultural carrying capacity is most often the primary driving factor in a city deciding to initiate deer management.⁵

Intentional/Unintentional Animal Feeding

As Central Ohio continues to grow, wildlife is adapting to dwindling natural habitats and capitalizing on new food sources and nesting opportunities. Many of these food sources may be unintentional, such as pet food left out, pet excrement that has not been picked up, fallen tree fruit, garden vegetables, or garbage receptacles that are not properly secured. Also, many forms of wildlife find that food left out for domestic animals can lead to conflicts with human populations.

Bird feeders can be a major cause of unintentional feeding of deer in communities, causing the animals to congregate and engage in property damage. Proper education around the use of bird feeders is necessary to ensure that food amount is limited so that the birds can clean up any feed provided in less than four hours of the day. Additionally, feeders should be utilized as designed, and bird feed should never be left on the ground.

However, intentional feeding of wildlife, including deer, specifically has the potential to lead to animals losing their fear of humans, leading to more aggressive behaviors, and increasing the probability for animal-vehicle collisions. Intentional feeding has also been shown to cause wildlife to overly reproduce versus wildlife that forage naturally. For example, with deer, fed deer can have two to three fawns per season where foraging deer average one fawn per season. Since urban/suburban deer rarely migrate out of their environment due to food attractants, a city can quickly experience an increase in population along with migrant animals moving into the area as well. Intentional feeding of animals can be extremely harmful, and by altering their diet, it can upset the animal's stomachs and potentially even lead to death. Finally, it is important to note that concentrating populations of animals due to feeding leads to a greater spread of disease, such as those mentioned previously that are of concern to the community.

Justification for Deer Population Management

The potential for deer populations to exceed the BCC or CCC, to impinge on the well-being of other plant and animal species, and to conflict with land-use practices as well as human safety and health, often leads to the need to examine effective herd management strategies. Financial and logistical constraints often require that local deer management be undertaken in a practical and fiscally responsible manner, specifically focusing on the public's attitude towards creating a smaller deer herd and allaying public safety concerns such as deer-vehicle-collisions.

⁵ Westerfield, G. (2020, December). *Deer Management Plan for the City of South Euclid*. Ohio Department of Natural Resources, Division of Wildlife.

3 - DEER MANAGEMENT OPTIONS

Non-Lethal Methods

NO FEEDING ORDINANCES

Some communities have begun to implement ordinances that would ban the feeding of deer. The purpose of a feeding ban is to eliminate deer attractions that could reduce the negative effects on residents over time. Recreational deer feeding has been found to concentrate deer populations into areas that can lead to damaged gardens and landscaping and cause increased deer-vehicle-collisions. The feeding of deer can also contribute to deer population expanding more quickly.

Conflicts with deer in urban/suburban areas are exacerbated by intentional feeding and unintentional feeding. Rarely do wildlife such as deer cause problems in urban settings except for when they have access to additional food. Oftentimes, deer take advantage of food set out for other animals and the banning of all feeding would have a greater effect. However, community members concerned about the welfare of animals, or who enjoy the feeding of animals may object to any regulation preventing them from doing so.

Other communities have adopted ordinances that prohibit the feeding of all non-domesticated animals, including but not limited to deer, ducks, raccoons, stray dogs, and cats. Others have opted to specifically prohibit the feeding of deer. The feeding of birds typically has been exempted if done from birdfeeders. However, intentionally leaving birdseed on the ground, or failing to clean up spills can be restricted.

Attached in Appendix A at the end of this report is an example of no-feeding legislation that closely mirrors language used by Granville, Ohio. It specifically prohibits the intentional feeding of deer, but not other animals. Feeding is defined as: "...the act of placing or permitting to be placed on the ground, or within five feet of the ground, any device or any fruits, grains, minerals, plants, slat licks, vegetables, seeds, nuts, hay, or any other edible materials that may reasonably be expected to result in deer feeding, unless such items are screened or otherwise protected from deer consumption..." Violations would be a minor misdemeanor

Case Studies

- Alliance, OH
 - o Alliance implemented its deer feeding prohibition in 2020. The original purpose of the ordinance was to mitigate the feeding of feral cats, however, one Councilmember requested to add the feeding of deer in response to citizen concerns.
 - o Enforcement is handled through citizen complaints to the City. Since implementation, there have been no charges made for feeding the deer.
 - o There has been no noticeable effect on the deer population according to the Mayor since legislation was passed.
- Medina, OH
 - o Medina is actively considering a no-feeding ordinance. However, it has not passed due to a prohibition of feeding feral cats that the community strongly objected to.

- The City is working to resolve the feral cat problem first before revisiting no-feeding of deer.
- Mentor, OH
 - Mentor reported that over the past five years there have been zero citations issued for violating its no feeding ordinance. Primarily, it has served as an educational tool, and when officers respond to a complaint they issue a verbal warning which has helped to curb feeding.
 - The most beneficial way the ordinance has helped is that it has prevented people from feeding deer in the City's public parks. This reduces habituation to humans resulting in negative human-wildlife interactions.
 - The City reported that it is difficult to determine if the ordinance has helped impact the size of the herd, considering the City employs other forms of deer management including bow hunting and sharpshooting.
- Ottawa Hills, OH
 - Ottawa Hills passed its restrictions on the feeding of deer in 2016. According to the Village Administrator, it proved to be difficult to enforce and primarily served as an educational opportunity when a complaint was submitted. There was no noticeable effect on the deer population.
 - The Village later implemented a bow-hunting culling program after passing the no-feeding ordinance.

STAFF ASSESSMENT - NO FEEDING ORDINANCE

No-feeding ordinances are typically a first step taken by cities when dealing with a growing deer population. However, they are extremely difficult to enforce, relying upon citizen complaints of neighbors feeding the deer. Additionally, if not coupled with a ban on other types of animal feeding, it may be ineffective. Of the communities surveyed, they reported little to no enforcement activities and no difference in the deer population. The biggest benefit is that a ban on feeding may offer opportunities to educate the community when responding to a nuisance situation.

BIRTH CONTROL AND STERILIZATION

It is important to understand that fertility control methods do not typically have an immediate impact on the size of the deer population unless coupled with other management options. With fertility control alone, reductions in populations may not be readily apparent for at least 5-10 years. There may also be the unintended consequence of the animals living longer and healthier lives due to not having to endure the stresses associated with pregnancy. For these methods to be effective, most research has identified that over 90% of the female deer population would need to be rendered infertile.

In general, fertility control programs are only permitted by the Ohio Department of Natural Resources, Division of Wildlife as research projects. While there are communities across the country that are attempting or have attempted using this technique, the success is subjective. In general, these types of programs are only beneficial if conducted on an island or in an enclosure where ingress of surrounding deer populations is prevented.

The two primary interventions that have been utilized are immunocontraceptive vaccinations and surgical sterilization. These options are most successful and should only be considered if it is a closed population where animals are easily identified and where there is little to no importation of new deer from outside the city.

➤ *Birth Control Vaccinations*

Currently, immunocontraceptives (or other contraception agents) may only be used legally for research and not management purposes on wild deer populations in Ohio. This use must be authorized by federal regulatory agencies and the Ohio Department of Natural Resources. Currently, ODNR is not allowing use of immunocontraceptives for deer population management.

The primary birth control vaccine that is used is Porcine Zona Pellucida (PZP) and has been used in places such as Fire Island National Seashore and Hastings-On-Hudson in New York, Metro Parks in Columbus, Ohio, and Fripp Island, South Carolina to control their deer population.

Immunocontraceptive vaccines activate the immune system and cause female deer to produce antibodies that bind to the protein envelope surrounding the egg, hindering fertilization. However, there are limitations to using this method due to the fact that deer would need an annual “Booster Shot” to maintain the decreased level of fertility. Additionally, the free-ranging nature of deer herds in the region where both immigration and emigration take place make it difficult to deliver the contraceptive to a large number of deer.

➤ *Surgical Sterilization*

Similar to immunocontraceptive methods, surgical sterilization may only be used legally for research and not management purposes on wild deer populations in Ohio. This method must be authorized by ODNR and is not allowed for deer population management at this time outside of research projects in the neighborhood of Clifton in Cincinnati, and soon in the city of South Euclid, outside of Cleveland where they will be combining surgical sterilization with culling to bring the deer population under control.

The preferred method is an ovariectomy versus tubal ligation to surgically sterilize deer. Tubal ligation has been shown to have no impact on the deer population because the females still have normal hormonal cycles, known as being “in heat.” During this time, chemicals are produced that lure every male within sniffing distance, potentially maintaining, or increasing the deer population in an area. A full ovariectomy removes the ovaries of the deer, shutting down the hormonal cycle entirely.

Case Study – Columbus Metroparks

In the Columbus Metroparks, birth control was experimentally utilized in the 1990s and early 2000s to help curb the size of the herd in several Columbus-area Metro Parks. However, the use of birth control for deer ceased in 2003.

The use of birth control began in 1990 with a program using the prostaglandin Boviline, which is a hormone that causes the female to abort the fetus when the animal’s progesterone level drops. The

program was evaluated after the winter of 1992 and it was determined that the deer herd nearly doubled between 1990 and 1992, leading to birth control efforts being discontinued.

In 1995, in conjunction with the Humane Society of the United States and the Ohio Department of Natural Resources, Division of Wildlife, a new birth control program was started using Porcine Zona Pellucida to study if this type of control program could be implemented by a local agency, in a semi-isolated deer herd, and have a positive effect on controlling herd growth numbers. While results from the study group of animals between 1995 and 2003 indicated that birth control efforts did reduce the number fawns born, the Metro Parks were only able to successfully booster 20-30% of the study population annually. This left 70% of the tagged does untreated and in many cases capable of reproducing. The program was ended in 2003 when the Ohio Division of Wildlife denied the Metroparks's request for a permit renewal. Since then, they have relied upon bow hunting and sharpshooting to manage the deer population.

From the Metroparks' studies on deer birth control, they concluded that there is some potential application in certain situations including: 1) If deer are easily accessible both physically and operationally, 2) If the deer are semi-isolated and largely contained to a specific area, 3) When deer populations are in low numbers. They determined that use of birth control agents would best be best used as a supplemental management technique to aid with reducing annual reproduction rates.⁶

Case Study – Neighborhood of Clifton - Cincinnati, Ohio

This method is being tested in Clifton, Ohio, a neighborhood in Cincinnati, where the citizens in the community rejected the City's initial plan to implement a bow-hunting program. Clifton opted to test a sterilization program in cooperation with the Cincinnati Parks, Ohio Department of Natural Resources and White Buffalo, a deer management company. The program operates under a research permit given by the Ohio Department of Natural Resources, as the state owns all of the deer.

Clifton implemented a three-year pilot program to see if it is a viable alternative to lethal culling. In December 2015, the sterilization of 41 does cost \$40,000 which was raised privately, and the total cost decreased to \$20,000 in the second year. Indicators show that the program may be working with an observed 65% reduction in fawning one year after the program began. In 2020, the annual population study was conducted, and it was determined that approximately 98% of the adult females in the study area had been sterilized. The total number of resident deer in the study area has decreased by 30% over a five-year period. Absent a substantial increase in immigration, it is anticipated that the size of the aging deer herd will begin declining more rapidly through natural causes in upcoming years. Additionally, the State of Ohio extended Clifton's research permit through Spring of 2023 to continue to monitor the long-term impact of the sterilization program.⁷

STAFF ASSESSMENT - BIRTH CONTROL AND STERILIZATION

Birth control vaccinations and sterilization are only authorized for limited research purposes by the Ohio Department of Natural Resources and are not a viable option for the City of Worthington. These methods are only effective in small geographic areas that have closed deer populations and a small herd size. Birth control and sterilization will not have an immediate impact on the deer population and communities will only see a decrease in population over an extended period of time.

Lethal Methods

ARCHERY HUNTING

The City could create and implement a program to allow archery hunting on specific properties by individual hunters. Several cities in the region have archery hunting programs designed to manage the size of the deer herd(s). These cities include Granville, Heath, New Albany, and Newark. Gahanna formerly had an archery hunting program, but it was disbanded in 2019.

Common Program Qualities

- Public and/or private properties would be identified that are suitable for hunting and permission to hunt on the grounds would need to be obtained from the property owner.
- Different requirements could be placed on the type of property included in the program, including options such as minimum acreage. Three to five acres is most common; however, in some instances programs have been implemented on smaller properties.
- Requirements could be placed on the distance from a school or walking path. A distance of 200 feet from pedestrian paths, sports fields, and residences is common. Some communities have allowed for residents to apply for the ability to have their property used for hunting, and the cities then make a case-by-case decision if the application as submitted can be done safely.
 - o With this approach, there are not stipulations placed on who can apply based upon acreages, locations, or type of property.
- Of the programs that were researched requirements on the hunter included:
 - o Obtaining the appropriate permits and tags from the State of Ohio.
 - o Registration with the municipality's police department
 - o Successfully passing an archery proficiency test
 - o Submission of a background check
 - o Hunting from a deer stand at least 10 feet off the ground
 - o The taking of doe(s) before taking a buck
- Communities typically allocate funding to cover the processing cost of the meat for hunters that want to donate it to local food pantries.
- Establishment of an ordinance prohibiting hunters from butchering or slaughtering an animal in public view.

Case Study – Gahanna, Ohio

Gahanna's bow hunting program was discontinued in 2019 after the retirement of Gahanna's former police chief who had created and administered the program himself starting in 1997. With a change in administration and a new police chief in Gahanna, it was determined that the program was no longer necessary, and if re-implemented would need to be significantly reworked, addressing administrative and legal concerns.

When Gahanna implemented and still administered their program, they were reportedly experiencing as high as 92 deer-vehicle-collisions in 2009-2010. In the ensuing years, between 40 and 80 deer were harvested per year, resulting in a drop in reported car accidents to 25 in 2015-2016. The former program allowed urban deer hunting to occur in city park areas and did not require the closure or limitation of park use or otherwise segregate or notify other park users that hunters were present in the parks. The program also did not include any proctored or direct testing of skill sets to

ensure the participant could safely use and handle the weapon being carried, which it is typically best practice to have demonstrated proficiency requirements. There was a mandatory annual meeting for all hunters that consisted of a recap of the last year and an overview of the program and rules and regulation. A background check was completed on each applicant, and they were removed if there was a conviction of a pre-determined violation. Additionally, a hold harmless agreement was signed by each hunter.

Officer Brad Kiger with the Ohio Department of Natural Resources, who worked with Gahanna on their bow hunting program, shared one incident that led to the dissolution of the program where a deer was initially shot on an authorized private property, but the animal then moved to adjacent properties before the police were called by both members of the public and the hunter. The deer was then shot a second time by the hunter, which was done in front of a crowd that had formed, leading to several complaints to the City. However, outside of this incident, he reported that there were minimal incidents.

Gahanna Deputy Chief Lawless stated that there are two critical indicators that usually support an urban deer hunting program as part of a wildlife management plan, and those are not presently occurring in Gahanna; verified high number of deer vs. vehicle crashes 2018 (1) 2019 (5) and 2020 (9) and 2021 YTD (4) and an obvious and measurable degradation or destruction of the natural habitat to the detriment of other species due to over-browsing. He stated that they do not intend to restart their bow hunting program at this time. If in the future the program is restarted, it is recommended that all participants be required to demonstrate proficient bow skills to participate in an urban setting. Discharging a weapon in a park or residential setting should require a high degree of care and proficiency that can be demonstrated annually. All participants should be required to attend a mandatory meeting to cover all the conditions, requirements, and rules related to the hunting program. Additionally, Gahanna would need to create an exception to the Hunting, Trapping, or Molesting Wildlife section of the City's code that prohibits hunting. Any future actions would need to include stakeholders in the decision-making process to set goals and objectives of any management solutions, adoption of management techniques to be used, communicating decisions and actions to the community, monitoring and evaluating effects and impacts, and revising goals and objectives as necessary for the management plan.⁸

Case Study – Mentor, Ohio

The City of Mentor has a hunting program along with a deer management program that does selective removal in areas of the city where it is not feasible to deploy private individuals, such as parklands. In the 2020-2021 deer hunting season, the program had 40 registered hunters who harvested 57 deer.

In Mentor, hunters typically assemble their own properties, and each hunter must submit an application, pass an archery proficiency test, and receive a permit from the City that requires approval from the Chief of Police. In order to bow hunt, individuals must assemble a collection of no more than five parcels totaling five or more acres of land, with a minimum of three huntable acres. They must hunt from a fixed and elevated position a minimum of 8ft off the ground, that is at least 100ft away from all property lines, driveways, and roads for which they do not possess permission to hunt or retrieve and an inspection by the police department or a designee is required before they may begin

⁸ Spence, J. B. *Gahanna Division of Police - Urban Deer Hunting Program Report*.

hunting. The Chief of Police maintains the right to approve or deny any property or collection of parcels, whether they meet the outlined conditions or not, based on the Chief's sole discretion. Hunters must harvest an antlerless deer before they can harvest an antlered one to discourage trophy hunters, and also report all harvested deer to the City for population monitoring purposes in addition to the typical reporting to ODNR that occurs.

In 2011, the deer population in Mentor was estimated to be 1,100 with a density of 39.3 deer per square mile. Since then, with the City's efforts to mitigate the herd, in January 2021 the deer population was estimated to be less than 500 with a density of 19.8 deer per square mile. Deer-vehicle-collisions are down 60-70% after peaking at 98 accidents in 2013 and falling to 26 collisions in 2020. Plant diversity in the City's natural areas is up by 130% on average, and the deer are showing improved health every year.

STAFF ASSESSMENT - ARCHERY HUNTING

Worthington is limited in the number of appropriate, open areas where bow hunting could safely and sensitively be conducted. If the City were to pursue this option, community engagement and education would be important, along with tight enforcement and monitoring of hunting activities, and identification of appropriate sites.

The City would need to create a program and determine the requirements. Staff resources would need to be dedicated to managing the program, which would include publicizing the program to the public, screening and certifying hunters, and monitoring the hunters during the hunting season. Additionally, there would need to be amendments to the City's code to allow for hunting in specific locations for the purposes of culling the deer herd.

The majority of suitable properties within the City of Worthington would be private properties, commercial properties, schools, or parks that would require the permission from the property owner(s). To determine appropriate properties, the City would need to create a listing of criteria in order to evaluate any potential hunting sites in Worthington.

SHARPSHOOTING

Under this option, the City would determine the number of deer that need to be culled from the herd and then arrange for expert marksmen to take the deer. Research indicates that utilizing this approach requires a higher level of financial support compared to other methods.

While no cities in Central Ohio have a sharpshooting program in place, Northeastern Ohio has multiple cities utilizing this method of deer management.

Common Program Qualities

- Frequently implemented in response to an elevated number of deer-vehicle-collisions
- Identification of specific properties with an appropriate backdrop, such as a hillside, for sharpshooting activities to take place.
 - o Identified properties are set up with bait stations, in order to concentrate deer.

- Sharpshooters are located in elevated stands, including locations such as deer stands, tree houses, or decks.
- The costs and process associated with field dressing, transporting meat to the processor, and servicing equipment need to be accounted for by the City when implementing such a program.
 - o The City will oftentimes provide funding to process the deer meat.
 - o Typically, the processed meat is donated to food pantries to help feed the hungry.
 - o Another option that has been utilized is to create a local resident donation program, where the culled deer are donated to interested residents who then handle the costs for processing themselves.
- Larger numbers of deer are initially culled in the first year or two before decreasing to maintain an acceptable density of deer in an area.

Case Study – Solon, Ohio

The City of Solon, Ohio is located in southeast Cuyahoga County and is comprised of 20.6 square miles and approximately 23,000 people. Solon has one of the most established culling programs in Ohio. They first implemented a Deer Management Program in 2005 in response to a swelling deer population that was causing a large number of deer-vehicle-collisions. Their management efforts consisted of the passage of a no-feeding ordinance, which has been difficult to enforce, and the implementation of a sharpshooting program, with the goal of reducing deer-vehicle-collisions.

When developing their program in 2005, deer counts estimated a population density in excess of *50 deer per square mile*.⁹ Their management program has called for a reduction of the population to a density of approximately *10 deer per square mile*, however deer population densities may vary throughout the city. The goals of the program were general and widespread, reduction in landscape damage; wooded area damage, and deer-vehicle accidents.

The program utilized privately contracted sharpshooters and they spent approximately \$200,000 annually for the first two years to cull a large number of deer, then the budget was decreased in subsequent years before being ended in 2009. The program proved to be effective, with deer-vehicle-collisions being reduced to 43 by 2009. However, in 2011 after the program temporarily ended due to budget concerns, the deer herd had increased by 62% and deer-vehicle-collisions more than doubled. In response, the City re-implemented sharpshooting practices in early 2012, contracting with the U.S. Department of Agriculture to perform culling activities. In 2013, the City experienced 35 deer-vehicle-collisions (DVCs) citywide.

With the sharpshooting program in place, there has been quantifiable reduction in the number of DVCs, however proof of the extent of reduced landscape and wooded area damage is only anecdotal. General observation and a falloff in citizen complaints has led to the conclusion that some levels of improvements have been made in Solon. The City has acknowledged that reducing the number of DVCs to zero is unobtainable, however they maintain the goal of keeping the average number of DVC at the level of 35 annually, or lower.

⁹ City of Solon. (2014, September 15). Deer Management Plan. Retrieved from <https://www.solonohio.org/DocumentCenter/View/790/Deer-Management-Plan?bidId=>

5-Year Historical Costs of Solon Sharpshooting Program*

2017-2018	\$58,861
2018-2019	\$61,230
2019-2020	\$53,366
2020-2021	\$54,121
2021-2022	\$59,995

*Amounts listed are according to Solon contracts with the USDA

Case Study – Shaker Heights, Ohio

The City of Shaker Heights is a first ring suburb of Cleveland, Ohio and comprises six square miles, most of it, 4.7 square miles, is residential. More than 7% of the land use is open space and parklands. The City, with its wooded parklands, residential gardens, and lakes and streams, created an excellent habitat for the deer population to flourish. Counts for Shaker Heights revealed a density of 10 deer per square mile, with deer beginning to adversely affect their natural surrounds at 10-20 deer per square mile. As the population began to grow, so did deer-human interactions and resident pleas to address the growth in numbers of deer and reduce the negative impacts of deer in the Shaker Heights community.¹⁰

Trained marksmen under the direction of the Shaker Heights Police Department conduct sharpshooting on public lands and on private property when allowed by property owners and where deer can be harvested safely and humanely. The marksmen receive additional training in the Cleveland Metroparks to simulate the environment in which they will be working. “Do Not Enter – Deer Management Area” signs where deer management operations occur and radio contact with police officers on patrol prevent citizens from wandering into the operational area. In the event of an unauthorized entry into the area, no shots are fired, and individuals are asked to leave. Culled deer are transported to a processor for dressing and preparation for donation to a local food bank.

Shaker first implemented their program on City property; however, it has been expanded to approved private properties because as sites have been used, deer have learned to avoid those areas. Even in areas that are wooded and not in a park, there are people walking dogs, biking, and cross-country skiing. As the number of viable public locations for culling has decreased, residents began to request culling on their own property.

4-Year Historical Costs of Shaker Heights Sharpshooting Program**

2017-2018	\$40,952
2018-2019	\$40,952
2019-2020	\$55,000
2020-2021	\$68,000

**Amounts listed are budgeted amounts from Shaker Heights Operating Budget

¹⁰ City of Shaker Heights, Ohio. (2015, December). Report of the Deer Task Force. Retrieved from <https://shakeronline.com/DocumentCenter/View/366/Report-of-the-Deer-Task-Force-PDF>.

STAFF ASSESSMENT - SHARPSHOOTING

If the City were to adopt this option, it would require permits for trained marksmen and there would be the need for administrative support to run a program of this type. Additionally, police support would be required to secure the sites where culling occurs. o. Vendors would need to be selected in order to process the deer and recipients of any processed meats would need to be determined.

The City would need to be prepared for high initial costs in the first several years to be able to decrease the herd size, and then continuing costs to maintain the population at manageable levels. Cessation of sharpshooting activities would lead to a quick rebound in the deer population.

Public opinion would also need to be closely monitored because in many communities, lethal forms of deer management can become controversial. If the City were to pursue this option, community engagement and education would be important to allay resident concerns and set expectations.

- Trapping and Relocation/Euthanasia

This option involves the placement of traps, with bait, in areas that deer frequent. The Ohio Department of Natural Resources will not permit trapping and relocation, so any deer that are trapped would need to be euthanized. Experience has shown that when deer are trapped and relocated, they experience extreme stress and have mortality rates upwards of 60%. Typically, trapping and euthanasia have only been used in conjunction with other deer management techniques. This management technique raises questions about whether it is humane or not and could bring negative resident and media attention.

Low survival rates of translocated deer are only one factor to consider when evaluating the efficacy of relocation efforts. The potential to spread parasites and disease, such as exotic lice and CWD, should also be considered before initiating an urban deer translocation program. The long-term negative consequences of translocating deer will outweigh the short-term benefits of reducing deer densities if CWD or other diseases are spread to other deer populations. Because of these disease risks, most wildlife agencies, including in Ohio, do not allow the translocation of deer.

STAFF ASSESSMENT – TRAPPING AND RELOCATION

Trapping and relocation are not allowed in the State of Ohio and is not an option for the City to pursue. Deer that are trapped have extremely high levels of mortality, upwards of 60-80%, and relocating animals has the potential to cause negative public health outcomes by spreading diseases.

4 - CONSIDERATIONS MOVING FORWARD

Communities across Ohio have adopted various deer management methods to address the growth of the deer population in their boundaries. There are multiple determining factors that can go into the decision-making process for communities on whether or not a management program is necessary.

First is determining the issues that currently exist that warrant such action. There are several factors to look at to determine this:

Worthington Data Points

The City's Management Assistant has worked with the Worthington Division of Police to source historical information about deer-vehicle-collisions (DVCs) within the City of Worthington. These numbers do not necessarily include all single car collision incidents with only property damage, since incidents with no injury do not need to be reported to the Ohio Department of Public Safety under the Ohio Revised Code. Our data regarding deer-vehicle-collisions where a police report was filed shows that since 2017 there have been 22 collisions with property damage.

In 2019 the Management Assistant was designated to be the City's point person on deer and wildlife concerns, and all calls and emails began to be forwarded to them. A spreadsheet was created so that interactions with residents expressing their concerns about the deer population could be logged. Additionally, an online form was made available in November 2020 on the City's website, where residents are able to submit their comments. As indicated on the map in Appendix C, the majority of concerns that have been received are largely east of SR 315 and the Olentangy River.

2021 shows a nearly 400% jump year to date from the 2019-2020 average of the number of complaints received by the City. This jump may be attributed in part to the creation of the online form and contact information which were shared widely on social media during the height of fawning season this past year. Additionally, this could be partially attributed to the effects of the pandemic with more residents spending time at home and observing the deer in the community. This contrasts with a 66% increase in reported DVC year to date in 2021. The 5 DVCs in 2021 is a 250% increase from the 2019-2020 average, but below the 2017-2018 DVC average, and is slightly above the 2017-2020 average of 4.25 accidents per year.

State of Worthington Grounds and Trees

The City's Arborist, Shawn Daugherty, has worked to compile a listing of all the City trees that were damaged in 2020, as shown in Appendix C. He reported that about half of those trees are getting replaced, with the others being evaluated with the hopes of being rehabilitated. The replacement of the damaged trees involves the expenditure of cost and labor and each replacement tree running approximately \$200. Additionally, the City installs trunk protection on any new tree planting that is done. Over the past year, the City has spent \$1,300 on new tree guards. However, despite the installation of trunk protection, damage is still occurring. In 2021, the City started a spray routine on a bi-weekly basis to prevent foraging on the annual flower beds and containers on the Village Green, the Griswold Center, the Municipal Building, and the Community Center. Mr. Daugherty also reported that while there are more deer now than he can remember from previous years, there is not enough evidence or information to say that the ecosystem and other species have been negatively affected by the deer population in Worthington.

Dead Animal Removal

The City's Service and Engineering Department is responsible for the removal of dead animals from the City's right-of-way. Jaime Fowler with the Service and Engineering department provided the number of dead animal calls that the Department has received over the past five years, along with the number of those animals that were reported to be deer. This information is based on the report from the crew responsible for removing the dead animals and whether or not they specifically noted the

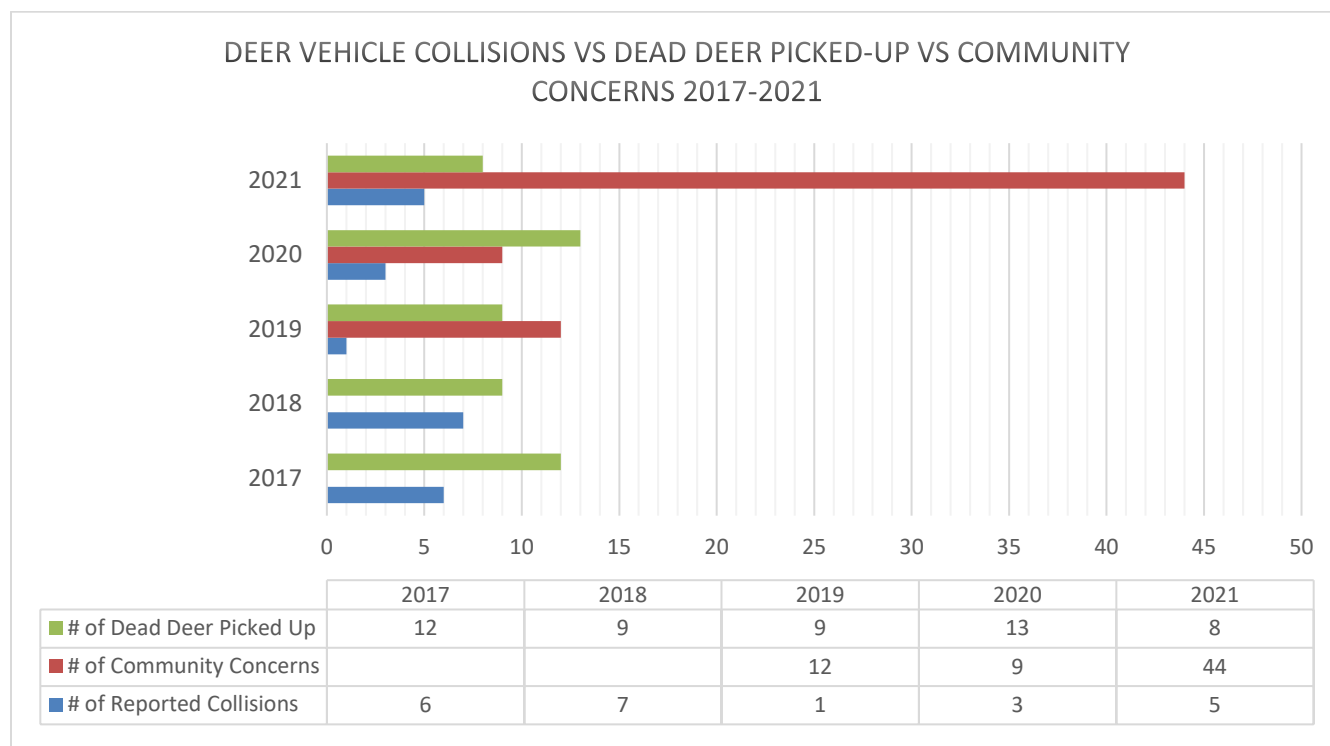
type of animal. It is possible that there were more deer picked up that were not recorded as being deer. Additionally, of the deceased animals picked up by Service crews, not all of them were related to vehicle collisions. Deceased animals may have succumbed to sickness or died of natural causes, leading to removal. The listing of these numbers can be found in Appendix C.

Parks and Recreation Commission

In November 2020, the Parks and Recreation Commission requested a presentation on deer in Worthington from City Staff. The Management Assistant overviewed the research compiled on deer, including different methods other communities have used to manage their deer populations. The Parks and Recreation Commission encouraged staff to conduct education about feeding of deer in City parks but did not want to make any further recommendations since the issue is larger than just in the parks.

Worthington Trends

The chart below compares the number of deer-vehicle-collisions reported to the Worthington Division of Police, versus the number of dead deer picked-up by the Service and Engineering crews, versus the number of community concerns recorded by the Management Assistant. While the data is not comprehensive, it is valuable to track different datapoints to see trends within the information we do have to help educate decisions moving forward.



***2021 numbers are as of October 2021

Deer and Lyme Disease

In the past, residents have raised their concerns about the risk of Lyme disease being spread by deer in Worthington. However, depending upon the size of the deer herd in Worthington, it is not clear whether deer represent a Lyme disease threat. While reducing the deer population may have an impact on the number of ticks, increased education efforts on ticks and the transmission of Lyme disease may also be helpful to help keep residents safe.

Studies in urban and suburban areas have shown that the relationship between deer density, tick abundance, and Lyme disease incidence has not been definitively determined. Dr. Tamara Awerbuch, who worked at the Harvard School of Public Health, has worked on research relating to deer ticks. She has stated that hunting deer will not effectively combat Lyme disease since mice are the primary disease vector. To see a decrease in Lyme disease, the deer population would need to nearly be eliminated.¹¹ However, Dr. Sam Telford who has worked with the Department of Infectious Disease and Global Health at the Tufts University Cummings School of Veterinary Medicine, argues that reducing deer populations must be considered in any discussion of effective community level intervention to reduce the risk of Lyme disease. He asserts that the majority of studies analyzing the effect of deer reduction as a mode of intervention against Lyme disease demonstrate great reductions in the density of deer ticks, a prerequisite for local risk for acquiring infection.¹²

Adult ticks primarily feed on deer in mid-autumn to mate and acquire a final blood meal before females lay eggs to complete their life cycle. Larvae feed on mice, birds, and other small mammals in the summer and early fall. Nymphs also feed on mice, birds, and other small mammals but are most active in the late spring and early summer. The density of ticks is most sensitive to the availability of hosts for subadult ticks (small mammals and birds) than hosts for adult ticks, such as deer. Risk of exposure to Lyme disease is correlated with abundance of acorns, mice, and chipmunks – key hosts for subadult ticks, which are most likely to transmit Lyme disease, and their corresponding food source. Ticks pick up the bacterium that causes Lyme disease from animals such as mice.¹³

Blacklegged ticks that carry Lyme disease are most commonly found in the eastern and southern areas of Ohio but are likely to occur in suitable wooded habitat throughout most or all of Ohio. The greatest risk of tick exposure comes from small, wooded areas, tall grass or weeds, bushes, or leaf debris.¹⁴ Appendix E has various maps illustrating the locations of ticks across Ohio and the US and where cases of Lyme disease are increasing.

¹¹ Johnson, R. (2014, January). *Killing deer not the answer to reducing Lyme disease, says HSPH scientist*. Killing Deer Not the Answer to Reducing Lyme Disease, says HSPH Scientist. Retrieved October 13, 2021, from <https://www.hsph.harvard.edu/news/features/killing-deer-not-answer-reducing-lyme-disease-html/>.

¹² Sam R Telford, III, Deer Reduction Is a Cornerstone of Integrated Deer Tick Management, *Journal of Integrated Pest Management*, Volume 8, Issue 1, January 2017, 25, <https://doi.org/10.1093/jipm/pmx024>

¹³ *Lyme disease*. Pennsylvania Game Commission. Retrieved September 24, 2021, from <https://www.pgc.pa.gov/Wildlife/Wildlife-RelatedDiseases/Pages/LymeDisease.aspx>.

¹⁴ Lyme disease. Retrieved September 24, 2021, from <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/zoonotic-disease-program/resources/lyme-disease>.

Possible Future Options

To further understand the breadth of the deer issue in Worthington, there are several next steps that may be taken to answer several broad questions regarding the deer population:

- What kinds of deer-related problems are occurring?
- Where and when are these problems occurring?
- Who is experiencing these problems?
- How severe are the problems?

Currently, the City has primarily heard from a small group of resident stakeholders who have strong opinions on the deer population, and it is not clear whether the Cultural Carry Capacity has been exceeded. Before moving to take action, it is important to get a broad understanding of the perceived problem and whether there is agreement about the existence and nature of the deer problem. Below are several options that Council could choose to pursue in order to further scope out the extent of the deer issue in Worthington:

Conduct a Survey of the Deer in Worthington

After the extent of the deer issue has been evaluated, if it is Council's desire, there will need to be a process scoped out to determine the objectives for deer management in Worthington and creating a framework in order to best achieve them. It will be important to utilize a process that takes into account Worthington's unique qualities and identify the best approach to manage the deer population. Additionally, implementation of even a modest management plan requires start-up and recurring funding, staff time, potentially volunteer management, and maintaining a consistent flow of communication about deer management activities.

The creation of a public engagement process would work to define and evaluate a range of potential actions to achieve management objectives, including efforts that are designed to influence human behavior such as educating residents on how to protect plantings from deer and those that are aimed at reducing deer numbers (e.g., hunting, culling, inhibiting deer reproduction). Options will need to be evaluated to determine what will be acceptable to the community, evaluating the costs, and what the potential for success will be.

Any public engagement process will require technical information from experts and local knowledge from community members. The quality of deliberations about potential actions depends on several factors, including: the quality of information about the costs; benefits and feasibility of each alternative; and efforts to consider each alternative in light of established community goals. It's important that the information used to make decisions is perceived by recipients as coming from unbiased, trustworthy sources—especially important if there will be the need to justify or defend publicly the decisions about actions selected.

APPENDIX A

ORDINANCE NO. XX-2022

Amending Section 505.08 of the Codified Ordinances of the City of Worthington to Create Section 505.081 “Feeding of Deer Prohibited”

WHEREAS, the City of Worthington, Ohio has observed that there is a significant and growing deer population; and,

WHEREAS, City Staff has collected a listing of community complaints, and has conducted extensive research into best practices and case studies for conducting effective deer management strategies at the direction of the City Council; and,

WHEREAS, the deer population in the City poses a hazard to motorists in the City, causes a reduction in plant life, and causes damage to landscaping installed by residents and commercial landowners of the City; and,

WHEREAS, the feeding of deer has been shown to increase the concentration of deer in the area of feeding, thereby increasing the likelihood of collisions between vehicles and deer, increasing tick-borne diseases in pets and other wildlife, and increasing damage to vegetation and landscaping in the area; and,

WHEREAS, the feeding of deer has been shown to encourage them to remain in urbanized areas and to become reliant on non-native food sources that may not be sustainable or healthy; and,

WHEREAS, the Worthington City Council finds that the adoption of an ordinance regulating the intentional feeding of deer promotes the health, safety, and welfare of the citizens of the City is necessary; and,

NOW, THEREFORE, BE IT RESOLVED by the Council of the Municipality of Worthington, County of Franklin, State of Ohio:

SECTION 1. That Section 505.08 of the Codified Ordinances of the City of Worthington, Ohio shall be amended to read as follows pertaining to the Feeding of Deer Prohibited:

505.08 NUISANCE CONDITIONS PROHIBITED.

(a) No person shall cause or allow any place where an animal is kept to become unclean or unwholesome. No person shall keep any swine, sheep or goats in the City. Horses, cattle and chickens may not be kept anywhere within the City within 150 feet of any residence, other than the residence of the person keeping such animals or fowl. (Ord. 94-73. Passed 12-10-73.)

(b) No person shall keep or harbor any animal in the City so as to create offensive odors, excessive noise or unsanitary conditions which are a menace to the health, comfort or safety of the public, or otherwise permit the commission or existence of a nuisance as defined herein.

(c) No person shall keep or otherwise harbor any animal within the City which, by frequent and habitual barking, howling or yelping, creates unreasonably loud and disturbing noises of such a character, intensity and duration as to disturb the peace, quiet and good order of the City. Any person who allows any animal habitually to remain, be lodged or fed within any dwelling, building, yard or enclosure, which he occupies or owns, shall be considered as harboring such animal.

(d) Any animal which scratches, digs, or defecates upon any lawn, tree, shrub, plant, sidewalk, building, park, playground, school ground or private property, other than the property of the owner or person in charge or control of such animal, is hereby declared to be a nuisance.

(e) No person being the owner or in charge or control of any animal shall allow or permit such animal to commit a nuisance on any school grounds, playground, City park, or upon any private property other than that of the owner or person in charge or control of such animal without the permission of the owner of such property. Where the owner or person in charge or control of such animal immediately removes all feces deposited by such animal and disposes of same in a sanitary manner, such nuisance shall be considered abated.

(f) Whoever violates this section is guilty of a minor misdemeanor.
(Ord. 27-77. Passed 5-23-77.)

505.081 FEEDING OF DEER PROHIBITED

(a) Deer Feeding Prohibited. Except as provided in subsection (d) below, no person shall intentionally feed deer within the City.

(b) Feeding Defined. For the purposes of this section, feeding shall include the act of placing or permitting to be placed on the ground, or within five feet of the ground, any device or any fruits, grains, minerals, plants, salt licks, vegetables, seeds, nuts, hay, or any other edible materials that may reasonably be expected to result in deer feeding, unless such items are screened or otherwise protected from deer consumption

(1) The presumption that the placement of any fruits, grains, minerals, plants, salt licks, vegetables, seeds, nuts, hay, or any other edible materials is for the purpose of feeding deer shall not apply to the following:

(2) Naturally growing materials, including but not limited to fruit, grain, nuts, seeds, hay, and vegetables.

(3) Planted materials growing in gardens and lawns, as ornamental plants, or shrubs, standing crops.

(4) Residue from lawns, gardens and other vegetable materials maintained as a mulch pile.

(5) Stored crops, provided that the crop is not intentionally made available to deer.

(6) Spills of seed materials intended for planting or crop materials that have been harvested if the spills are incidental to normal agricultural operations and such materials are not intentionally made available to deer.

(7) Unmodified, commercially purchased bird or squirrel feeders or their equivalent.

(8) Temporary, seasonal, or ornamental decorations as determined by the City Manager.

(c) Removal Required. Each property owner or person having control of the property shall have the duty to remove any device or materials placed on the owner's property in violation of this section. Alternatively, a property owner or person having control of the property may modify such a device or make other changes to the property that prevent deer from having access to the materials or feeding from the device.

(d) Exceptions to Prohibition.

(1) The prohibition in subsection (a) of this section shall not apply to any health department employee, law enforcement officer, or state or federal game official acting within the scope of his or her official duties.

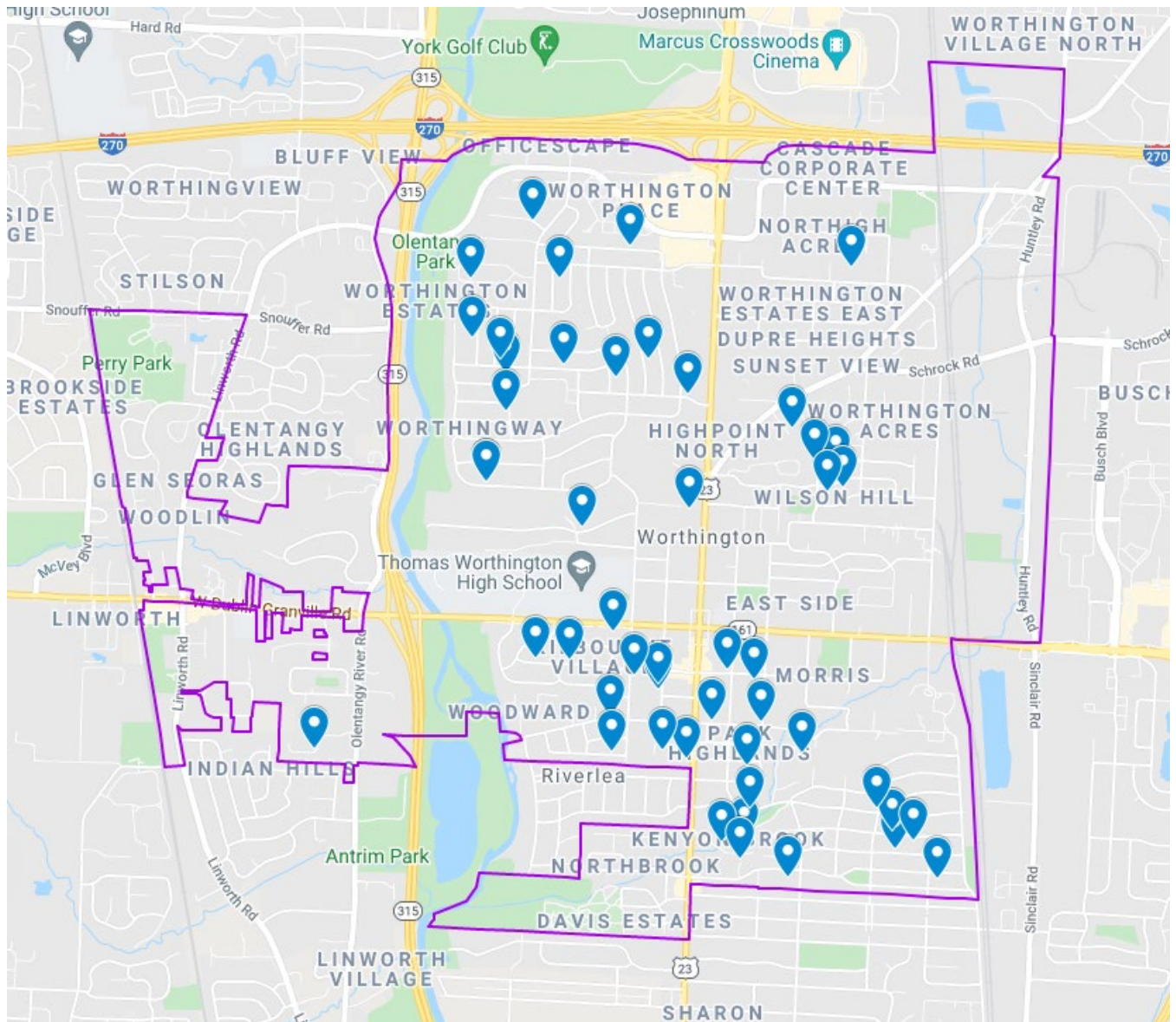
(2) The prohibition in subsection (a) of this section shall not apply to feeding that is authorized by the City Manager on an emergency basis, or authorized as part of a deer management program

(e) Failure to remove such materials or to make such modifications within 48 hours after written notice from the City shall constitute a violation. Each subsequent 24-hour period during which the owner or person having control of the property fails to comply with this legislation shall constitute a separate violation.

(f) Whoever violates this section is guilty of a minor misdemeanor.

SECTION 2. That notice of passage of this Ordinance shall be posted in the Municipal Administration Building, the Worthington Library, the Griswold Center, and the Worthington Community Center and shall set forth the title and effective date of the Ordinance and a statement that the Ordinance is on file in the office of the Clerk of Council. This Ordinance shall take effect and be in force from and after the earliest period allowed by law and by the Charter of the City of Worthington, Ohio.

APPENDIX B



***As of October 2021

APPENDIX C

Worthington Urban Deer Damage 2020

Street Trees

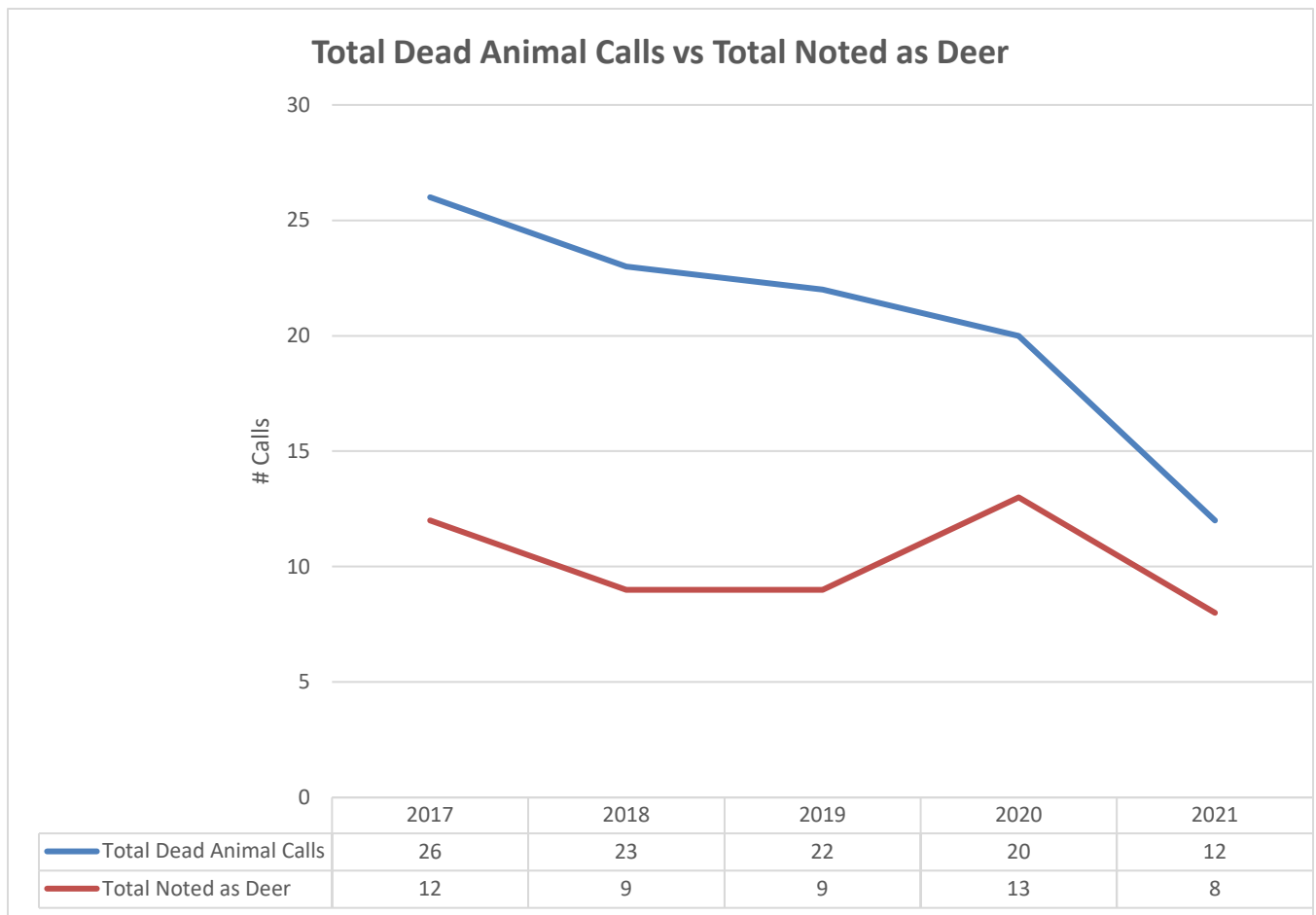
- | | |
|------------------------------|------------------------|
| • 534 Thackeray Ave | Red Maple |
| • 6576 Masefield Ave | Redmond Linden |
| • 6576 Masefield Ave | Redmond Linden |
| • 500 Poe Ave | Red Maple |
| • 6587 Masefield Ave | Linden |
| • 471 Highgate Ave | Serviceberry |
| • 434 Highgate Ave | Linden |
| • 6894 Rieber Ave | Red Maple |
| • 6607 Evening | Bald Cypress |
| • 367 Hennessy Ave | Tree Lilac |
| • 386 Lambourne Ave | Red Maple |
| • 6661 Guyer Street | Red Maple |
| • 180 Larrimer Ave | Red Maple |
| • Post Office -Short Street | Lacebark Elm |
| • 53 Short Street | Red Maple |
| • 567 Lambourne Ave | London Planetree |
| • 357 Lambourne Ave | Tulip Poplar |
| • 6851 North High Street | Chinkapin Oak |
| • 187 Crandall Ave | Littleleaf Linden |
| • North Street/Min Mar Court | Canada Red Chokecherry |
| • 415 East Stafford Avenue | Tree Lilac |
| • 48 East South Street | Red Maple |
| • 685 Andover Ave | Galaxy Magnolia |

Park Trees

- | | |
|------------------------------------|--|
| • Moses Park | American Yellowwood |
| • Bike Trail -Tucker Bridge | London Planetree |
| • Olentangy Soccer field | Frontier Elm |
| • Wilson Bridge Road Park Entrance | <u>11 trees total</u> -Bald Cypress, Linden, Freeman Maple |
| • N.E. Village Green | Red Buckeye |
| • Bike trail – Highgate | Swamp White Oak |

APPENDIX D

Worthington Department of Service and Engineering Dead Animal Pick-Up Reporting

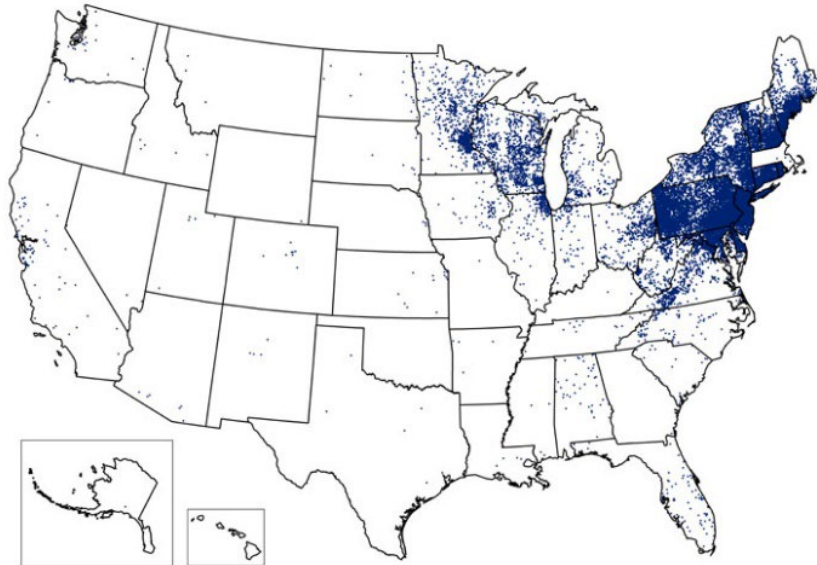


***2021 numbers are as of October 2021

APPENDIX E

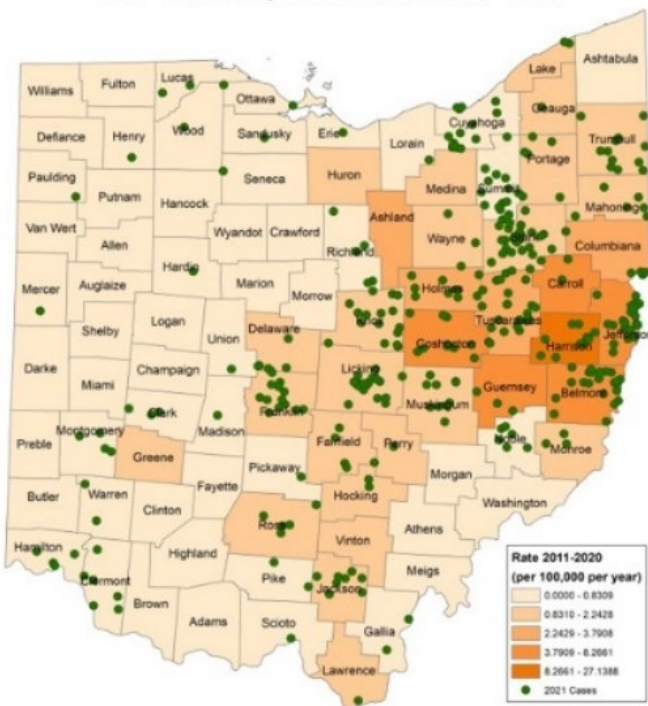
Deer Tick Maps from Ohio Department of Natural Resources

Reported Cases of Lyme Disease -- United States, 2019



1 dot placed randomly within county of residence for each confirmed case

Lyme Disease in Ohio
2021* Cases Compared to Incidence 2011 – 2020



Estimated Distribution* of Blacklegged Ticks in Ohio, 2010-2020

