

Deer Management Report

Presented to the Board of Aldermen

**By
Gary Hoelzer**

June 30, 2011

**CITY OF TOWN AND COUNTRY
RESOLUTION No. 23-2010**

**A RESOLUTION OF THE BOARD OF ALDERMEN OF THE CITY OF TOWN AND COUNTRY, MISSOURI
FOR LONG-RANGE PLANNING OF DEER MANAGEMENT**

WHEREAS, the City of Town & Country has previously determined that there is an excessive local deer population within its municipal boundaries which constitutes a hazard to the health and welfare of the citizens and residents of the City, and a threat to the habitat of the City; and,

WHEREAS, the Missouri Department of Conservation has indicated that the deer population in parts of the City of Town & Country exceeds recommended levels for subdivisions and urban park areas; and

WHEREAS, in response to the deer overpopulation, in 2009, the Board of Aldermen approved Ordinance No. 3430 which permitted the City to enter into an agreement with White Buffalo, Inc. for professional deer management services; and

WHEREAS, the City has implemented a Deer Management Program for 2010-2011 by retaining the deer management services of White Buffalo, Inc. to perform certain deer management services for the City; and

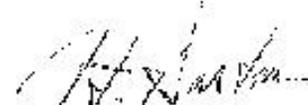
WHEREAS, the deer management program should be on going, including implementation, monitoring and oversight;

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF ALDERMEN OF THE CITY OF TOWN AND COUNTRY, MISSOURI, AS FOLLOWS:

Section 1. The City Administrator, or his designee, shall develop evidence-based short-term and long-range plans for deer management.

Section 2. The staff recommendations for short-term and long-range plans for deer management should be submitted to the Board of Aldermen of the City of Town & Country by July 1, 2011.

Passed by the Board of Aldermen for the City of Town and Country, Missouri, this 20th day of December, 2010.


Jonathan F. Dalton
Mayor, City of Town and Country

Attest:

Pamela Burdt, City Clerk
Responsible for Short-Long Range Plans

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Deer Management in Town and Country

Executive Summary

Gary Hoelzer
June 30, 2011

SUMMARY

Deer management in urban areas has received considerable attention and has been the topic of a number of studies, working groups, and analysis not only in the St. Louis area but throughout the country. This report is the result of the collective efforts of people that represent diverse views regarding appropriate methods to address the growing herd in the urban environment.

In 2007 Mayor Dalton appointed a Deer Task Force to study the growing problem and to present a report to the Board of Aldermen with recommendations on deer management. The Task Force consisted of Alderman Jon Benigas, Alderman Fred Meyland-Smith, and Alderman Lynn Wright, and Chaired by Alderman Bill Kuehling.

The Deer Implementation Task Force, again established by Mayor Dalton, was chaired by Alderman Fred Meyland-Smith, with a membership that included Alderman Lynn Wright and four resident representatives.

The West St. Louis County Deer Task Force thoroughly examined the issue of urban deer management by analyzing both local and national efforts and initiatives. It issued its comprehensive final report in 2005. The Task Force had a Town and Country representative, as well as former Mayor Skip Mange, who was representing the St. Louis County Council on the Task Force.

The conclusions and recommendations from the reports issued by those three appointed bodies are woven throughout this report, which also includes the experience gained from wildlife management organizations from other urban areas of the United States.

The City of Town and Country first officially addressed the topic of deer with its relocation plan from 1999 through 2001 with 233 deer captured and relocated. With no subsequent official management, the deer population increased from 60 to 85 deer per square mile (mi²) in and around Town and Country. The latest estimate by the Missouri Department of Conservation is that there are approximately 660 deer in the 10-square miles of Town and Country that are west of I-270.

Wildlife biologists generally agree that the recommended deer population for an urban area is between 10 to 20 deer / mi². When the population is allowed to increase to its current level, deer significantly impact biodiversity, resident satisfaction, and public safety. If NO deer management plan is implemented, the deer population could increase to as many as 1,038 deer (104 deer / mi²) in just two more years.

RECOMMENDATION

Reduce the deer population to 30 deer per square mile

When deer are allowed to populate in an urban area there are detrimental effects to biodiversity, the environment, and the health and safety of the community.

While other sources recommend a lower deer population, 30 deer / mi² is a reasonable goal that would achieve a significant herd reduction. Once that goal is achieved; an additional survey of the residential population along with deer / vehicle collision trend data will indicate if a further population reduction is warranted.

The West St. Louis County Deer Task Force stated in their 2005 report: 'The goal of deer management is to maintain a reasonable number of deer in the area, ideally between 15-20 deer/mi²' (p.59).

A survey of other urban areas indicated deer population goals that typically ranged between 10 to 20 deer/mi²:

The goal of the deer management program is to reduce, and then maintain as necessary, deer populations in each reservation between 15-20 deer/mi²¹, similar to densities that originally existed in the forests of northeastern Ohio (Cleveland Metroparks, December 3, 2010, p.3).

The Bernards Township, New Jersey reduced the deer population from 118 per square mile to 20 per square mile, with an additional goal of 10 deer per square mile. Source: www.newjerseyhills.com, 'Deer aerial survey south to measure herd reduction in Bernards Township' (October 22, 2010).

The Sustainable City Network, a publication for municipal professionals, stated in a January 19, 2011 article, 'most areas can support a healthy population of 15 to 20 deer per square mile.'

When deer exceed 10 to 20 per square mile, there are adverse impacts to the ecological balance evidenced by disappearing species of plants, vegetation, flowers, insects, bees and birds.

As the herd increases, the negative aspects of deer overpopulation begin to replace those positive attributes that residents associate with wildlife, with the

¹ Cleveland Metroparks has since revised his target goal to 10 deer / mi² to enhance bio regeneration

increasing damage to property and the growing threat to public safety caused by vehicle collisions.

STRATEGY RECOMMENDATIONS

A. Short Term Goal: Employ professional sharpshooters to reduce the deer population to approximately 30 deer / mi² over the next two years.

Employing White Buffalo or an organization of equal experience and skill is the quickest method to reduce the herd to acceptable levels. Other methods are either unable to achieve a significant population reduction; or, are not as cost effective as the professional sharpshooting strategy.

B. Long Term Goals:

- 1) Utilize various options to maintain the deer population at or about 30 deer /mi².

Strategy options include professional sharpshooters, trained police sharpshooters, bow hunting and/or surgical sterilization.

- 2) Ongoing goal analysis to determine whether further reductions are necessary:
 - a. Regular distance-sampling population estimates
 - b. A residential survey in 2014 to determine the level of deer tolerance
 - c. Monitoring of the trend of deer / vehicle collisions
 - d. Adverse impact to biodiversity from deer browse

Deer Management in Town and Country

Report to the Board of Aldermen

Gary Hoelzer
June 30, 2011

I. RECOMMENDATION: Reduce the deer population to 30 deer / mi²

While other sources recommend a deer population between 15 to 20 deer per square mile (mi²), 30 deer / mi² is a reasonable goal that would achieve a significant herd reduction. Once that goal is achieved; an additional survey of the residential population along with deer / vehicle collision data will indicate if a further population reduction should be considered.

Background

Prior to urbanization, it is estimated that the natural deer population was between 7 and 30 deer/mi² (George, p.2; Cleveland Metroparks, p.3; deCalesta). With urbanization, the natural predators have been reduced or eliminated, allowing deer to overpopulate to the current estimated population of 66 deer/mi².

The West St. Louis County Deer Task Force stated in their 2005 report: 'The goal of deer management is to maintain a reasonable number of deer in the area, ideally between 15-20 deer/mi². In some areas of west St. Louis County, deer populations are currently as large as 60 – 85 deer per square mile' (p.59).

A survey of other urban areas indicated deer population goals that typically ranged between 10 to 20 deer/mi².² The stated goal of the Cleveland Metroparks in their application for sharpshooting (December 3, 2010) was 15-20 deer/mi²:

The goal of the deer management program is to reduce, and then maintain as necessary, deer populations in each reservation between 15-20 deer/mi², similar to densities that originally existed in the forests of northeastern Ohio (p.3).

Rick Tyler, the Senior Natural Resource Manager for Cleveland Metroparks and the author of the December 3rd document, has since stated in a telephone conversation on June 28th that they have decreased their target population goal to 10 deer / mi² to improve regeneration from the damage caused by deer browse.

² The Bernards Township, New Jersey reduced the deer population from 118 per square mile to 20 per square mile, with an additional goal of 10 deer per square mile. Source: www.newjerseyhills.com, 'Deer aerial survey south to measure herd reduction in Bernards Township' (October 22, 2010).

In an article in a publication for municipal professionals, Lloyd Fox with the Kansas Department of Wildlife and Parks stated,

“We encourage local governments to build a deer management plan early, before the size of a herd gets unmanageable. Nobody wants to see sick and dying animals in a suburban area,” he said. While most areas can support a healthy population of **15 to 20** deer per square mile, Fox said one problem area in Kansas—a corridor between Kansas City and Topeka— has a typical population of **30 to 50** deer per square mile.”³

There have been seven population estimates conducted in Town and Country since 1997. These surveys have been conducted by four different organizations utilizing four different methodologies. The two most recent population estimates indicated that the deer population in Town and Country was between 480 and 700 deer (48 deer / mi² and 70 deer / mi²). If no deer management plan is implemented, the deer population could increase to as many as 1,038 deer (104 deer / mi²) in just two more years.

The following chart indicates the total population, estimated deer population per square mile, the general area of the survey, the year the survey was conducted, the organization conducting the survey and its methodology.

Total Population	Per Sq. Mi	Area	Year	Conducted by / Method
472 – 788	52 – 88	T&C/Queeny	2-1997	White Buffalo Spotlight
640-682	71.1 – 75.8	T&C/Queeny	1-1999	MDC Aerial helicopter
80 deer RELOCATED: January –February 1999				
540-972	60 - 108	T&C/Queeny	1-2000	Air Scan, Inc. Infrared fixed wing airplane
57 deer RELOCATED: January – February 2000				
544-580	68 – 72.5	8 sq miles	12-2000	MDC Aerial helicopter
96 deer RELOCATED: January – February 2001				
471 +/- 94	43.4 +/- 8.7	T&C/Queeny	4-2002	Holterra Wildlife Management Distance sampling
	60-85	West St. Louis County Deer Task Force (p.59)		
112 deer culled, 100 deer sterilized				
650	65	10 sq mi West/270	12-2009	White Buffalo Distance sampling
75 deer culled, 30 doe sterilized				
600	60	10 sq mi West/270	12-2010	White Buffalo Distance sampling

³ “No One Wins When Urban Deer Run Rampant,” January 19, 2011; retrieved from www.sustainablecitynetwork.com.

II. RATIONALE FOR DEER MANAGEMENT

SUMMARY

The primary factors that lead local government to implement deer management strategies when the deer exceed acceptable population levels are the ecological imbalance, dissatisfaction by people whose property is adversely impacted, and growing concerns to public safety due to an increase in deer / vehicle conflicts.

A. Ecological carrying capacity

The ecological carrying capacity, also referred to as the biological carrying capacity, is defined as ‘the number of deer that can be continually supported by the land in balance with all other natural resources’ (Cleveland Metroparks).

The two photos illustrate the destruction of ground cover by deer. The top photo was taken in 2000, and the bottom photo of the same plot was taken in 2004 after culling operations in a portion of the Cleveland Metropark system that allowed regeneration to occur.

According to Erin Shank, wildlife biologist with the Missouri Department of Conservation, sapling height drops significantly in areas where deer densities exceed 20 deer per square mile.

In two separate studies conducted in Pennsylvania tree height and tree diversity were adversely impacted by higher deer populations. In the first study trees protected from deer browsing were twice as tall as those impacted by deer after only five growing seasons. In the second study researchers found that when deer densities were less than 20 deer per square mile an old growth forest supported 27 species of trees and shrubs compared to the current 11 species with deer densities that exceed 40 deer per square mile (West St. Louis County Task Force, p.27).⁴



⁴ Shank, Erin (2005). Deer browse and the effect on forest systems. Report of the West St. Louis County Deer Task Force.

A report by the Cleveland Metroparks to the Ohio Division of Wildlife stated:

The main justification for deer control was the need to prevent further habitat destruction by deer populations. Excessive deer browse was presumed to be the cause of poor tree seedling recruitment in mature forests, loss of wildflower diversity, and severe alteration in the physiognomic characteristics of forest understory (i.e., removal of small trees and shrubs). Those types of impacts caused by overabundant deer populations are well documented through numerous scientific studies (December 3, 2010; p.2).

Another study conducted by the Cleveland Metroparks shows the destructive impact of deer browse upon the bluebell wildflower as well as the ability to regenerate once the population is under control. The top photo is from 1996, and the bottom photo is ten years later after deer management was implemented. Failing to reduce the number of deer per square mile would 'very likely damage the ecosystem to a point where some species of plants might never regenerate' (Cleveland Metroparks).



The adverse impact upon biodiversity extends not only to species of plants, but extends in "domino fashion" to the 'intricate and entirely dependent relationship' between those plants and other living species, such as nectar and plant feeding bees (West St. Louis County Task Force, p.29). In addition to the 150 species of bees native to Missouri, other herbivores are impacted by the overpopulation of deer; including butterflies, moths, beetles and leafhoppers.



The fragile imbalance to the environment continues to cascade to woodland birds that feed these insects to their nestlings (West St. Louis County Task Force, p.29). deCalesta (1997) reported that when deer densities exceeded 20 per square mile, the bird community exhibited a significant reduction in species richness and abundance.

Closer to home, Preston Larimer, teacher of biology and ecology at The Principia Upper School, has conducted a number of studies with his students on the campus. He stated that deer overpopulation and the invasive honeysuckle plant have nearly eliminated the regeneration of the oak tree on the Principia campus. He stated that the deer eat the acorns and those young saplings that do survive are eliminated by deer browse. The deer have also greatly reduced wild flowers on campus and some species are disappearing altogether.

According to John George, a natural history biologist with the Missouri Department of Conservation,

...at densities above 25 deer per square mile, the habitat diversity and quality slowly becomes degraded to the point that, without help from some form of deer removal, the habitat can become a downward spiral of diversity that may not be able to recover all of the species that can be lost. This can be confusing for people to understand...As they look about the park they see trees, plants, birds, insects and other species and they cannot understand that the park may be missing much of the diversity that was present before the deer were numerous. These losses in diversity can often be slow to materialize and difficult to see (George).

Similar conclusions have been published by the Cleveland Metroparks. In their publication entitled, 'Natural Resources Management Issues', the rationale for deer management in their park system is explained:

Deer are a part of the natural ecosystem of northeast Ohio. However, wolves, mountain lions and indigenous people, the traditional predators of deer, are no longer present in today's environment. This has allowed deer populations to grow beyond the "biological carrying capacity," the number of deer that can be continually supported by the land in balance with all other natural resources.

Cleveland Metroparks is charged with conservation of natural resources as its fundamental mission. The most noticeable impacts of large deer populations are on plant life near the ground and on other wildlife species that depend on that vegetation. "Browse lines" develop in areas with too many deer. Spring plants, especially forest wildflowers, are hit hard as they are the first new growth after the long winter. As these plants are eaten repeatedly, they are unable to reproduce and often die out. Seedling trees are also heavily eaten by deer, often to the point where forest regeneration stops.

Songbirds and small mammals that rely on the understory layer in a forest have an increasingly difficult time successfully raising young or finding food. This may reach a point whereby these species disappear from areas of high deer population. Cleveland Metroparks is monitoring the impact of deer in all reservations.

Thinning the herd by using trained marksmen has been used when necessary to protect other important natural resources.

Deer and the ecological system co-exist when the deer population is maintained between 10 to 20 deer / mi². When the population exceeds those levels 'the

habitat diversity and quality slowly becomes degraded to the point that, without help from some form of deer removal, the habitat can become a downward spiral of diversity that may not be able to recover all of the species that can be lost' (George, MDC).

B. Social carrying capacity

The social carrying capacity refers to the number of deer socially acceptable by the community. According to John George with the Missouri Department of Conservation,

The residents of an area will have a density of deer that they socially accept and densities that they will not accept. The SCC is not constant or agreed upon by all of the residents. MDC recommends that densities of deer between 15-20 deer per square mile in urban areas is socially acceptable and should maximize the positives associated with deer while minimizing the negatives (George).

As the population of deer continues to increase, the undetected impact to biodiversity gives way to obvious signs of damage to property in the residential and commercial landscape. The positive qualities that wildlife bring to a suburban



environment begin to diminish and are replaced by the destructive qualities of damage to lawns and the landscape, as well as conflicts between domesticated animals and the threat to public safety through deer / vehicle collisions.

The 2008 survey of Town and Country residents indicated that the number of deer exceeded the social carrying

capacity for a significant percentage of our community. In a random telephone survey of 400 residents conducted by Dr. Terry Jones of the University of Missouri St. Louis, the following findings were recorded:

- 51% reported that the damage to plants from deer is extremely or very serious. This percentage increases to 66% for those respondents in Ward 2 who live east of Queeny Park and south of The Principia.
- 42% reported that deer are an extremely or very serious problem. This number increases to 58% for those respondents in Ward 2 who live east of Queeny Park and south of The Principia.
- 80% of the respondents in Ward 2 reported 50 or more deer on or near their property over the past year (photo from Mason Valley)

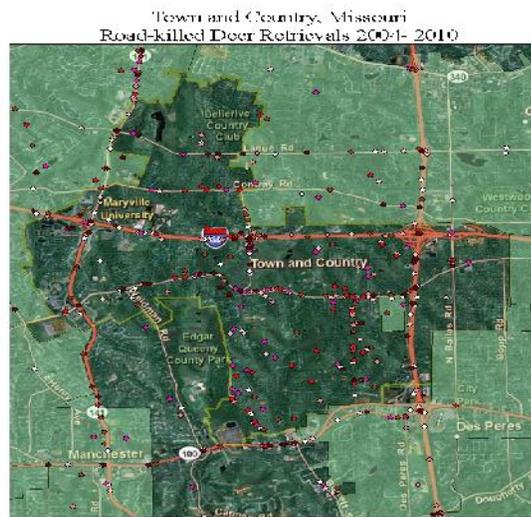
C. Public safety

The threat to public safety presented by deer / vehicle collisions is among the most serious elements supporting progressive measures to control the deer population in urban areas. Using its claim data, State Farm estimates that 2.3 million deer-vehicle collisions occurred in the United States between July 2008 and June 2010, which is a 21 percent increase over the prior reporting period. According to the Insurance Institute for Highway Safety deer-vehicle crashes lead to about 200 fatalities annually throughout the nation. The average property damage costs per accident is \$3,103. Missouri is ranked 16th in the number of accidents involving deer.



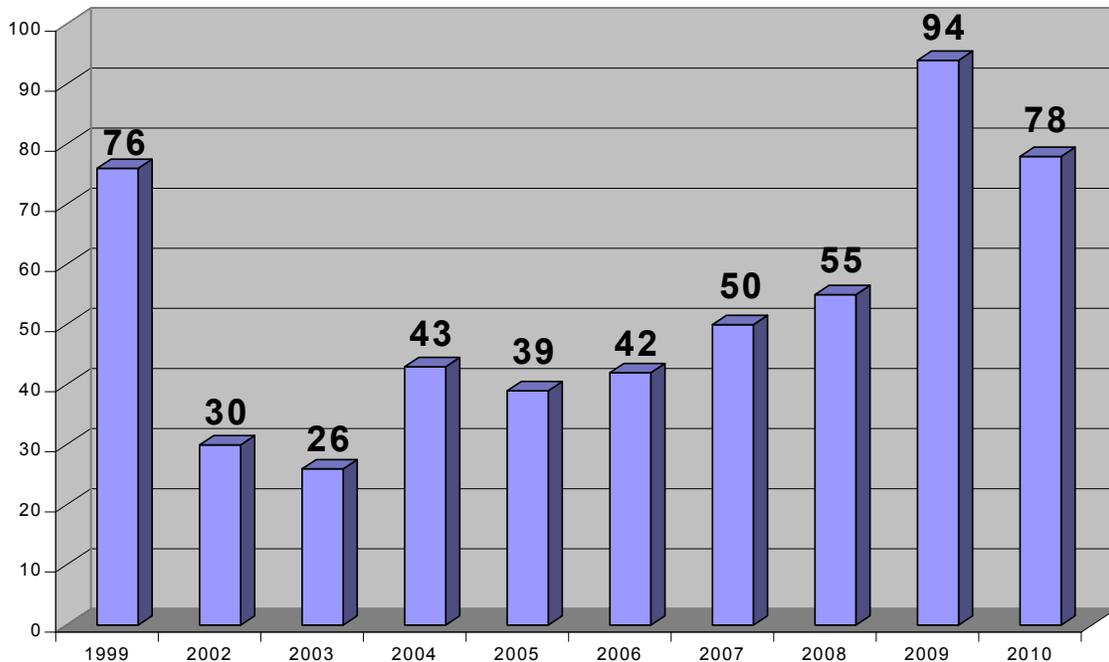
Town and Country Data

In the four-year period of 2007–2010, the Town and Country Police Department documented an average of 69.25 deer-vehicle collisions per year. Since very few collisions involve a police report, in 1997 the department began documenting incidents in which a deer-vehicle collision probably occurred based on the circumstances, or was verified although no report was written (see the chart on page 14).



In a random telephone survey of Town and Country residents in 2008, Dr. Terry Jones of the University of Missouri-St. Louis, reported that 51 percent of those surveyed stated that they had a collision, or a near collision, with a deer during the past five years. In addition, 52 percent of the respondents stated that deer-vehicle collisions are a serious or very serious problem in Town and Country.

It is important to note the drop in deer / vehicle conflicts beginning in 2002 after 233 deer were captured and relocated...a strategy that has since been prohibited by the Missouri Department of Conservation due to the transfer of disease to other deer populations.



St. Louis County Data

The West St. Louis County Deer Task Force reported that between 350 and 500 deer-vehicle collisions are reported in St. Louis County annually. In a 2004 survey conducted by the Task Force, 15.5 percent of the 2,671 respondents stated that they or an immediate family member had been involved in a collision with a deer in the past five years. Seventy-three (73) percent of those surveyed stated that reducing collisions was “very important.”

Public safety and Lyme Disease

The danger posed to the public from Lyme disease transmitted through the deer population was studied by the West St. Louis County Deer Task Force. While it is an issue to monitor closely, it is currently not a rationale for deer management in the St. Louis area. The Task Force reported—

Lyme disease is often cited by west St. Louis county residents as a concern related to the large deer population. Residents worry that areas of high deer densities may increase the risk of transmission of the disease to humans. Whether or not high deer densities increase the risk of Lyme disease is questionable...The concern over increased incidence of Lyme disease in areas of high deer densities may be more of a perceived risk than a real one (p.24).

III. Strategies for Urban Deer Management

With the consideration of strategies to manage urban deer population, a summary by the West St. Louis County Deer Task Force (2005) is insightful:

The dilemma of suburban deer management has been played out in many urban areas throughout the country. Various management approaches have been tried in different urban areas, however...lethal management actions are currently the only methods available to reduce the deer population. Non-lethal methods focus on damage abatement and do not function to reduce the number of deer.

The most common methods, as well non-lethal methods, will be summarized in the following section. Each method will be analyzed for its ability to reduce the herd from the current estimate of 66 deer / mi² (after the 2011 births) to 30 deer / mi², as well as the cost to achieve the initial goal. Each method will also be examined for its ability to maintain the population goal once it is achieved and the overall 10-year projected cost to utilize that method.

It should be noted that each method will be considered as a stand-alone strategy for comparison / contrast purposes. However, methods could be combined and the effects will vary according to the application. Several examples of combining methods are given in this section.

Utilizing professional sharpshooters

Time to achieve population goal:	2 years / 350 deer killed
Cost to achieve population goal:	\$161,500 (includes processing)
Annual cost to maintain goal:	\$17,000 / 20 deer
10-year projected cost:	\$297,500 / 510 deer killed

Summary

Contracting with a professional wildlife management company that specializes in sharpshooting is the quickest and most effective method of quickly reducing the deer population in an urban area. Within two years the problems associated with an overpopulation of deer--over browse, ecological imbalance, property damage, and the threat to public safety due to vehicle collisions; will either be reduced or eliminated. The cost estimates in this section were provided by White Buffalo.

Background

As stated in the final report of the West St. Louis County Deer Task Force, 'If the goal of a deer management program is to decrease deer numbers quickly, sharpshooting is the best method to use' (p.50).

Reducing the deer herd to 30 deer / mi² would cost approximately \$161,500 over a two-year period utilizing a contractor like White Buffalo. This cost includes \$31,500 to process 350 deer for the Share the Harvest program that supplies food to needy families who may otherwise lack a dependable source of protein.

The optimal period for sharpshooting is in the heart of winter—from mid January to early March.

Going forward once the population goal is attained, the annual projected cost to maintain the deer population at acceptable levels utilizing professional sharpshooters would cost approximately \$17,000.

Year	# deer	White Buffalo	Share the Harvest
February 2012	300 deer	\$100,000	\$27,000
February 2013	50 deer	\$30,000	\$4,500
Annual maintenance program			
February 2014	20 deer	\$15,000	\$1,800
February 2015	20 deer	\$15,000	\$1,800
Annual recurring cost: \$17,000 (approximate)			

Utilizing POLICE sharpshooters

Time to achieve population goal:	5 years / 550 deer
Cost to achieve population goal:	\$175,500 (includes processing)
Annual cost to maintain goal:	\$8,690 / 20 deer
10-year projected cost:	\$218,950 / 650 deer killed

Summary

White Buffalo has trained police officers and rangers from several public safety agencies to manage their deer population through sharpshooting. Employing this method would involve selecting several police officers for training as sharpshooters and these officers would bear the primary responsibility of either achieving the deer population goal or to maintain it once it has been achieved.

The cost for police sharpshooters to achieve the population goal of 30 deer / mi² is nine percent higher than contracting with a professional deer management company like White Buffalo. This is due in part to the initial start-up cost required to equip police sharpshooters, the training, and the additional deer that would have to be killed and processed since goal attainment is not achieved until at least five years into the program.

It is estimated that White Buffalo could achieve the population goal in two years by culling 350 deer. It would take police sharpshooters under ideal conditions working overtime five years. In addition 550 deer would have to be culled since fewer deer would be killed initially; thereby leaving more deer in the population to reproduce.

Background

Using police officers as sharpshooters would involve formal training by White Buffalo (\$35,000), start-up costs for rifles, equipment, and cold weather clothing (\$11,000); and the ongoing expenses for police overtime and staff time to bait sites three weeks in advance of the sharpshooting period.

It is estimated that it would take two sharpshooters a period of three (40 hour) weeks to achieve the goal of 100 to 150 deer. With the staffing of the police department, deer management would be on an overtime basis at a rate of \$50 per hour. Staff time to bait the sites three weeks in advance of the sharpshooting would cost approximately \$1,890 (63 hours x \$30), and \$1,500 for the bait.

Once the goal is attained in approximately five years, it is estimated that it would take two sharpshooters 40 hours (80 total) to achieve 20 deer annually to maintain the population.

It should be noted that the primary application of training public safety officers to engage in sharpshooting has occurred in public park agencies. The trained officers or rangers conduct the activities as part of their normal duties and not as a secondary function on an overtime basis. In addition, those sections of the park where sharpshooting will occur can be closed off with limited or restricted access.

Diverting police officers to sharpshooting activities for an extended period of time would require a diversion of resources away from their primary role in the community. The cost savings of this method may not outweigh the hidden cost that would be incurred unless it is in the more limited role of maintenance once the initial goal is attained.

References

- Johnson County Park, Kansas Police; trained by White Buffalo in 2009

Chief Dan Field stated that his officers accompanied White Buffalo in their sharpshooting program in 2009 in which 313 deer were culled over three nights. In December of 2010 his officers engaged in their first “solo” sharpshooting project and successfully culled 33 deer in five hours. By contrast, bow hunting in 2009 took six weeks to kill 29 deer.

- Cleveland Metroparks Police, trained by White Buffalo approximately 1998 (13 years of experience)

Lieutenant Mark Hayner stated that his sharpshooting program lasts from January through March in the Metropark system. His officers average 300 to 400 deer a year and stated that the training by White Buffalo was ‘very important’ to the success of his officers. Biologists determine the sharpshooting goal based upon aerial and spotlight surveys.

Lieutenant Hayner offered the following unsolicited comments: The rationale for deer management in Cleveland Metroparks is (1) vegetation preservation, (2) recovery of the forest, and (3) ecological regeneration from the impact of deer over browse.

The following is the estimated cost for achieving the population goal and then maintaining it thereafter.

Year	# deer	Project Cost	Share the Harvest
February 2012	150 deer	\$62,000 ⁵	\$13,500
February 2013	100 deer	\$16,000 ⁶	\$9,000
February 2014	100 deer	\$16,000	\$9,000
February 2015	100 deer	\$16,000	\$9,000
February 2016	100 deer	\$16,000	\$9,000
Annual maintenance program			
February 2017	20 deer	\$6,890	\$1,800
Recurring annually thereafter			

⁵ Includes training and start up costs

⁶ Approximate cost

Combining White Buffalo and Police sharpshooters

White Buffalo could train police officers during the two-year project to achieve the initial goal; and in the third year, police officers could take over the maintenance portion of deer management. Utilizing this combined method, the cost estimates are as follows:

Time to achieve population goal:	2 years / 350 deer
Cost to achieve population goal:	\$198,500 (includes processing)
Annual cost to maintain goal:	\$8,690 / 20 deer
10-year projected cost:	\$268,020 / 510 deer killed

White Buffalo and Police Sharpshooter Comparison

	Time to reach goal	Cost	Initial # deer	10-year
White Buffalo	2 years	\$161,500	350	\$297,500
Police	5 years	\$175,500	550	\$218,950
W.B. & Police	2 years	\$198,500	350	\$268,020

Implement authorized bow hunts on certain lands

Time to achieve population goal:	Goal attainment improbable
Cost to achieve population goal:	N/A

10-year cost to the City: \$0 / 750 deer killed

Summary:

While a cost-effective strategy for the City, it is improbable that bow hunting as a single method could achieve the population goal of 30 deer per square mile. Assuming ideal conditions and sufficient properties, bow hunters may be able to cull 75 deer annually. According to estimates by MDC, after five years the population would still be 66 deer / mi². Rick Tyler, Senior Natural Resource Manager for Cleveland Metroparks, made the same observation in a telephone interview on June 28th regarding the inability of bow hunting in effectively reducing a deer herd. Mr. Tyler stated the primary application of bow hunting is to maintain the herd once the goal is reached, although Cleveland Metroparks prefers their police-trained sharpshooters for that role.

After culling operations in a township in Pennsylvania, the United States Department of Agriculture's Wildlife Services stated in their summary report, 'Archery hunting as the only management tool was not able to successfully reduce the population' (2008; p.3).

Bow hunting could be a supplemental strategy authorized for certain property owners. Several major property managers of 10 acres or more have requested permission to bow hunt on their properties for damage abatement. Hunting limited to these large parcels would allow owners to manage their property and mitigate property loss.

As already stated, bow hunting could also be implemented as a method to maintain an acceptable deer population once the target goal is reached.

Background

According to a national survey by the West St. Louis County Deer Task Force (2005), 'various management approaches have been tried in different urban areas, however the general consensus is that hunting (including managed hunts and bow hunting) is the cheapest and most effective method of deer management' (p.39). The report also concluded that bow hunting conducted from tree stands and at close distances makes this strategy 'the safest form of hunting in a suburban area' (p.45).

Other West County municipalities have addressed deer management by authorizing bow hunting regulated strictly by city ordinance. Chesterfield's management program was implemented in 2005 and with five full seasons of experience, they have averaged 31 deer killed on an average of 10 properties. Over the five-year period, bow hunters have killed 154 deer.

Clarkson Valley began their bow hunting program in 2004. After seven seasons, Clarkson Valley has averaged 60 deer killed annually on 32 different properties. Since the inception of their program they have reduced the herd by 421 deer, with 93 percent of those being doe.

Neither Clarkson Valley nor Chesterfield has conducted population estimates to track the effectiveness of their management program at reducing or maintaining an ideal population level.

	Annual Avg Deer killed	Annual Avg Properties	Total killed	Doe
Clarkson Valley (7 seasons)	60	32	421	93%
Chesterfield (5 seasons)	31	10	154	85%
Combined	48	23	575	91%

When asked about problems or complaints associated with their bow hunting program, the city clerk for Clarkson Valley stated, "None at all." When asked if she ever received complaints due to injured deer running onto the property of another resident she stated "no." Similar responses were given by the administrator of the program for the city of Chesterfield.

Potential conflicts are minimized in these two municipalities due to the training certification requirement of all bow hunters and signed agreements with adjacent landowners prior to the commencement of hunting activities.

Both municipalities have a one acre minimum requirement which can be achieved by joining contiguous properties.

NOTE: Bow hunting can "train" the deer to avoid human contact and can lessen the effectiveness of sharpshooting in the surrounding areas. Therefore, it is recommended that bow hunting be minimized in those areas where sharpshooting will take place.

Combining White Buffalo and Bow hunting

This section summarizes combining professional sharpshooters with bow hunting. A professional sharpshooting/wildlife management company would be contracted to achieve the initial population reduction; and bow hunting could be authorized to maintain the population at the target goal level from that point forward.

Annual limits should be established and areas designated for the number of deer killed by bow hunters based on population estimates and trends.

Utilizing this combined method, the cost estimates are as follows:

Time to achieve population goal:	2 years / 350 deer
Cost to achieve population goal:	\$161,500 (White Buffalo)
Annual cost to maintain goal:	\$0 / 20 deer (bow hunting)
10-year projected cost:	\$161,500 / 510 deer killed

Surgical Sterilization

Time to achieve population goal:	Goal attainment improbable
10-year projected cost:	\$650,000 / 500 doe sterilized

Summary

According to population estimates by MDC, it is improbable that surgical sterilization as a single strategy could achieve the population goal of 30 deer/mi². White Buffalo's current cost estimate per sterilized doe is \$1,300 for 50 or more deer. Based on this cost and the assumption that 50 doe could be sterilized

annually for the next ten years, the population would be reduced to 41 deer per square mile by 2020 at a cost of \$650,000.

With sterilization as the sole method of deer management the number of deer in Town and Country would continue to increase to a high of 74 deer / mi² by 2015 before the effects of sterilization result in steady declines for the next six years.

Major variables involved with surgical sterilization include:

- (1) the difficulty of capturing fertile doe as the sterilized population increases
- (2) the increased costs associated with the difficulty in locating unsterilized doe
- (3) ongoing MDC approval
- (4) immigration and emigration patterns of deer when a significant percentage of the population is sterilized

Background

As previously stated, the West St. Louis County Deer Task Force Final Report concluded: 'Lethal management actions are currently the only methods available to reduce the deer population. Non-lethal methods focus on damage abatement and do not function to reduce the number of deer' (p.39).

Non-lethal methods may slow the growth of the herd in the area surrounding Town and Country, 'but significant reduction in deer numbers would take a long time and require sterilization of an unattainable number/ proportion of the female population' (Erin Shank, MDC).

Based on the assumption that immigration patterns will not be impacted by a high percentage of sterilized doe, the primary reduction method of the current herd by non-lethal methods will be by natural and accidental death.

Currently surgical sterilization is the only non-lethal method of deer management approved by the Missouri Department of Conservation. It is also the most effective non-lethal method, sterilizing doe with one administration; also making it the most cost effective non-lethal method when compared to immunocontraceptive drugs.

The most effective period to engage in mobile darting for surgical sterilizations is early Fall (September) before acorns drop.

GonaCon immunocontraceptive vaccine

GonaCon is often mentioned as an alternative non-lethal measure for deer management. However, GonaCon has limited effectiveness in limiting conception and it is expensive when compared to surgical sterilizations, especially for free-ranging deer.

Wildlife Services of the U.S. Department of Agriculture reported that a single administration of the drug in field studies of free-ranging deer 'prevented

pregnancy in 67-88 [68] percent of the deer in the first year and in 47-48 percent the second year' (USDA). A second booster increases the effectiveness to about 90% but diminishes after three to four years (DeNicola).

The limitation of GonaCon, according to the USDA, is that the drug must be administered by hand into the muscle or tissue of the animal, requiring the capture of each doe through drop-nets or a tranquilizing dart. To administer the booster the same doe would have to be located and re-captured, significantly increasing the cost of the use this method on free-ranging deer in Town and Country.

The USDA cautions that if employed, 'contraception alone cannot reduce overabundant deer populations to healthy levels. GonaCon is a tool to be used in conjunction with other wildlife management methods' (USDA, 2010).

A report by the Northeast Deer Technical Committee⁷ concluded:

Ongoing studies are examining the effectiveness and practicality of administering GonaCon™ to free-ranging white-tailed deer. Preliminary results using free-ranging deer have provided poor results...fertility control [including GonaCon and PZP] in deer is a rapidly advancing technology that continues to require additional research. Fertility control may have value for use on small insular deer populations under carefully regulated conditions, but will not provide an alternative to hunting for the control of free-ranging herds. Although effective fertility control agents have been identified, their use on large free-ranging herds would be impractical and ineffective. Because fertility control has no short-term effect on population size, pre or post treatment culling will be an essential part of the timely resolution of deer problems with fertility control agents (p.18).

Combining White Buffalo and Surgical Sterilization

Once professional sharpshooters achieve the initial population goal of approximately 30 deer / mi², the population could be maintained by either sharpshooting 20 deer or by sterilizing 10 doe annually (MDC). It should also be noted that with these population estimates, MDC also included 15 surgical sterilizations to accompany the 2013 sharpshooting activities.

The ability to locate, identify and sterilize ten doe per year for maintenance is unknown given the growing percentage of the sterilized population. Dr. Tony DeNicola stated that surgical sterilizations in Mason Valley given the more dense population of deer would be possible yet would cost a minimum of \$2,000 per doe due to the difficulty in locating unsterilized doe. He cautioned that

⁷ "An Evaluation of Deer Management Options", a publication collectively developed by the New England Chapter of The Wildlife Society and the Northeast Deer Technical Committee. The Northeast Wildlife Administrators Association (composed of the Northeastern United States and eastern Canada state and provincial wildlife agency heads) encouraged, examined and approved this publication.

“maintaining the reduced density throughout town would be nearly impossible” (email 6/27/2011: 7:36 pm).

Therefore, if surgical sterilizations were to be employed as a maintenance strategy, it is likely that sharpshooting or other lethal method(s) would have to be employed periodically as an alternative strategy to keep the population at an acceptable level.

The cost estimates and target goals are as follows:

<u>Year(s)</u>	<u>Method</u>	<u>Cost</u>	<u>Deer</u>
2012	Sharpshooting	\$127,000	300
2013	Sharpshooting	\$34,500	50
2013	Sterilizations	\$30,000	15

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2014-21	Sterilization	\$20,000 ⁸ (annual)	80 doe (10 per year)
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10-year projected cost: \$351,500

	Time to reach goal / 10-year projections	Cost	# deer / (annual)
White Buffalo	2 years	\$161,500	350
	10 years	\$297,500	(20)
W.B. & Sterilization	2 years	\$161,500	350 / 15 sterilized
	10-year	\$351,500	(10)
W.B. & Police	2 years	\$198,500	350
	10-year	\$268,020	510 (20)
W.B. & Bow	2 years	\$161,500	350
	10-year	\$161,500	510 (20)

⁸ Dr. Tony DeNicola stated that surgical sterilizations in more densely populated areas would be possible yet would cost a minimum of \$2,000 per doe due to the difficulty in locating unsterilized doe. He cautioned that “maintaining the reduced density throughout town would be nearly impossible” (email 6/27/2011: 7:36 pm).

IV. CONCLUSION

Problems associated with excessive deer populations in the urban environment are not unique to Town and Country and other West St. Louis County communities. The rationale for local government involvement in deer management is clearly evident due to the adverse impact to the environment, property owners, and the increasing number of vehicle crashes nationwide.

A number of local governments, state conservation departments, federal agencies and private organizations have extensive experience in best practices related to reducing the overpopulation of deer to reasonable levels that existed prior to the elimination of the natural predators.

Achieving the Goal

The primary method that will provide the quickest and most effective relief to the ongoing problems associated with an excessive number of deer is sharpshooting through a professional organization or agency. Therefore it is recommended that the City of Town and Country enter into an agreement with such an organization to cull the herd to the recommended goal of 30 deer / mi², which could possibly be accomplished over a two-year period, with the first operation scheduled for January-February of 2012.

Maintaining the Goal

A number of viable options exist in maintaining the deer herd once an appropriate population level is attained. Notwithstanding the information provided on each method in the main body of this report, potential strategies available to the City include ongoing sharpshooting, regulated bow hunting and surgical sterilization; or a combination of these methods.

Like any evidence-based practice, a key element is considering the best of available research and practice related to a specific problem and tailoring a solution that is consistent with the unique characteristics of an organization or community. The latter consideration is outside of the scope of this author and rests with the elected representatives of the people.

Follow up activities

Once the initial goal of 30 deer / mi² is reached, it is recommended that the City contract with an organization or individual to conduct a residential survey. The purposes of the survey would include:

- the degree of satisfaction with the level of wildlife, and
- identification of remaining problem areas where the deer population could be concentrated.

In addition to the survey, the police department currently analyzes deer / vehicle trends on a regular basis. This factor will be closely monitored for the effect of crash reduction related to the initial goal of 30 deer / mi².

The Missouri Department of Conservation recommends that at least three distance-sampling studies should be conducted annually to increase the accuracy of deer population estimates. After the initial training, city staff accompanied by MDC would conduct the studies to estimate the total population as well as concentration of deer where management activities should be directed.

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