



SHAKER HEIGHTS

REPORT OF THE DEER TASK FORCE
December 2015

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I. Introduction

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) residential. More than 7% of the land use is open space and parklands, including the Shaker Heights Country Club; the Van Aken Boulevard and Shaker Boulevard medians, on which the GCRTA rapid transit operates; and the Shaker parklands which include Lower Lake, Horseshoe Lake and Park, Green Lake, and Marshall Lake. The City, with its wooded parklands, beautiful residential gardens, and lakes and streams, has created an excellent habitat in which the deer population is flourishing. As the deer population grows, so does deer-human interaction, along with the pleas of our residents to address growth in numbers of deer and reduce the negative impacts of deer in our community.

This report will provide background on the deer population in our region and a description of the behavior of deer; a description of the current deer problem in Shaker Heights; methods of deer management; and recommendations to the Mayor and Council on how to address the problem. Sources used to inform the work of the task force include:

- Cornell Cooperative Extension's publication: *Managing White-Tailed Deer in Suburban Environments: A Technical Guide*
http://wildlifecontrol.info/pubs/Documents/Deer/Deer_management_mechs.pdf
- Lake Erie Allegheny Partnership for Biodiversity (LEAP) *Position Statement on White-Tailed Deer Management* http://www.leapbio.org/content/white-tailed-deer/White-tailed_Deer_Position_Statement.pdf
- Rick Tyler, Retired Natural Resources Manager, Cleveland Metroparks
- Nick Mikash, Natural Resource Specialist, City of Mentor, Ohio
- Survey responses submitted by Shaker Heights residents
- Shaker Heights Police Department deer incident reports and calls for service
- Shaker Heights Public Works Department deer reports and calls for service

Respectfully submitted by the Deer Task Force:

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December 2015

OVER THE HEDGE

by Michael Fry & T Lewis

Fri, Aug 28



II. Background of Deer in our Region and General Description and Behavior of Deer

The white-tailed deer populations within our region share a similar history to other deer populations across North America. White-tailed deer were nearly eliminated from the region in the late 19th and early 20th centuries, at which time conservation measures were enacted to establish sustainable populations. White-tailed deer populations have recovered from historic lows, and today, with few remaining predators, high reproductive rates and survivorship, local ordinances which prohibit hunting, adaptive food habits, supplemental feeding, and low disease-related mortality, the frequency of deer-human interactions has increased in many areas.

White-tailed deer have excellent senses and physical abilities. They monitor their surroundings and locate potential danger using a combination of smell, hearing, and sight. Deer have evolved as a prey species and can detect and avoid many potential threats. When threatened, deer can attain speeds of 36 miles per hour and easily jump an eight-foot obstacle.

White-tailed deer are extremely adaptable, both in habitat and diet selection. Deer are an edge species, faring well in transitional areas between forests, agriculture, grasslands, and even suburban landscapes.

Suburban areas provide high-quality, high calorie, and easily accessible foods in the form of gardens, ornamental plantings, and fertilized lawns, while nearby woodlands offer daytime refuge. Plant species richness is higher in residential areas than in wooded habitats. Suburban areas are free of hunting and natural predation.

Mating behavior occurs primarily from mid-October through December in most of the white-tailed deer range. Female white-tailed deer generally breed for the first time when they are yearlings (14 to 18 months in age). In areas with good forage, six-month-old fawns may breed, but older females will produce more offspring. Yearling does typically produce one fawn, whereas adults (2.5 years in age or older) commonly produce twins or sometimes triplets, when conditions are favorable, such as those found in suburban areas. Deer have a high reproductive potential and populations can increase quickly.

Fawns are born mid-May through July and spend the first few weeks of their life hiding. They begin to follow their mothers within a few weeks.

Deer become very familiar with their home range, which enhances survival, and consequently, they seldom leave it. If forced from their home range, they usually return within a few days.

The negative impacts associated with an overabundance of or excessive browsing by deer are well-documented:

- A deer population that is out of balance with its native ecosystem has detrimental impacts by directly and indirectly affecting native plant and wildlife populations, habitat quality, and ecosystem processes.

- When deer become overabundant, they cause a decline in biodiversity (the number and variety of species of living organisms) in natural areas and reduce the ability of native plants to survive and reproduce. Deer browsing reduces the height, vigor and reproduction of plants through the repeated removal of stems, leaves, and flowering parts of plants. If left uncontrolled, the deer population impacts the health of our wooded areas by browsing trees on public and private land.
- Deer browsing negatively impacts wildlife that needs woodland understory for forage, nesting, and cover. Deer browsing can, for instance, significantly reduce vegetation that birds use for foraging, escaping predators, and nesting.
- Deer browsing and antler rubbing can cause damage to landscape and garden vegetation.
- An overabundant deer population causes a reduction in the availability of forage, which leads to the decline in the health of individual animals.
- Overabundant deer populations hasten the spread of disease that impact deer (e.g., chronic wasting disease) and humans (e.g., Lyme disease).

III. Description of Deer Problem in Shaker Heights

Reports of deer in Shaker prompted City Council to have a public work session on the issue in March 2010, at which time the City Animal Warden believed, based on his knowledge of deer in Shaker, it would be some years before the deer population would become significant. However, based on the increasing number of complaints about deer aggression and damage to gardens, Council held another work session in October 2012.

Table 1 shows the total reports of deer incidents and observations have almost doubled since 2010. (These incidents and observations do not include the results of the resident survey described later in this report.) The Department of Public Works receives reports of dead deer found on the ground (usually the result of deer fights; attempting to jump over fences; or otherwise injured) and deer lingering or living in yards. The Police Department reports on numbers of deer/vehicle accidents; and injured and dying deer which have been dispatched (humanely put down). Police also receive calls regarding the observation of deer, usually from residents concerned that deer are preventing them from access to their driveways or yards, or on the street.

Table 1 – Resident Calls Concerning Deer Since 2010

Public Works	2010	2011	2012	2013	2014	2015 (thru Sept.)
Dead Deer	12	16	20	25	25	24
Deer in Yard	16	19	33	35	29	36
Subtotal	28	35	53	60	54	60

Police	2010	2011	2012	2013	2014	2015 (thru Sept.)
Deer/Vehicle Accidents	5	3	6	2	6	4
Injured Deer Dispatched	3	1	4	0	4	5
Deer Observed	<u>25</u>	<u>19</u>	<u>26</u>	<u>31</u>	<u>43</u>	<u>32</u>
Subtotal	<u>33</u>	<u>23</u>	<u>36</u>	<u>33</u>	<u>53</u>	<u>41</u>
TOTALS	61	58	89	93	107	101

Staff at the Nature Center at Shaker Lakes report the deer have had significant negative impacts on the health of the forest at the Nature Center and throughout the Shaker Parklands. A healthy, diverse forest has an understory full of native shrubs. A forest with too many deer does not have this important layer. Most of the parklands forest lacks this important shrub layer. Shrubs that do exist are non-native invasive plants that deer do not eat. These types of plants also decrease the diversity in our Parklands.

In an attempt to initiate a collaboration with neighboring cities which are also experiencing an increase in deer and deer incidents, Shaker Heights Mayor Earl Leiken convened a group of east side suburban mayors in February and July 2013. These meetings resulted in the formation of the Eastside Wildlife Management Partnership (EWMP), comprising the cities of Beachwood, Cleveland Heights, Lyndhurst, Mayfield Heights, Pepper Pike, Shaker Heights, South Euclid, and University Heights. The EWMP hired Davis Aviation in December 2014 to perform an aerial infrared survey of the 26,837 acres within the boundaries of its eight cities. Aerial infrared imaging utilizes low flying aircraft fitted with a high-resolution thermal imager. Aerial infrared studies are currently considered an accurate way to estimate deer populations.

The counts for Shaker Heights revealed a density of 10 deer per square mile. Deer begin to adversely affect their natural surroundings at 10-20 deer per square mile. Of the eight cities in the EWMP, Pepper Pike had 39 deer per square mile. Beachwood had 35 deer per square mile, and the other five cities had a deer density of between 8-15 per square mile. Pepper Pike has since initiated a culling program.

Mayor Leiken appointed Shaker's Deer Task Force in May 2015. The task force heard presentations from Mr. Rick Tyler, Cleveland Metroparks Retired Natural Resources Manager; and Nick Mikash, City of Mentor Natural Resource Specialist, who each have experience managing deer culling programs.

Shaker's Deer Task Force created a resident survey to collect information reported by residents about deer damage and incidents with deer. As of December 1, 2015, 350 responses were received.

Of particular significance are the responses to questions about the number of deer in Shaker; the level of concern about deer in neighborhoods, and residents' comfort level with deer. Chart 1 below shows that over 73% of the respondents report that the number of deer in their neighborhoods is increasing.

Chart 1

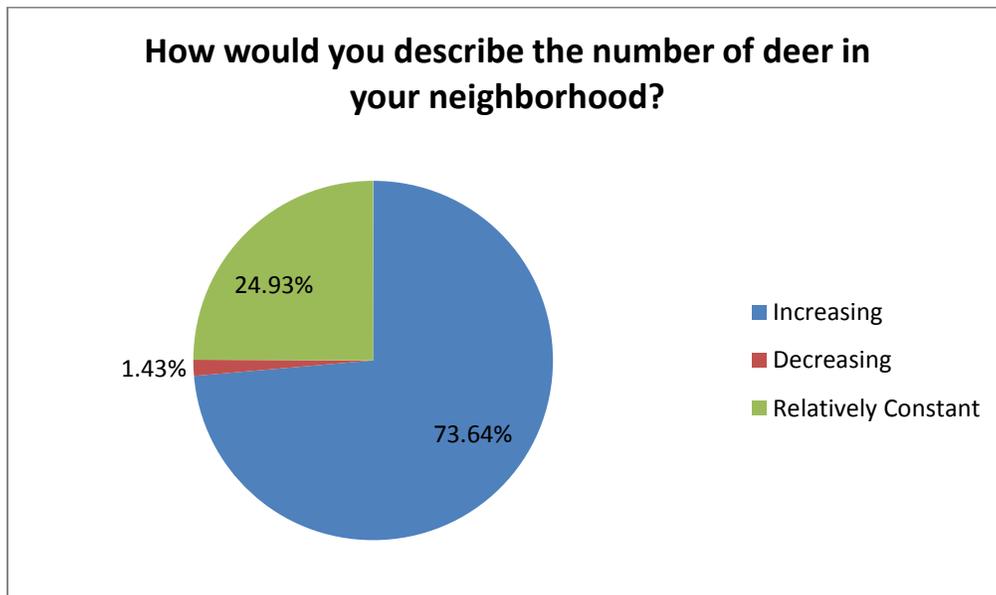


Chart 2 shows that over 73% of the respondents feel that the deer population is of moderate or substantial concern.

Chart 2

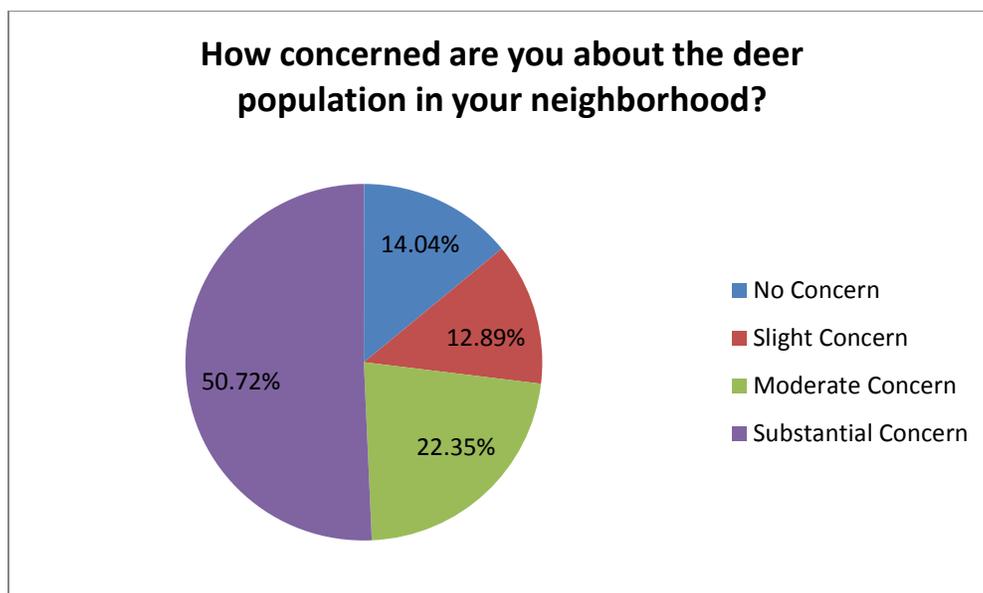


Chart 3 shows that over 75% of those who completed the survey would like to see a moderate to substantial decrease in deer in Shaker Heights.

Chart 3

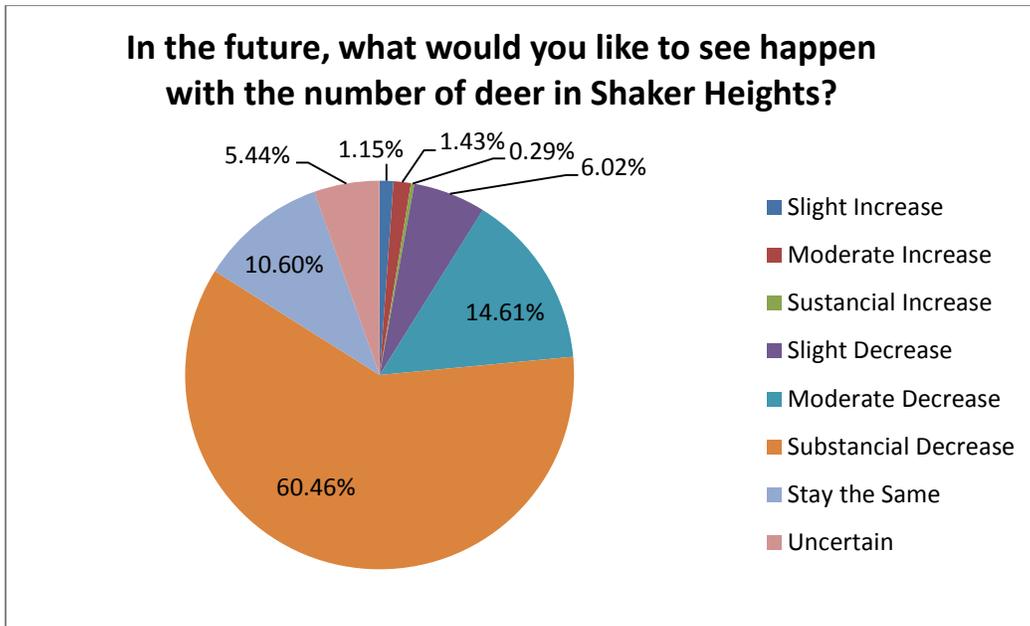
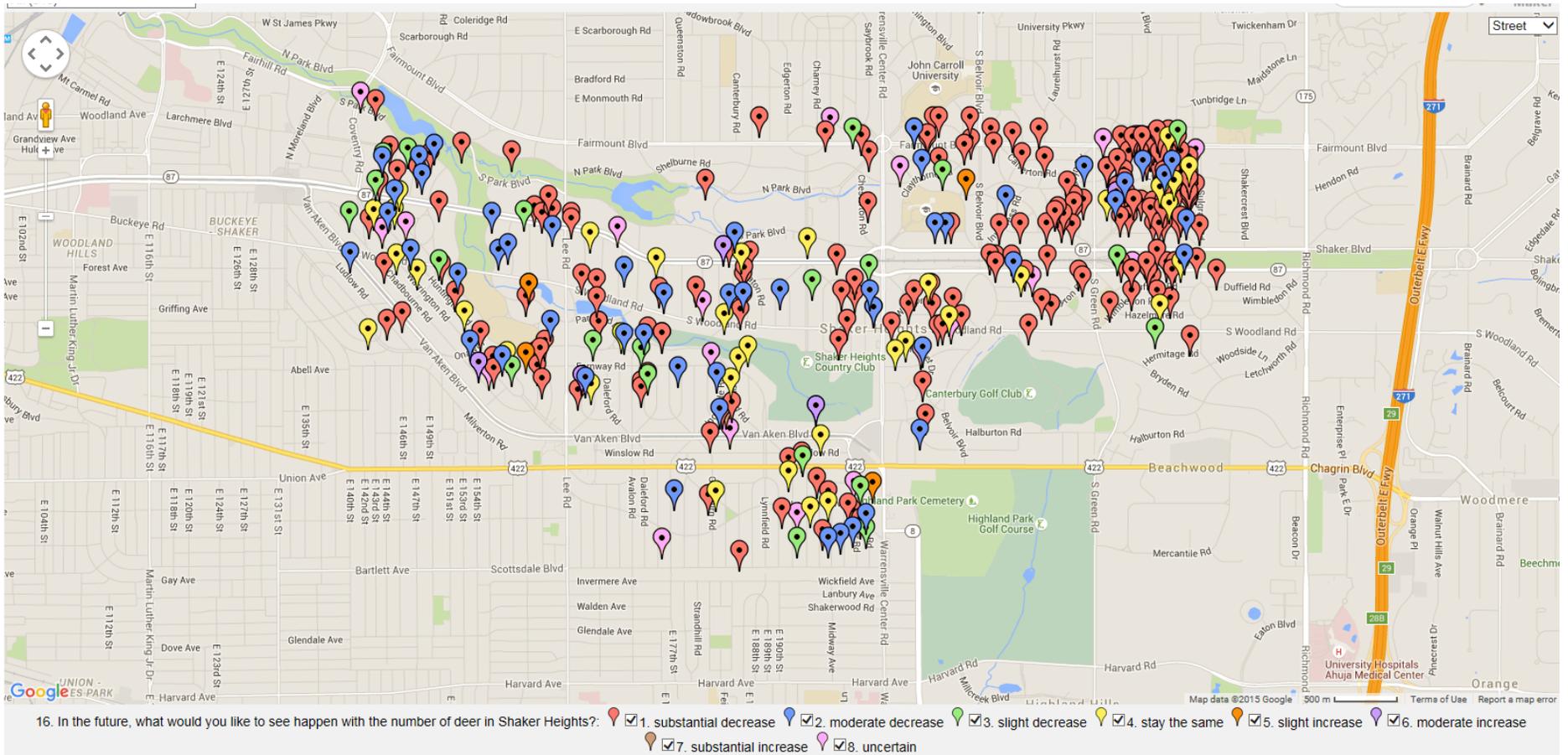


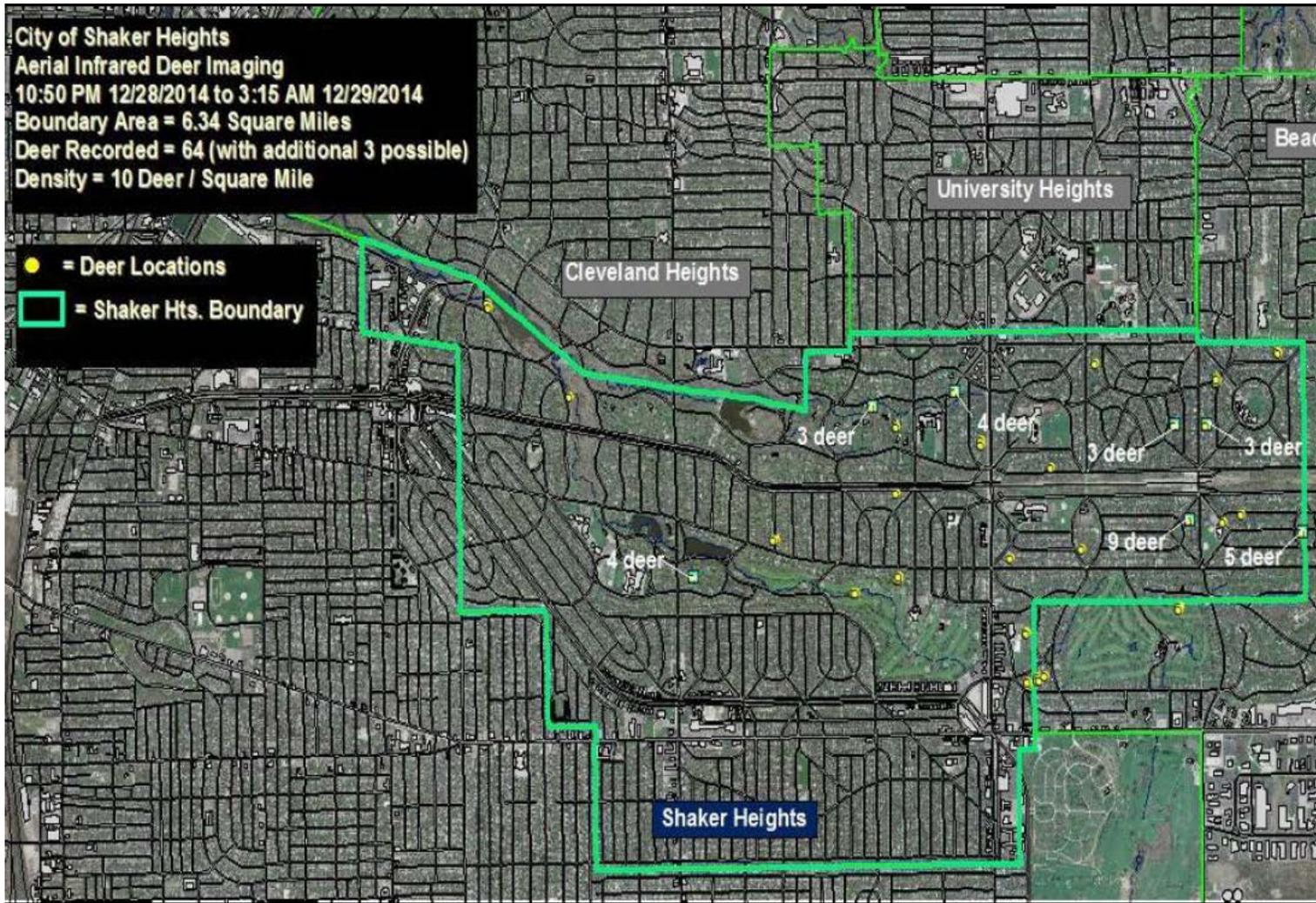
Chart 4 shows that many respondents who want to see a decrease in the number of deer live in the northeast area of the City – east of Warrensville Center Road and north of South Woodland.

Chart 4



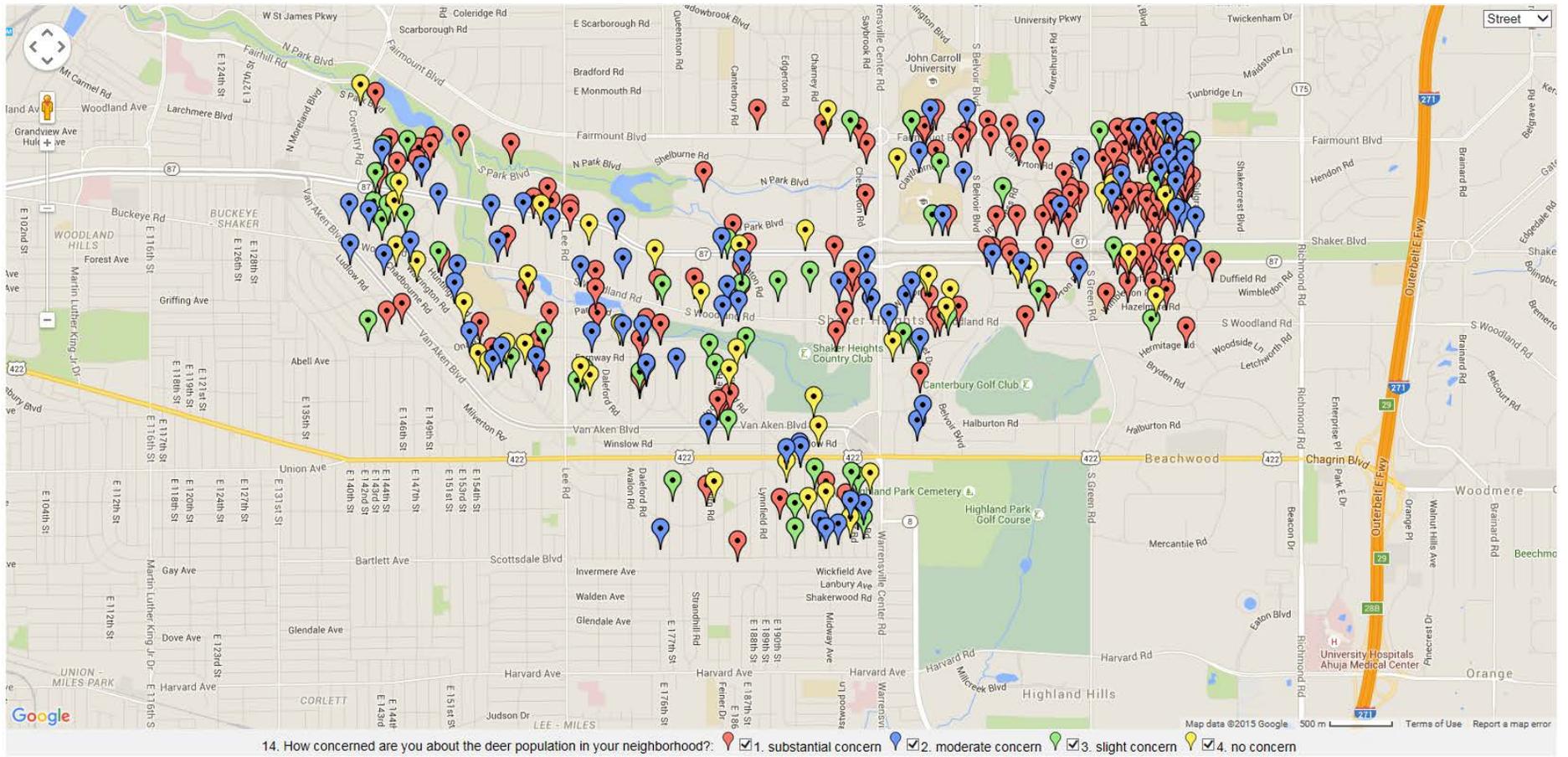
On Chart 5 the aerial infrared deer survey performed by Davis Aviation counted 10 deer per square mile in Shaker Heights, and we can see from the survey's images that most of the deer counted in this survey were in this northeast portion of the City.

Chart 5



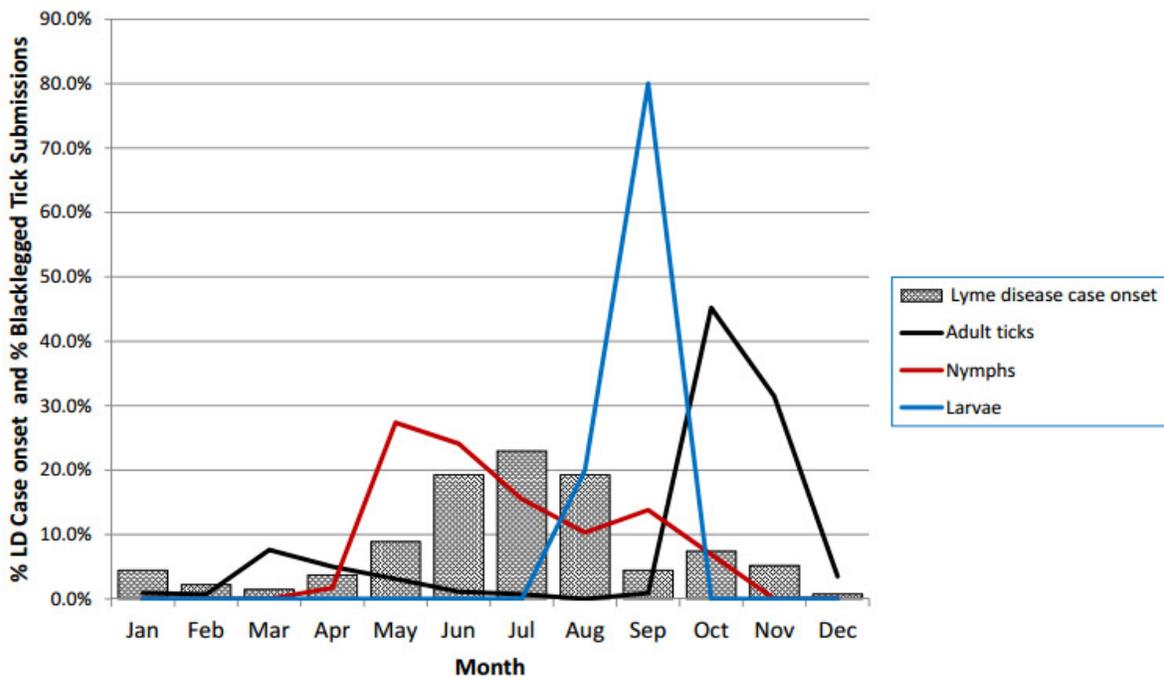
Other areas where deer were reported include along the parklands including Lower Lake, the Shaker Boulevard median particularly east of S. Belvoir Road, and around the Shaker Heights Country Club. Chart 6 below illustrates residents' concerns about deer in those areas.

Chart 6



Issues raised by respondents to the deer survey, particularly by those living in the northeast area of the City, include plant damage; aggression towards pets and humans, especially children; deer pellets in yards making lawns unusable; and deer crowding on streets. Concerns of Lyme disease and ticks have been raised. Shaker Heights Health Department Director Dr. Scott Frank reports that Lyme disease has come to Ohio and is most common between May and August. He reports that it's been several years since there has been a confirmed case of Lyme disease contracted in Cuyahoga County and no confirmed cases in Shaker Heights (though not all Lyme disease is diagnosed). The increasing deer population in Shaker Heights represents little Lyme disease threat to most Shaker residents. While deer are a reproductive host for the black legged tick, rodents (primarily the white-footed mouse) are the primary carriers of Lyme disease. Studies in urban and suburban areas do not demonstrate that decreasing the deer population decreases the occurrence of Lyme disease.

Fortunately, ticks do not thrive in mowed lawns or short grass, so risk of ticks in yards in Shaker Heights is low. Recommendations to create a “tick safe” yard are available here http://www.cdc.gov/lyme/prev/in_the_yard.html. The greatest risk of tick exposure in Shaker would come from small wooded areas, tall grass or weeds, bushes, or leaf debris. If you, your pets, or your children are exposed to these areas, it important to check for ticks carefully. Ticks like moist areas and places where there are creases in the body, such as the groin, underarms, and back of the knees. Because it usually takes a day or two of the tick being attached to transmit Lyme disease, it is important to identify bites as soon as possible. Unfortunately, there is no way to kill black legged ticks in the environment, so they are here to stay. Protecting yourself from the ticks is the best way to avoid any consequences from this new, uninvited, unfriendly neighbor.



<http://www.odh.ohio.gov/lyme>

Although residents chose whether to respond to the survey, the results of the Task Force Deer Survey reflect that residents who reside in the northeast area of the City – east of Warrensville Center Road and north of South Woodland, are concerned about the deer population in their neighborhood, and would like to see a decrease in deer.

IV. Deer Management Options

No single deer management technique or strategy is universally acceptable or appropriate. The complexity of deer issues and limitations of available techniques requires an integrated program. Short-term strategies may relieve immediate problems while long-term approaches will maintain deer populations at acceptable levels.

Non-Lethal Alternatives

- **Habitat Modification** – Deer adapt well to nearly all human-modified environments, except for highly urbanized locations.
- **Unpalatable Landscape Plantings** – Deer are selective feeders; they forage on plants or plant parts with considerable discrimination. Their obvious preference for and apparent avoidance of certain plants can be an advantage. Costly browsing damage may be reduced or eliminated by planting less-preferred species or by establishing susceptible plants only in areas protected from deer. Under most circumstances, landscaping based on knowledge of deer feeding preferences can provide an alternative to the use of expensive chemical repellents and physical barriers. Whether a particular plant species will be eaten by deer depends on the deer's previous experience, nutritional needs, plant palatability, seasonal factors, weather conditions, and the availability of alternative foods. Herd density is an extremely important factor in whether a particular plant species will be eaten. Basically, when enough deer are present, they will eat almost anything.

Deer-browsing resistance of any plant species may change due to fluctuation in deer populations, alternative food availability, and environmental factors. No plant species will be avoided by deer under all conditions.

See Appendix A for a list of unpalatable landscape plantings.

- **Repellents** – Repellents work by reducing the attractiveness and palatability of treated plants to a level lower than other available forage. There are two classifications of repellents, including odor-based and taste-based. Odor-based repellents are generally more advantageous as animals realize plants are treated prior to having to sample and taste a plant which causes damage. Commercial repellents do not perform equally, and research has indicated that odor-based products often out-perform taste-based solutions. The effectiveness of repellents depends on several factors. Rainfall will dissipate some repellents, requiring reapplication. Some repellents do not weather well even in the absence of rainfall. Deer are also likely to ignore either taste or odor repellents in times of food scarcity.

Samples of repellents can be found in Appendix B

Non-Traditional Techniques

- **Reproductive Agents** – Reproductive agents for wildlife are not commercially available. They are currently classified as experimental and are produced by research facilities. Research trials are ongoing, but this option is not viable. Also, the free-ranging nature of deer makes it difficult to deliver contraceptives to them. **The Ohio Department of Natural Resources (ODNR), Division of Wildlife, will not authorize this technique.**
- **Relocation** – This technique requires the use of traps and /or remote chemical immobilization techniques. This method has been demonstrated to be impractical, stressful to the deer, and may result in a high post-release mortality rate of up to 85%. These programs also require release sites that are capable of receiving deer. **The Ohio Department of Natural Resources, Division of Wildlife, will not authorize this technique.**

Lethal Alternatives

The Ohio Department of Natural Resources, Division of Wildlife, will process deer damage control permits to applicants experiencing a high rate of deer/vehicle accidents resulting in significant safety issues, but deer/vehicle accidents have been minimal in Shaker Heights, mainly due to our low speed limits. Permits may also be granted to reduce numbers based on property damage to landscapes, ornamental shrubbery, gardens, trees, and wooded areas.

- **Trap and Euthanasia** – Capture with box traps, Clover traps, drop nets, or rocket nets followed by euthanasia. Deer are greatly stressed during the restraint phase of any capturing process. A deer caught in such a trap remains in the trap until animal control personnel arrive to euthanize the deer.
- **Sharpshooting** – This method employs trained, experienced personnel to lethally remove deer through sharpshooting. Human safety concerns are often associated with the discharge of firearms in suburban landscapes. Using baits to attract deer to designated areas prior to removal is quite common. Archery equipment has been used to remove deer in suburban areas when firearms discharge is not permitted.

In an urban setting like Shaker Heights, sharpshooting with firearms or archery equipment must use techniques that maximize safety, humaneness, discretion, and efficiency. The use of trained personnel to remove deer has been successful in other neighboring cities, including Pepper Pike, Mentor, Solon, and in the Cleveland Metroparks. Costs of this solution vary depending on the use of outside contractors (U.S. Department of Agriculture), individual hunters, or officers of the Shaker Heights Police Department.

V. Conclusions and Recommendations

Deer-related concerns have increased significantly in Shaker Heights. The negative impact of deer is growing; residents cannot enjoy their gardens and yards; they are fearful of aggressive deer; and they are concerned for the safety of their children and pets. Non-lethal methods, such as deer repellents and unpalatable gardens, have little to no impact on reducing deer damage. While the aerial infrared deer survey counted 10 deer per square mile, the density of deer in certain areas of the City is greater.

As the extent of these concerns grow, this Task Force has the following recommendations for addressing residents' safety, health, and economic concerns caused by white-tailed deer.

- **Public information and education:** The City should publicize the information available on its website, shakeronline.com, to include links to information available in this report, including the list of Unpalatable Landscape Plantings and Samples of Deer Repellents. The City should also facilitate the wide distribution of this report to its residents via the Mayor's E-News, Facebook, other social media postings, and other methods offered by the City's Communications & Marketing Department.
- **Continued data collection:** Continue to make the Deer Survey and Deer Reporting Form available on the website to collect up-to-date data on the impact and location of deer in the City. The City should also monitor the outcomes of other cities' deer management programs, and continue to work with the Eastside Wildlife Management Partnership to identify possible collaborations on deer management with neighboring cities.
- **Deer reduction strategy (culling):** Based on the data collected which identifies the number and location of deer, the City should work with the Ohio Department of Natural Resources, Division of Wildlife, to develop and implement a sharpshooting program on certain public lands. The details of such a program, including cost, locations, methods, and desired outcomes, should be presented to City Council for their approval for implementation beginning winter 2017.

Appendix A

List of Unpalatable Landscape Plantings

Plants Rarely Damaged

Barberry	Common Barberry	Paper Birch
Common Boxwood	Russian Olive	American Holly
Drooping Leucothoe	Colorado Blue Spruce	

Plants Seldom Damaged

European White Birch	American Bittersweet	Red Osier Dogwood
Flowering Dogwood	Kousa Dogwood	English Hawthorn
Redvein Enkianthus	European Beech	Forsythia
Honey Locust	Chinese Holly Chinese	Inkberry
Chinese Junipers – green	Junipers – blue Norway	Mountain Laurel
Beautybush	Spruce	White Spruce
Austrian Pine	Pitch Pine	Mugo Pine
Red Pine	Scots Pine	Japanese Flowering Cherry
Corkscrew Willow	Common Sassafras	Common Lilac
Japanese Wisteria		

Plants Moderately Damaged

White Fir	Paperback Maple	Red Maple
Silver Maple	Sugar Maple	Common Horse Chestnut
Trumpet Creeper	Downy / Allegheny Serviceberry	Japanese Flowering Quince
Panicled Dogwood	Smokebush	Cotoneaster
Cranberry Cotoneaster	Old-fashioned Weigela	Rockspray Cotoneaster
Japanese Cedar	Border Forsythia	Common Witchhazel
Rose of Sharon	Smooth Hydrangea	Climbing Hydrangea
Panicle Hydrangea	Japanese Holly	China Girl / Boy Holly
Easter Red Cedar	European Larch	Goldflame Honeysuckle
Privet	Saucer Magnolia	Dawn Redwood
Virginia Creeper	Sweet Mock Orange	Eastern White Pine
Bush Cinquefoil	Sweet Cherry	Douglas Fir
Firhorn	Bradford Callery Pear	Common Pear
White Oak	Chestnut Oak	Northern Red Oak
Deciduous Azaleas	Carolina Rhododendron	Rosebay Rhododendron
Staghorn Sumac	Multiflora Rose	Rugosa Rose
Willows	Anthony Waterer Spiraea	Bridalwreath Spiraea
Persian Lilac	Japanese Tree Lilac	Late Lilac
Basswood	Greenspire Littleleaf Linden	Eastern Hemlock
Carolina Hemlock	Judd Viburnum	Leatherleaf Viburnum
Doublefile Viburnum	Korean Spice Viburnum	

Plants Frequently Damaged

Balsam Fir	Fraser Fir	Norway Maple
Eastern Redbud	Atlantic White Cedar	Clematis
Cornelian Dogwood	Winged Euonymus	Wintercreeper
English Ivy	Apples	Cherries
Plums	Rhododendrons	Evergreen Azaleas
Catawba Rhododendron	Pinxterbloom Azalea	Hybrid Tea Rose
European Mountain Ash	Yews	English Yew
Western Yew	Japanese Yew	English/Japanese Hybrid Yew
American Arborvitae		

Appendix B

List of Repellents

Deer-Away® - This contact repellent is both an odor- and taste-based repellent. Studies have shown it to be 85% to 100% effective.

Hinder® - This area repellent is one of the few registered for use on edible crops. It is applied directly to vegetable and field crops as well as ornamentals and fruit trees. Its effectiveness is usually limited to two or four weeks.

Thiram – This repellent is a fungicide that acts as a contact deer repellent. It is most often used on dormant trees and shrubs. Thiram products are most effective when used with Vapor Gard®, which increases adhesion.

Miller® Hot Sauce – This contact repellent is suggested for use on ornamentals, Christmas trees, and fruit trees. Care must be taken when applied to fruit trees or vegetables.

Tankage – This repellent is a slaughterhouse by-product traditionally used as a safe repellent in orchards. It repels deer and anything else by smell. Various forms of animal urine (fox, mountain lion, wolf, or any other predator type) are also effective and safe.

Ro-pel® - This taste-based repellent repels deer with an extremely bitter taste. Ro-pel® requires only a once a year application. It is not recommended for use on edible crops.

Hair Bags – Human hair is an odor repellent that costs very little but has not consistently repelled deer. Human hair is collected, placed in mesh bags and hung from shrubs and tree branches.

Bar Soap – Recent studies and numerous testimonials have shown that ordinary bars of soap applied in the same manner as hair bags can also be effective. One bar can protect a radius of about one yard.

When using any form of repellent, follow all directions indicated on the label. No toxicant is registered for deer control. Poisoning of deer with any product for any reason is illegal. The effectiveness of any product is related to the availability of food sources. Repellents work when applied repeatedly and when varied as deer can become immune to a particular scent. These repellents can be purchased in most home and garden stores or through farming/hunting supply catalogs.