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VILLAGE OF

PINEHURST

Final Report of the Deer Management Taskforce

November 18, 2014

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Executive Summary

The Deer Management Task Force of The Village of Pinehurst, North Carolina was formed by Resolution 2014-45, in response to consistent public concern about the increase in deer/human conflicts in the Village of Pinehurst. The Resolution may be found in Exhibit 1. The Task Force met weekly from September 3 through November 12, 2014, and consisted of nine members of the Pinehurst community, including the police chief, with support from two Village staff members. The list of members and staff will be found in Exhibit 2. The Task Force heard presentations from nine individuals either in person or by conference telephone call. A list of these individuals and the organizations they represent will be found in Exhibit 3.

The Task Force has attempted to understand and find solutions for a number of problems caused by the conflicts within deer and human contact. These problems are now common throughout the United States, and can be organized into four areas: deer tick related diseases; deer colliding with motor vehicles; insurance and legal liability resulting from deer roaming on public and private property; and destruction of vegetation and landscaping on public and private property.

There is no doubt that the deer population has increased in the United States and the state of North Carolina during recent decades. At one point in the not too distant past, deer herds had dramatically lessened, which led to a restocking program in central North Carolina from 1950-1980. This program was quite successful due to a lack of natural predators in our area and a volume of sportsman hunting which did not keep up with the growth of the herd. However, the increase in the deer herds across the United States and in North Carolina has led to investigations by a number of municipalities in response to citizen complaints and fear of disease, accidents, vegetation replacement cost, and liability issues. Members of the Task Force read reports from several of these municipalities including Princeton, New Jersey; Bloomington, Indiana; Buffalo, New York; Columbus, Ohio; and the Texas Parks and Wildlife Department. Information was also gathered from Emerald Isle, Bald Head Island, and Duke Forest in North Carolina. Reference material from the Humane Society of the U. S (HSUS) presenting birth control techniques was also reviewed.

While reading the above mentioned reports was quite useful to the Pinehurst Task Force in framing the interviews and discussion with experts, it became clear that one the areas of differentiation when considering all aspects of deer management is that Pinehurst is a small, mostly developed, residential community without large lots and large private or public park lands (eg. Bald Head Island, Duke Forest, Rock Creek Park in Washington, DC.) This means that recommendations of Village government to control the deer herd will require a great deal of public education and cooperation from private landowners in order to successfully manage the deer population. Comments from residents and observations by a representative of the North Carolina Wildlife Commission confirm that Pinehurst has a pocket of deer in the area which includes Linden Road, Clarendon Gardens, Pinewild, Burning Tree Road. This area may need special attention.

In order to assist the work of the Pinehurst Deer Management Task Force, a seven question survey was developed by members of the Task Force and Village staff. The survey and results will be found in Exhibit 4. To gain as broad a response as possible, the survey was posted on the Village website for 18 days, publicized in The Pilot newspaper and on the Village's social media, and made available in hard copy at Village Hall. The response to the survey was quite robust compared to other surveys conducted by the Village: 1,215 citizens participated in the deer survey compared to approximately 550 for the Village's annual community survey. In brief, 91% indicated they noticed deer in their neighborhoods; 58% did not feel that deer tick borne diseases are a problem in Pinehurst; 52% felt that deer are not a problem on our roadways; 62% felt deer are detrimental to residential landscaping; and 77% supported a recommendation to the Village Council which would include a public education component, common sense steps to take when encountering deer, and the selective culling of the deer herd in the Village of Pinehurst. The comments section of the survey was responded to by 704 persons. A staff review of all comments indicated that 323 comments related to the culling idea: 202 favored selective culling and 121 did not. The independent investigation of the Task Force confirmed the survey results.

Findings and Recommendations

1. The recently adopted prohibition on feeding of wildlife, except wild birds, can be effective in drawing deer away from neighborhoods if enforced. One result should be less damage to landscaping.

2. **Public Health Concerns Related to Deer** (see Section A). Deer, and other animals, are known hosts for ticks and they serve as vectors for the illnesses that they can carry. Deer can play an important role in the life-cycle of ticks as they can carry many more ticks than other animals due to their body size and they are a preferred host of certain tick species. It is also understood that many other animals carry ticks.

Tick-borne illnesses are not found at an epidemic level in Moore County and its surrounding region, however, certain tick-borne illnesses are found on a more common basis than others. Lyme Disease that is contracted in the surrounding region of North Carolina is extremely rare, but Ehrlichiosis and Spotted Fever Group (SFGRs) have been diagnosed more readily in patients within our region. Both Ehrlichiosis and SFGRs are serious illnesses that should be treated promptly to avoid serious complications in patients that contract them.

Reducing the amount of deer within the Village would reduce the number of hosts available for ticks, however it is uncertain whether this would have any impact on the prevalence of tick-borne illnesses in our community. Tick-borne illnesses should not be considered an impetus for reducing the deer herd in the Village of Pinehurst.

The most important thing that residents of the Village of Pinehurst can do as it relates to tick-borne illnesses is to become informed on:

- the conditions for picking up ticks
- how to avoid/reduce the potential tick bites
- the potential illnesses that can be contracted from tick bites
- what people should do if bitten by a tick

3. **Car/Deer accidents** (see Section B). The volume is modest but not insignificant, mostly clustered during fall and winter months. However during the time frame of the Task Force, approximately five accidents have occurred including on Hwy 211 at Pinewild, Hwy 5 at Shaw Road, Memorial Drive, and Diamondhead Drive. Cost per accident can be several hundred to several thousand dollars. Not all deer/car accidents are recorded as such by the Highway Patrol, police departments, and insurance companies. They may just be classified as accidents (not caused by deer) or not reported if the vehicle owner believes the cost of repair will be within the deductible of the insurance policy. Pinehurst Police are now attempting to record accidents when deer are the cause.

Recommendation: place "deer crossing" signs in selected areas on the north and south of Linden Road to warn motorists that deer are in that area. Consider public reminders of accident potential during the year by use of the Village website and press releases.

4. **Landscaping** (see section C). A thorough discussion was held about deer resistant plants and flowers. See Exhibit 5. Commercial products such as Liquid Fence are highly recommended by landscapers, although these products require frequent use and can be expensive to purchase. A program to supply Liquid Fence in at least one large Pinehurst grocery store at reasonable cost is contained in the full report on Landscaping.

Recommendation: the list of deer resistant plants should be posted on the Village website, publicized as widely as possible to residents, landscapers, home builders, garden clubs, etc.

5. **Insurance and liability** (see Section D). The Village of Pinehurst is insured by the North Carolina League of Municipalities. The Liability portion of the policy contains a "Duty to Defend" clause and would respond to any action or law suit arising from the Village's actions with respect to the deer. Such actions include culling or any other NC Wildlife approved attempt to control or manage the deer population. The League encourages the utilization of insured individuals or organizations for deer management. Also, they should provide the Village with an appropriate certificate of insurance. The deer herd is owned by the State of North Carolina for the use and enjoyment of the citizens. Therefore, the Village of Pinehurst has no responsibility, nor liability, for deer movements/actions. Any actions undertaken by the Village to control the deer would mean assuming a liability which currently does not exist.

Loss control services from the North Carolina League stated that as the deer population increases, so does the probability of automobile accidents, tick related illnesses and property damage. Therefore, even though they have not mandated some preventative action by the Village, they suggest it would be prudent to act. In effect, while there is no legal responsibility

for Village action, reasonable care of the village residents and their property should be undertaken.

Recommendation: a loss control inspection by the NC League of Municipalities, which focuses on any deer management being considered, should occur before any action is taken. Such an inspection/risk analysis is a service provided by the League to participating members.

6. **Deer Herd Management** (see section E). The North Carolina Wildlife Commission made two presentations to the Task Force. Copies of the presentations will be found in Exhibits 6 and 7. The Commission biologist toured many of the Pinehurst neighborhoods, and discussed with the Task Force many approaches to deer management all of which are directed to promote the health of the deer herd, protect private and public lands whenever possible, and prevent human/deer conflicts such as vehicle accidents and landscaping damage. Unfortunately, the biologist has pointed out that sterilization, and removal techniques are extremely expensive and not usually successful, while also very stressful on deer being handled for those purposes. This is too bad, because the ability to sterilize or remove deer as management tools is appealing. He has estimated the deer density in the Linden Road area to be at least 15-29 deer per square mile which is at the level where culling of the herd is recommended for biological (ie deer health) as well as social (ie human interaction) objectives. The biologist has estimated that approximately 300 deer inhabit the Village at this time and he has made a preliminary estimate that approximately 100 deer could be appropriately taken from the herd over time to prevent over population. The actual number taken per year would be much less than that if a program is instituted under the guidance of the North Carolina Wildlife Resources Commission. He also points out that deer reproduce rapidly, with mature females averaging 1.7 off spring annually. Therefore, in general, one female will produce ten deer over five years in areas such as ours where there are no natural predators or hunting and culling techniques employed. The Wildlife Commission estimates that the deer population in North Carolina grew from 700,000 to 1,300,000 between 1984 and 2006. In Moore County, 2902 deer were taken in 2013.

Recommendation: A selective culling program is recommended to the Pinehurst Village Council. Such a program should be highly controlled and managed by our Police Department, using a small group of highly trained archery and/or firearms professionals, and after a thorough evaluation of the information contained in Section E and Exhibit 8 of this Report. A culling program must be approved by and managed in conjunction with the North Carolina Wildlife Resources Commission.

Section A

SECTION A
Public Health Issues Related to Deer

1. Introduction to Tick-Borne Illnesses

The main public health concern posed by deer to the residents of the Village of Pinehurst relate to deer as hosts for ticks and as vectors for the illnesses they carry. There are 5 tick-borne illnesses that are of potential concern to local residents: (ranked in order of prevalence in our area from greatest to least) Ehrlichiosis, Rocky Mountain Spotted Fever, STARI, Red Meat Allergy and Lyme Disease.

1a. Ehrlichiosis

- Ehrlichiosis is a general name for several bacterial diseases affecting both people and animals. Two kinds of ehrlichiosis — one caused by *Ehrlichia chaffensis* bacteria and the other, less commonly, by *Ehrlichia ewingii* bacteria — are transmitted to humans through bites of infected **Lone Star ticks** (*Amblyomma americanum*). These ticks are found in the southeastern and south-central United States, including North Carolina.
- Typical symptoms of ehrlichiosis include fever, headache, fatigue and muscle aches. Other signs and symptoms may include nausea, vomiting, diarrhea, cough, joint pains, confusion, and occasionally a rash, particularly in children. Usually, these symptoms occur within one or two weeks following a tick bite. The disease is initially diagnosed based on clinical signs and symptoms and medical history and can later be confirmed for surveillance purposes by using specialized laboratory tests. Ehrlichiosis can be treated with antibiotics such as doxycycline.
- Ehrlichiosis can be a severe or even fatal illness, especially if untreated, and as many as half of all patients require hospitalization.
- Between 2008 and 2012, there were between 3 and 6 confirmed and probable cases of Ehrlichiosis in Moore County. In the same timeframe, there were 387 confirmed and probably cases of Ehrlichiosis in the state of North Carolina.
- However, in 2012 alone, there were between 3 and 6 cases of Ehrlichiosis in Moore County and 112 cases in the state.
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1b. Rocky Mountain Spotted Fever (RMSF) and Other Spotted Fevers (SFGR)

- Rocky Mountain spotted fever (RMSF) is a potentially fatal human illness caused by the bacteria *Rickettsia rickettsii*, which is transmitted to humans by the bite of an infected tick. In the United States, ticks that carry RMSF include the **American dog tick** (*Dermacentor variabilis*), the brown dog tick, and the Rocky Mountain wood tick. In North Carolina, RMSF has been found in American dog ticks, which are common across the state. The lone star tick is also being investigated as a possible carrier of RMSF.
- A second spotted fever-like illness has been found in North Carolina. This illness is caused by the bacteria *Rickettsia parkeri*, which can be transmitted by the Gulf Coast

tick. This tick is often confused with the American dog tick since the two look very similar to the naked eye. Illness caused by *Rickettsia parkeri* is less severe than RMSF and rarely fatal.

- Laboratory tests are not yet available to distinguish between the two rickettsias. Diseases caused by this group of bacteria are referred to as Spotted Fever Group, or Spotted Fever Rickettsiosis (SFGR). SFGR is the most common tick-borne illness reported in North Carolina.
- Typical symptoms of RMSF/SFGR include fever, headache, abdominal pain, vomiting, and muscle pain. A rash may also develop but is often absent in the first few days; some patients never develop a rash. A scab may also develop at the site of the tick bite. Antibiotics are most effective if started before the fifth day of symptoms. The initial diagnosis of SFGR is made based on clinical signs, symptoms and medical history, and can later be confirmed by using specialized laboratory tests. Since RMSF/SFGR can be difficult to diagnose in the early stages, patients with suspected SFGR should be treated immediately in accordance with CDC published guidelines . Without prompt and appropriate treatment, the disease can be fatal.
- Between 2008 and 2012, there were between 26 and 43 confirmed and probable cases of SFGR in Moore County. In that same year, there were 2,044 confirmed and probable cases of SFGR in the state of North Carolina.
- In 2012 alone, there were between 5 and 9 cases of SFGR in Moore County and 78 in the state.
- North Carolina ranks the highest in number of confirmed RMSF cases in the United States.
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1c. Southern Tick-Associated Rash Illness (STARI)

- A rash similar to the rash seen in Lyme disease has been found in people following bites of the lone star tick (*Amblyomma americanum*). The rash may be accompanied by fatigue, fever, headache, muscle and joint pain. This condition has been named southern tick-associated rash illness (STARI). The cause of STARI is unknown. The rash of STARI is a red, expanding "bull's eye" lesion that develops around the site of a **lone star tick** bite. However, unlike Lyme disease, STARI has not been linked to any arthritic, neurological or chronic symptoms. In the cases of STARI studied to date, the rash and accompanying symptoms have resolved promptly following treatment with oral antibiotics.

1d. Red Meat Allergy

- **Lone star tick** bites are likely the cause of thousands of cases of severe red meat allergies that are plaguing patients in Southeastern United States including Tennessee, North Carolina and Virginia and spreading up the Eastern Seaboard along with the deer population. The allergy can cause hives and swelling, as well as broader symptoms of anaphylaxis including vomiting, diarrhea, trouble breathing, and a drop in blood

pressure. Persons with the allergy can go into a delayed anaphylactic shock four-six hours after eating red meat.

1e. Lyme Disease

- Lyme disease is caused by the bacterium *Borrelia burgdorferi*. It is transmitted to humans by the bite of an infected **blacklegged tick** (*Ixodes scapularis*). Cases have been documented in North Carolina.
- Typical symptoms include fever, headache, fatigue, and a characteristic "bull's eye" shaped skin rash called erythema migrans. If left untreated, infection can spread to joints, heart and the nervous system. Lyme disease is diagnosed based on symptoms and the possibility of exposure to infected ticks. Laboratory testing can be helpful. Most cases of Lyme disease can be treated successfully with a few weeks of antibiotics.
- Between 2008 and 2012 there were no cases of Lyme Disease in Moore County and there were 438 cases in the state.
- Lyme Disease contracted in Moore County, and the surrounding areas, is very rare. There has been only one confirmed case of an individual contracting Lyme Disease in Moore County.
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SOURCE: Presentation by Dr. Paul Jawanda – Infectious Disease Physician – FirstHealth of the Carolinas

1f. Difficulties with Tick-Borne Illness Prevalence Data

While on the surface, the numbers of cases of various tick-borne illnesses in Moore County and the surrounding areas may not seem numerous, there are known difficulties in collecting and reporting on these illnesses.

In order to diagnose an individual with a tick-borne illness, the patient must undergo specific laboratory testing at prescribed intervals. Typically, if a patient presents to a physician with symptoms that could be signs of a tick-borne illness, the physician will prescribe a course of strong antibiotics for the patient prior to the lab results providing an official diagnosis. Some patients, after undergoing antibiotics and feeling relief from their symptoms, will forego the prescribed laboratory testing to confirm a diagnosis of tick-borne illness. Hence, a fair number of cases of tick-borne illnesses go unreported.

2. Ticks Common to Moore County and the Surrounding Area

There are a variety of species of ticks that reside in North Carolina, however some species tend to be more prevalent than others.

2a. The Lone Star Tick (Amblyomma americanum) is the most prevalent tick found in our area. Lone Star Ticks are typically easier to identify as the adult female of the species bears a bright spot in the center of its back. In addition, the shape of the Lone Star Tick's body is very rounded. The Lone Star Tick is an aggressive biter and is commonly found on humans. The Lone Star Tick is a known carrier of Ehrlichiosis, STARI and Red Meat Allergy.

2b. Another tick found in our area, although less common than the Lone Star Tick, is the American Dog Tick (Dermacentor variabilis). The American Dog Tick is identified by its tear-drop shaped body. The American Dog Tick is a known carrier of RMSF.

2c. Another tick found in our region is the Blacklegged or Deer Tick (Ixodes scapularis), but it is much less prevalent than the Lone Star or American Dog Tick. The Blacklegged Tick also has a tear-drop shaped body. The Blacklegged Tick is a known carrier of Lyme Disease.

3. Animals as Hosts for Ticks

Ticks require a blood meal from a host in order to carry out their complete life-cycles. Different species of ticks prefer different host animals. Deer are a common host for ticks, as they can host many (hundreds or more) ticks on their bodies. Rodents can also be a common host for ticks, as well as other mammals, birds, reptiles and amphibians, such as: dogs, cats, raccoons, foxes, rabbits and squirrels.

4. Recommendations for Reducing Tick Bites on Humans

In general, tick-borne illness may be prevented by:

- Avoiding tick habitat (dense woods and brushy areas),
- Using insect repellents containing DEET
- Treating outdoors clothes with Permethrin
- Wearing long pants and socks
- Performing tick checks after any time spent in the woods, thick brush or tall grasses
- Promptly removing ticks after outdoor activity

People should monitor their health closely after any tick bite, and should see a doctor if they experience a rash, fever, headache, joint or muscle pains, or swollen lymph nodes within 30 days of a tick bite. If possible, it may also be helpful to preserve the removed tick in rubbing alcohol for future identification purposes, should an illness develop after a tick bite.

SOURCE: Presentation by Dr. Paul Jawanda – Infectious Disease Physician – FirstHealth of the Carolinas

5. Conclusion

Deer, and other animals, are known hosts for ticks and they serve as vectors for the illnesses that they can carry. Deer can play an important role in the life-cycle of ticks as they can carry many more ticks than other animals due to their body size and they are a preferred host of certain tick species.

Tick-borne illnesses are not found at an epidemic level in Moore County and its surrounding region, however, certain tick-borne illnesses are found on a more common basis than others. Lyme Disease that is contracted in the surrounding region of North Carolina is extremely rare, but Ehrlichiosis and SFGRs have been diagnosed and/or treated on a more regular basis in patients within our region despite small numbers of official confirmed cases. Both Ehrlichiosis and SFGRs are serious illnesses that should be treated promptly to avoid serious complications in patients that contract them.

Reducing the amount of deer within the Village would reduce the number of hosts available for ticks, however it is uncertain whether this would have any impact on the prevalence of tick-borne illnesses in our community. Tick-borne illnesses should not be considered an impetus for reducing the deer herd in the Village of Pinehurst.

The most important thing that residents of the Village of Pinehurst can do as it relates to tick-borne illnesses is to become informed on how to prevent tick bites and what can be done should a tick bite occur.

In general, tick-borne illness may be prevented by:

- Avoiding tick habitat (dense woods and brushy areas),
- Using insect repellents containing DEET
- Treating outdoors clothes with Permethrin
- Wearing long pants and socks
- Performing tick checks after any time spent in the woods, thick brush or tall grasses
- Promptly removing ticks after outdoor activity
- If bitten by a tick, people should monitor their health closely after any tick bite, and they should see a doctor if they experience a rash, fever, headache, joint or muscle pains, or swollen lymph nodes within 30 days of a tick bite.
- After discovering a tick bite, if possible, it may be helpful to preserve the removed tick in rubbing alcohol for future identification purposes, should an illness develop after a tick bite.

Additional resources for ticks and tick-borne illnesses:

www.tickencounter.org/tick_identification

http://epi.publichealth.nc.gov/cd/diseases/ticks.html

www.cdc.gov/ticks/

www.ces.ncsu.edu/depts/ent/notes/urban/ticks.htm

Section B

SECTION B
Car/Deer Accidents

Deer-related accidents in Pinehurst in 2014:

Date	Street/Highway	Intersection
2/23/2014	US 15-501	N from Spring Lake Drive
2/23/2014	Diamond Head Drive	W from Ivy Way
3/1/2014	NC 5	Linden Road
3/20/2014	NC 2W	Palmetto Road
6/6/2014	Linden Road	W from Pinewild entrance
9/2/2014	NC 211	E from Page Road
9/9/2014	NC 211	W from Main Street
9/24/2014	Linden Road	W from Saville Row
10/25/2014	NC 5	N from NC 2W
11/5/2014	NC 211 W	W from Gun Club Road
11/5/2014	NC 211 W	W from Gun Club Road
11/12/2014	Diamondhead Drive	
11/12/2014	Linden Road	
11/12/2014	Morganton Road	
11/12/2014	NC 5	NC 2

Section C

SECTION C

Landscaping

The Pinehurst Deer Task Force has concluded that one of the ways to minimize landscape damage is to plant deer resistant vegetation. An extensive list of suggested deer resistant vegetation can be found on the internet as well as consulting with the Moore County Department of Agriculture, American Meadows (www.americanmeadows.com), NC Cooperative Extension Consumer Horticulture website (www.ncstate-plants.net) and many local nurseries including Green Haven Plant Farm on Hwy 22. We are grateful to Bart and Martha O'Connor for providing the attached list of some common plants that have proven to be deer resistant. In addition, it is known that deer avoid herb gardens because of the scents emitted. The abovementioned organizations can also provide a homeowner with a list of plants that deer are particularly fond of so that these materials can be easily avoided. We would encourage each individual property owner to do their own research with their particular needs in mind.

In conjunction with the proper plant materials, there are some other products on the market that, when used properly, have been met with success.

1. A safe and humane deterrent worth trying is the Scarecrow Sprinkler. It is equipped WITH A MOTION SENSOR THAT ENGAGES THE SPRINKLER. It operates off an ordinary garden hose and has offered many residents as resolution to deer damaging their landscaping. They are available online and at Home Depot, Lowes Home Improvement, Walmart and Burney's Hardware. Also available is the Ultrasonic Solar Animal Repeller by Bell & Howell. It can be ordered at www.animaloff.com
2. Two products that have proven to be successful if applied properly and regularly are Liquid Fence and Doe Gone. Both of these are available online and at several local businesses including Lowes Foods on Hwy 211.

The Village could participate in educating the public:

1. By continually updating its website to make these suggested materials easily available.
2. By providing this information through the Village Hall and the Beautification Committee.
3. By working with local builders and real estate companies.
4. By encouraging home owner associations to include this information in their welcome packets.
5. By reaching out to the many local garden clubs for assistance in promoting more agreeable landscapes.
6. By practicing what it preaches and stop planting problem pants, i.e. pansies.

A hungry deer is going to eat whatever is available. It is the duty of each individual to educate themselves, utilize good common sense, and institute appropriate efforts to live in harmony with our environment.

Section D

SECTION D
Insurance and Liability

Consultation with Ron Tilton, Loss Control & Safety Engineer for the N C League of Municipalities, our insurer, reviewed the potential for bodily injury and property damage arising from an increasing number of deer in the Village of Pinehurst. The primary focus was on accidents involving motor vehicle collisions with deer. Currently, the Village is experiencing slightly more than one reported accident per month. Mr. Tilton concluded that if the size of the herd is increasing, then it is expected that the number of accidents with cars and deer will also increase. He stated that "...while it may not be mandatory that the Village take some preventative actions, it would be the prudent thing to do".

Mr. Tilton said he is available to perform a loss control inspection of Village roads and property to identify areas of potential loss; aid in the development of a plan of loss avoidance; implementation of an action plan; and, establish a review format to evaluate the effectiveness of the safety plan. Again, his focus would be concentrated on the deer related issues.

The Village legal counsel, Michael Newman, informed us that the Village does not own the deer herd, rather it is the property of the State of North Carolina for the use and enjoyment of the citizens of the state. Therefore, the Village of Pinehurst has no responsibility, nor liability, for deer movements/actions through and on Village roads or property. Any actions undertaken by the Village with respect to the deer would mean the Village would assume a liability which they do not have.

Ryan Ezzell, the underwriter for the Municipal League assures us that the policy has a Duty to Defend clause and would respond to any loss or suit arising from the Villages actions with respect to the deer. Such actions would include culling or any attempt to control or manage the deer population. We were appraised of other municipalities, insured by the League, which have embarked upon various forms of deer management programs. The insurer requests that the Village inform them if there is any type of culling. A premium charge would be levied if such actions occur. Should the Village employ an insured contractor or individuals to reduce the deer herd and the Village is provided with a valid certificate of insurance, naming the Village as an additional named insured, then the premium charge would be minimal. If the Village chose to utilize local uninsured hunters to perform culling on Village property, then the charge would be higher. The League would have to be contacted directly to determine exact charges.

Mr. Ezzell did inform us that Sovereign Immunity is waived in North Carolina when a public entity chooses to purchase insurance.

A response from a large insurer of private passenger automobiles did confirm that auto-deer collisions in Moore County do impact premiums. While the insurer declined to reveal specifics

due to their Proprietary Information Policy, they did assert that recent rate increase requests were due, in part, to the increasing number of car/deer strikes on local county and Village roads.

As a final note, one resource, an independent claims consultant, reported on the increasing number of subrogation specialists, i.e., public adjusters, who re-open or work on existing claims. Often times they are working with or for law firms. Their goal is to maximize payments for the injured party arising from a loss. While our attorney assures us that any such action could be quickly dismissed under NC law, nevertheless, any such legal action has an economic impact. Any actions which avoid losses benefits all concerned.

Section E

SECTION E
Deer Management and Potential Culling

Rupert Medford with the North Carolina Wildlife Resources Commission has determined that the Village of Pinehurst has a deer density larger than its carrying capacity will support. Mr. Medford believes that there are 300 + deer in the Village of Pinehurst living in small pockets of woods and undeveloped areas in close proximity to residential areas. He has recommended reducing the herd by one third in order to keep the population healthy and reduce contact with the residents of Pinehurst. There are several options that can be employed to remove deer from the Village – Trap and relocate, Urban Archery Programs, and Sharpshooters are a few the Task Force have investigated.

Urban Archery programs are currently being used in 44 cities/towns/villages in the State of North Carolina as a tool to effectively manage deer populations. Concord, Chapel Hill, Pittsboro, Jefferson and Nags Head are just a few locations that have an Urban Archery program in place. Hunters use recurve bows, compound bows and crossbows from elevated stand locations in small wood lots without disturbing homes nearby. These hunters must possess a valid North Carolina hunting license, have written permission from the landowner on his person, and follow the rules and regulations set forth by the North Carolina Wildlife Resources Commission for hunting whitetail deer. Each city/town/village decides if hunting is allowed on public property and restrictions, if any for hunting on private land within the city/town/village limits. This does not obligate private land owners to allow hunting on their property. An Urban Archery Program would be the cheapest program to implement because there is a good base of bow hunters in Moore County that would be willing to participate. The Village of Pinehurst could charge hunters a fee for a permit to hunt. The Village could also make hunters take a proficiency test to show that he/she possesses the skills necessary to hunt with a bow.

Pros of Implementing an Urban Archery Program

1 – Very inexpensive

2 – Bows are very quiet

3 – Bows are short range tools – 40 to 60 yards

4 – Venison can be processed and donated to the Food Bank

Cons of Implementing an Urban Archery Program

1 – Public perception of hunting in the Village

2 – Bows are not as effective as firearms

Sharpshooting is the use of experienced marksmen with specific equipment (center fire rifles, night vision equipment, bait stations) used to quickly and effectively remove deer from specific areas. Sharpshooting is an intensive form of management used where other methods are ineffective or cannot be used safely. Sharpshooting is a relatively expensive undertaking, costing close to $1000 a day or $800 per deer removed depending on the contractor. The scope of work, seasonal or time restrictions, and disposal or processing of culled deer also adds to the costs. If the Village of Pinehurst were to employ a contractor such as Outdoor Wildlife Management or White Buffalo to carry out a culling program a permit would have to be obtained from the North Carolina Wildlife Resources Commission. The contractor would have to work very closely with North Carolina Wildlife Resource Commission to make sure that goals that have been set are met and the Pinehurst Police Department to ensure that the safety of the Village residents was a priority. Sharpshooters are much more effective than Bow Hunters, but the expense of removing 100 deer in the Village could cost $50,000.00 to $80,000.00.

Pros of Implementing a Sharpshooting Program

1 – Sharpshooters are more effective than bow hunters working day or night

2 – Private contractors carry their own insurance

3 – Sharpshooters can drop animals where they stand with proper shot placement

4 – Venison can be processed and donated to a food bank

Cons of Implementing a Sharpshooting Program

1 – Very expensive - $1000 per day/night or $800 per deer taken

2 – Public perception of discharging firearms in the Village

3 – Bullets travel much further than arrows

Deer Sterilization and Contraception Methods and Techniques

Any deer can be trapped by one of three methods: nets, clover traps (baited nets) or by tranquilizer. Once captured, the doe undergoes a procedure so it cannot reproduce. This method is quite costly, averaging $800-$1000 per deer. It is also time consuming. Some deer have been known to die during the procedure because of stress or shock. Male deer can also be trapped and euthanized. Male deer are more difficult to trap successfully because of their antlers. According to the NC Wildlife Resources Commission, application of anesthetics would

require the Village of Pinehurst to obtain a permit and all deer would have to be marked (tagged or collared) to identify them in future years for future treatment.

The method of trapping does and sterilizing them has been tested in many communities. One example is Cornell University. They undertook a five year sterilization effort. The work was done by a combination of volunteers and Cornell University staff between 2009 and 2013. Despite their efforts, the deer population remained unchanged. You will find that more sterilization projects have been done under the supervision/affiliation of a university. Few towns tend to take on the project alone because they are so expensive and time consuming.

Edible contraceptives (such as those placed in a salt lick) are not feasible. Besides being eaten by other animals, the contraceptives have proven to be costly and ineffective over the years. Chemicals are also being added into our environment. Because this would involve drugs ending up in the food chain, the FDA would likely have to give approval (Rupert Medford, NC Wildlife Resources Commission). As in the trap/sterilize method, a permit would be required from the NCWRC. Currently, this is not an approved method by the Wildlife Commission because of the unknown hazards to other animals and our environment.

Immunocontraception is done by capturing the deer and administering contraception through inoculation. An example of this method is Princeton, NJ. In 2003, 20 does were inoculated. 17 survived the process. 58 more were inoculated in 2004, 53 survived. This method is working in areas where housing density will not permit sport hunting or culling. Though time consuming and expensive, preventing the birth of 1.26 fawns/year has reduced the deer herd numbers in that area.

*Princeton Township Committee Applications for Designation as a Special Deer Management Area Attachment 1 page 2

Trap and Relocation Techniques

Deer can be trapped and relocated out of our area. Deer would be baited for a few weeks leading up to the implementation of the project. Acclimated to both the cage and the food source, deer are less likely to perceive the closing of the trap as an event. Less stress to the deer could prevent death by shock or stress. Deer would then be sedated and moved. This is an option, but expensive, for localized management of "pockets of deer". Rupert Medford, of the North Carolina Wildlife Resources Commission, quoted a price of approximately $2000/deer for relocation. Also, a relocation or contraception program would require Pinehurst to create two full time and two seasonal staff positions for deer management. A permit is also required from the NCWRC for this method to be used.

*Pinehurst Deer Management Task Force Meeting 10/1/14

Recommendations for the Village of Pinehurst:

There are still many unknowns regarding contraception and sterilization and neither work well in an open population. An open population is one where ingress and egress is unrestricted. Deer have a one-mile home range. Cost and time requirements are also substantial in all of these methods.The Village should attempt to keep up to date on new developments and costs related to contraception and sterilization in case effectiveness is improved and costs reduced.

Exhibit 1

RESOLUTION #14-45:

A RESOLUTION ESTABLISHING A DEER MANAGEMENT TASK FORCE FOR THE VILLAGE OF PINEHURST, NORTH CAROLINA.

THAT, WHEREAS, many community members are concerned about the number of deer in the Village of Pinehurst; and

WHEREAS, some residents are concerned about deer-vehicle collisions, tick-borne illnesses, damage to yard plantings and vegetable gardens and general safety; and

WHEREAS, residential environments have created excellent deer habitat and many citizens, through the planting of ornamental and/or vegetable gardens, provide an abundance of food and shelter; and

WHEREAS, many Pinehurst residents have contacted elected officials of the Village of Pinehurst, requesting measures to control the deer population in and around the residential areas of the Village; and

WHEREAS, a prudent approach to deer-human coexistence involves a partnership between the citizens, local government and the North Carolina Wildlife Resources Commission; and

WHEREAS, understanding the nature of the deer issue and exploring approaches is in the interest of the citizens of the Village of Pinehurst;

NOW, THEREFORE, BE IT RESOLVED, by the Village Council of the Village of Pinehurst, North Carolina, as follows:

SECTION 1. The Deer Management Task Force shall be established under the Chairmanship of Council Member John Strickland with administrative and research support provided by village staff as assigned by the Village Manager. The Task Force shall explore ways to address deer-human conflicts and to solicit community feedback on different possible approaches. Public Education shall be part of the Task Force's charge.

SECTION 2. The Task Force shall be composed of up to ten members including the chairman, as appointed by the Village Council.

SECTION 3. Members shall include a variety of community representatives, interests and expertise. Members shall be open-minded and capable of working alongside members with differing opinions.

SECTION 4. The Task Force shall meet as often as needed to prepare and deliver a report to the Village Council by November 18, 2014. The Task Force shall avail itself of expertise through the North Carolina Wildlife Resources Commission and/or other public or

private agencies with specific knowledge of deer management and other wildlife issues. The Task Force shall also inquire of other municipalities and communities that have employed various deer management practices and measures to determine effectiveness and community acceptance.

SECTION 5. The Task Force shall prepare a report for delivery to the Village Council which will provide available options for management of the local deer population. The Task Force may include as one of its options a "do nothing" option.

SECTION 6. The Task Force shall sunset on December 31, 2014.

THIS RESOLUTION passed and adopted this 22nd day of July, 2014.

(Municipal Seal)

VILLAGE OF PINEHURST
VILLAGE COUNCIL

By: Nancy Roy Florillo
Nancy Roy Florillo, Mayor

Attest:

Lauren M. Craig
Lauren M. Craig, Village Clerk

Approved as to Form:

Michael J. Newman, Village Attorney

Exhibit 2

Deer Management Taskforce Members

Bob Farren
Earl Phipps
John Strickland
John Eastman
Mallory Hickey
Melissa Swarbrick
Michael Black
Rob Papp
Sandra Williams

Staff Contacts:
Andy Wilkison
Melissa Holt

Exhibit 3

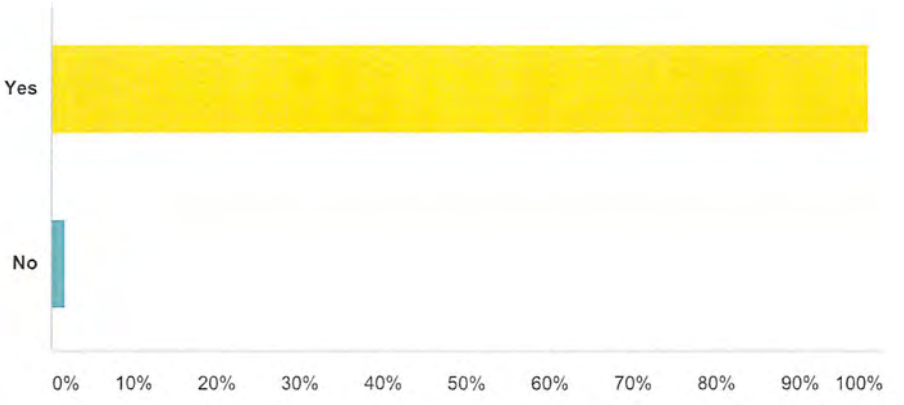
Deer Taskforce Speakers

Meeting Date	Name	Company
9/3/2014	Rupert Medford	North Carolina Wildlife Resources Commission
9/10/2014	Jim Young	Pinewild Wildlife Committee
9/24/2014	Bart & Martha O'Connor	Pinehurst residents
9/24/2014	Kevin Brewer	Village of Pinehurst staff
10/1/2014	Rupert Medford	North Carolina Wildlife Resources Commission
10/8/2014	Dr. Paul Jawanda	FirstHealth of the Carolinas
10/15/2014	Joe Lasher	Backyard Bow Pro
10/22/2014	Robbie Withington	USDA
10/22/2014	Steve Adelmann	Citizen Arms
10/29/2014	Tyler Stowe	Outdoor Wildlife Management

Exhibit 4

Q1 Are you a resident of Pinehurst?

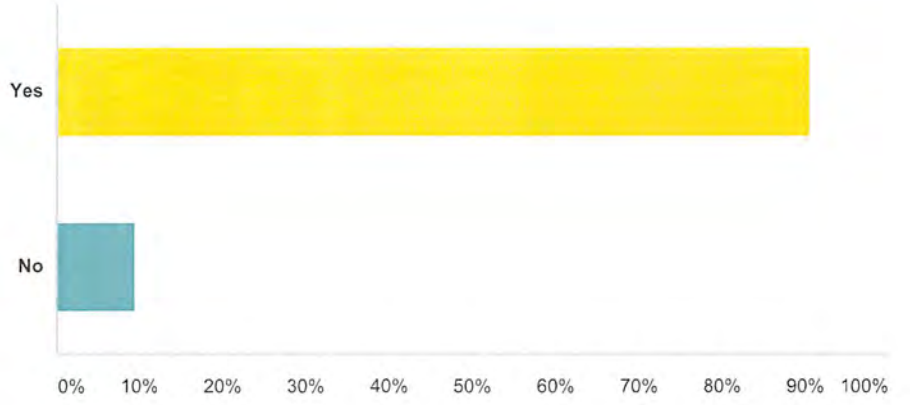
Answered: 1,215 Skipped: 0



Answer Choices	Responses	
Yes	98.27%	1,194
No	1.73%	21
Total		1,215

Q2 Do you notice deer in your neighborhood?

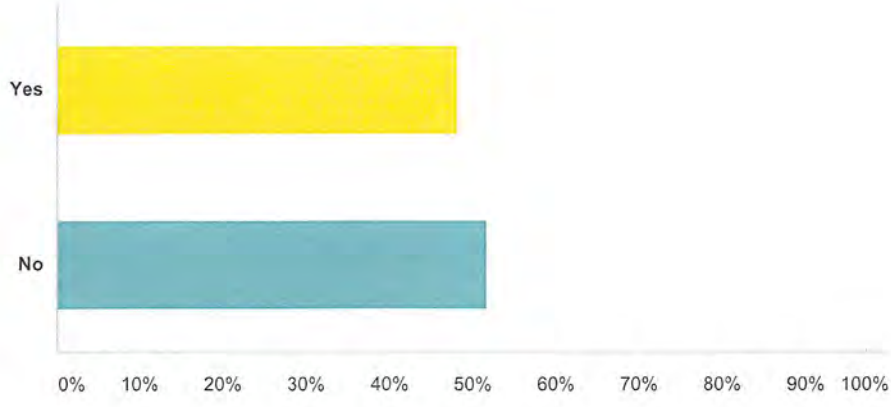
Answered: 1,215 Skipped: 0



Answer Choices	Responses	
Yes	90.62%	1,101
No	9.38%	114
Total		1,215

Q3 Do you feel there is a problem with deer affecting travel on roadways in and around the Village of Pinehurst?

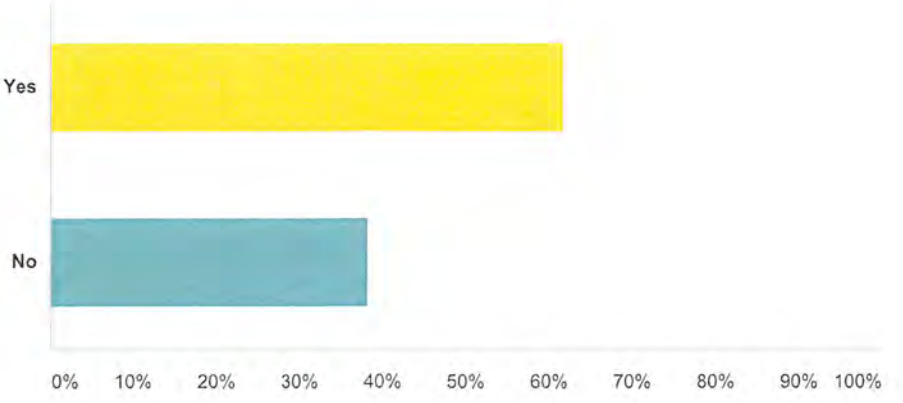
Answered: 1,215 Skipped: 0



Answer Choices	Responses	
Yes	48.15%	585
No	51.85%	630
Total		1,215

Q4 Do you feel that deer are detrimental to residential landscaping in your yard and/or neighborhood?

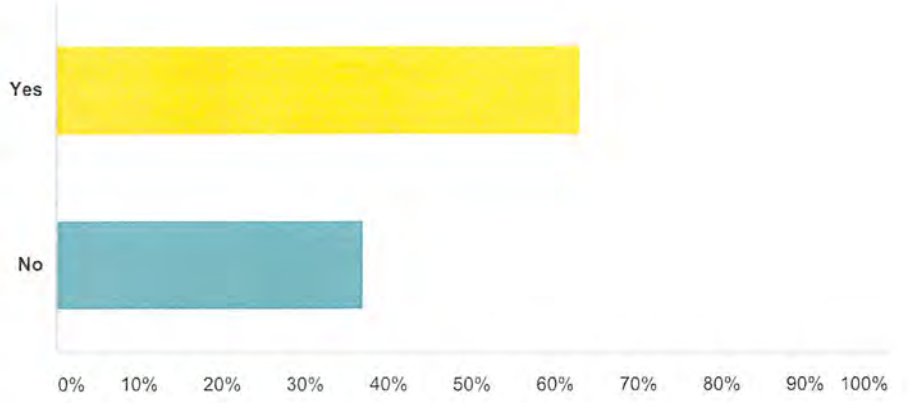
Answered: 1,215 Skipped: 0



Answer Choices	Responses	
Yes	61.73%	750
No	38.27%	465
Total		1,215

Q5 Do you feel that deer contribute to the prevalence of tick borne diseases?

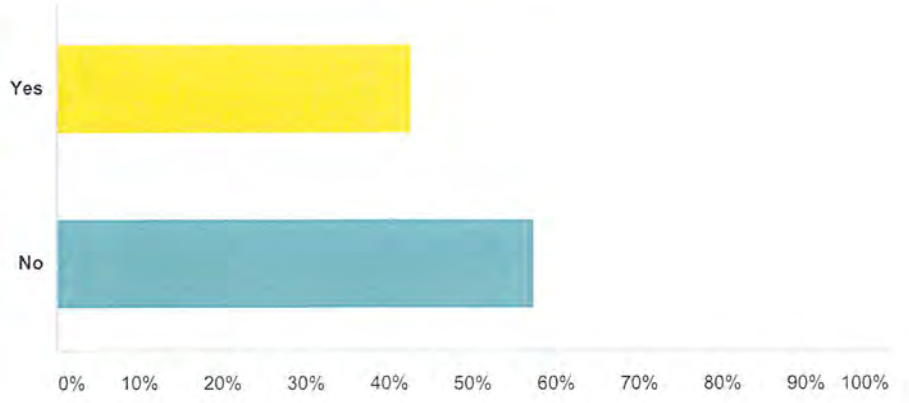
Answered: 1,215 Skipped: 0



Answer Choices	Responses	
Yes	63.05%	766
No	36.95%	449
Total		1,215

Q6 Do you feel that tick borne illnesses are a matter of concern within the Village of Pinehurst?

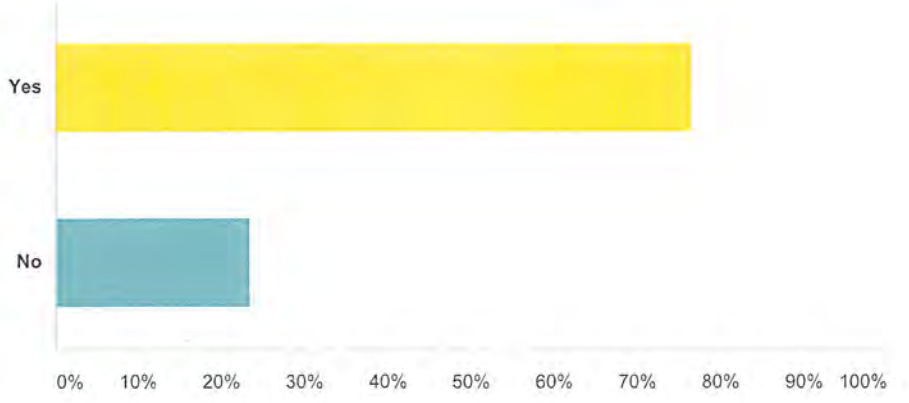
Answered: 1,215 Skipped: 0



Answer Choices	Responses	
Yes	42.55%	517
No	57.45%	698
Total		1,215

Q7 Would you support a recommendation to the Village Council, which would include a public education component, common sense steps to take when encountering deer, and the selective culling of the deer herd in the Village of Pinehurst?

Answered: 1,215 Skipped: 0



Answer Choices	Responses	
Yes	76.54%	930
No	23.46%	285
Total		1,215

Q8 Would you like to give any comments regarding the deer population in Pinehurst for the Deer Management Task Force?

Answered: 704 Skipped: 511

Exhibit 5

PLANTS FOUND TO BE DEER RESISTANT IN PINEHURST

TREES

DECIDUOUS

River Birch
Ginkgo
Bald Cypress
Dogwoods
Sweet Gum
Maples
Crepe Myrtles
Red Bud
Oaks

EVERGREEN

Cedars
Hollys
Magnolias
Cypresses
Pines

GROUNDCOVERS AND VINES

Periwinkle
Carolina Jessamine
Creeping Jenny
Mondo Grass
Honeysuckle
Pachysandra
Dichondria

FERNS

All Native

SHRUBS

DECIDUOUS

Barberry
Butterfly Bush
Flowering Quince

EVERGREEN

Abelia
Elaeagnus
Hollies
Osmanthus
Anise
Wax Myrtle
Leucothoe
Junipers
Viburnum
Gardenias
Azaleas
Rhododendron
Camellias
Cleyera
Ligustrum
Yucca
Nandina
Loropetalum

Bulbs

Daffodils
Amaryllis
Crocosmias
Oxalis

PERENNIALS

Yarrow
Columbine
Dianthus
Red Hot Poker
Lambs Ear
Coreopsis
Coneflower
Lantana
Sage
Lenten Rose
Peony
Aster
Rosemary
Phlox
Cana
Calla

ANNUALS

Ageratum
Begonia
Ornamental Peppers
Coleus
Verbena
Marigold
Dusty Miller
Petunias
Nicotiana
Pentas
Vinca
Zinnias
Scarlet Sage
Portulaca
Mums

November, 2014

Plants Considered Deer Resistant for Sandhills of NC

Trees

Deciduous

River Birch-*Betula nigra*
Ginkgo-*Ginkgo biloba*
Red Buckeye-*Aesculus pavia*
Hawthorn-*Crataegus* species
Honey Locust-*Gleditsia triacanthos*
Black Gum-*Nyssa sylvatica*
Bald Cypress-*Taxodium distichum*
Carolina Silverbell-*Halesia Carolina*
Goldenrain Tree-*Koelreuteria paniculata*
Kousa Dogwood-*Cornus kousa*
Sweet Gum-*Liquidambar styraciflua*

Evergreen

Deodar Cedar-*Cedrus deodora*
Japanese Cedar-*Cryptomeria japonica*
American Holly-*Ilex opaca*
Eastern Red Cedar-*Juniperus virginiana*
Southern Magnolia-*Magnolia grandiflora*
Sweetbay Magnolia-*Magnolia virgnica*
Live Oak-*Quercus virginiana*
Carolina Cherrylaurel-*Prunus caroliniana*
Pines-*Pinus* species
False Cypress-*Chamaecyparis* spp.
Arizona Cypress-*Cupressus arizonica*

Shrubs

Deciduous

Japanese Barberry-*Berberis thunbergii*
Butterfly Bush-*Buddleia davidii*
Sweetshrub-*Calycanthus floridus*
Spring Flowering Sprireas-*Spireae* spp.
Deutzia-*Deutzia gracilis*
American Beautyberry-*Callicarpa americana*
Witch Hazel-*Hamamelis macrophylla*
Flowering Quince-*Chaenomelea speciosa*
Crape Myrtle-*Lagerstroemia indica*

Evergreen

Abelia-*Abelia x grandiflora*
Wintergreen Barberry-*Berberis julianae*
Eleagnus-*Elaeagnus pungens*
Chinese Holly-*Ilex cornuta*
Yaupon Holly-*Ilex vomitoria*
Fragrant Tea Olive-*Osmanthus fragrans*
Holly Osmanthus-*Osmanthus heterophyllus*
Anise Shrub-*Illicium* species
Waxmyrtle-*Myrica cerifera*
Leucothoe-*Leucothoe* spp.
Yucca-*Yucca* spp.
Nandina-*Nandina domestica*
Loropetalum-*Loropetalum chinensis*
Junipers-*Juniperus* spp.
Viburnum-*Viburnum spp.*
Japanese Privet-*Ligustrum japonicum*
Southern Yew-*Podocarpus macrophyllus*

Perennials

Yarrow-*Achillea*
Columbine-*Aquilegia*
Catmint-*Nepeta*
Artemisia-*Artemisia*
Dianthus-*Dianthus*
Joe Pye Weed-*Eupatorium*
Red Hot Poker-*Kniphofia*
Rose Campion-*Lychnis*
Lambs Ear-*Stachys*
Blue Star-*Amsonia*
Coreopsis-*Coreopsis*
Purple Coneflower-*Echinacea*
Blanket Flower-*Gallardia*
Bee Balm-*Monarda*
Guara-*Guara*
Lantana-*Lantana* spp.
Mint-*Mentha* spp.
Gay-feather-*Liatris*
Sage-*Salvia* spp.
Rosemary-*Rosemarinus*
Cardinal Flower-*Lobelia*
Butterflyweed-*Aesclepias*
Lenten Rose-*Helleborus*
Russian Sage-*Perovskia*
Peony-*Paeonia* spp.
Speedwell-*Veronica*
Aster-*Aster* spp.

Groundcovers and Vines

Ajuga-Ajuga *reptans*
Periwinkle-*Vinca major* and *minor*
Carolina Jessamine-*Gelsemium sempervirens*
Confederate Jasmine-*Trachelospermum jasminoides*
Creeping Rosemary-*Rosmarinus officinalis* 'Prostratus'
Mondo Grass-*Ophiopgon japonicus*
Crossvine-*Bignonia capreolata*
Coral Honeysuckle-*Lonicera sempervirens*

Summer Annuals

Ageratum
Begonia
Ornamental Peppers
Coleus
Verbena
Melampodium
Marigold
Dusty Miller
Petunias
Flowering Tobacco
Pentas
Vinca
Zinnias
Scarlet Sage

Ornamental Grasses-*Most ornamental grasses are considered deer resistant*

Pampas Grass-*Cortaderia selloeana*
Fountain Grass-*Pennisetum alopecuriodes*
Pink Muhly Grass-*Muhlenbergia capillaris*
Maiden Grass-*Miscanthus sinensis*
Panic Grass-*Panicum virgatum*

Ferns

Christmas Fern-*Polystichum acrostichoides*
Tassel Fern-*Polystichum polyblepharum*
Royal Fern-*Osmunda regalis*
Southern Shield Fern-*Theylypteris kunthii*
Southern Maidenhair Fern-*Adiatum capillus-veneris*
Holly Fern-*Cyrtomium falcatum*
Lady Fern-*Athyrium filix-femina*
Cinnamon Fern-*Osmunda cinnamomea*

Bulbs

Daffodils
Crinum Lilies
Amaryllis
Crocosmias
Scillas
Oxalis
Agapanthus

Melissa Holt

From: John C. Strickland
Sent: Monday, September 29, 2014 9:17 PM
To: Melissa Holt
Subject: Fwd: Plant list for Deer Task Force

Melissa, please forward the email from Melissa Swarbrick to the Task Force, and add this information to the material distributed last week by Kevin Brewer. We will use all of the lists in our final our final report. John

Sent from my iPad

John Strickland, Council Member, Treasurer

Begin forwarded message:

From: <melissa@lixandflexinc.com>
Date: September 25, 2014 at 4:22:35 PM EDT
To: "Strickland, John" <johnestrickland@vopnc.org>
Cc: <mholt@vopnc.org>
Subject: Plant list for Deer Task Force

Hi John,

I took the list of "Plants Considered Deer Resistant for Sandhills of NC" and met with a couple of people from Sandhills Horticultural Society. They recommended adding the following to the list:

Trees-Evergreen
Thuja-Green Giant

Shrubs-Deciduous
Sweetshrub-Longwood Blue
Weigela- Sonic Bloom
Aesculus Parvi Flora- Creeping Horse chestnut
Hydrangea- Oak Leaf

Shrubs-Evergreen
Daphne

Perennials
Coreopsis- Red Satin
Scabioso
Stokesia
Anenome
Bergenia- Magic Giant
Toad Lily- Tricyrtis

Groundcovers and Vines
Epimedium

As a side note, the perennial Lenten Rose blooms in the winter and could be used instead of a winter annual. And Bonide Granuals can be used as deer repellent.

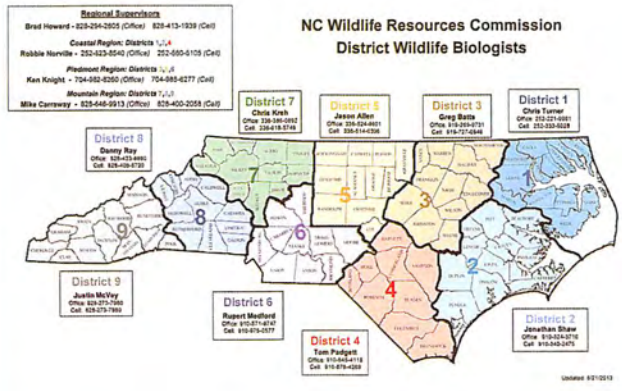
Melissa Swarbrick

Exhibit 6

Deer in North Carolina

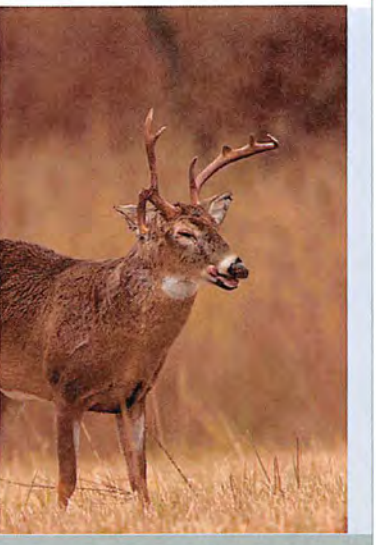
RUPERT H MEDFORD
NC WILDLIFE RESOURCES COMM.
DISTRICT SIX WILDLIFE BIOLOGIST
(919) 571 9747
RUPERT.MEDFORD@NCWILDLIFE.ORG

NCWRC District Six
ncwildlife.org



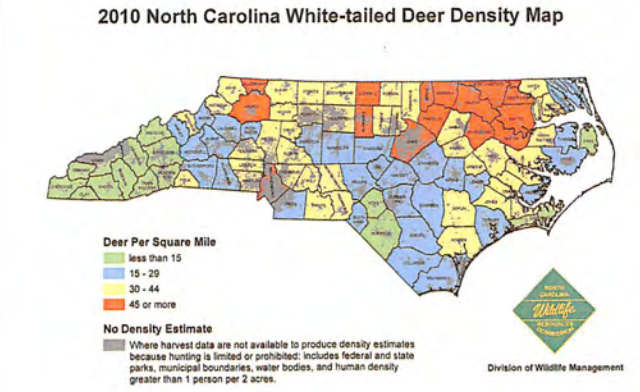
Why Do We Care About Deer Hunting?

- 239,336 deer hunters in NC (100,216 dove hunters)
- NCWRC dependent on license sales and PR funds
- US deer hunters spend $12.4 billion annually (>$350 million in NC)
- Depredation, DVC, and disease issues
  - 200 human fatalities, 29,000 injuries and over $1.1 billion in property damage each year nation wide
- High potential to impact wildlife habitat
- Valuable and abundant natural resource



1950 Deer Range

Deer Density Map by County



Characteristics of a Healthy Deer Herd

- Population is at or below biological carrying capacity
- Age classes are properly represented
- Adult sex ratios are balanced during breeding season
- Recruitment is .8 fawns/doe or higher

- What about social carrying capacity?

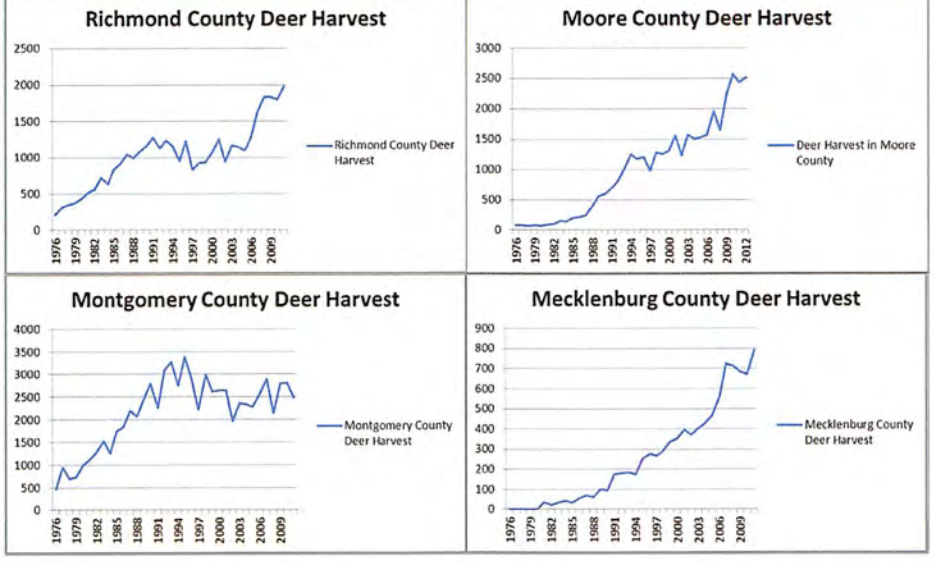
Damage to Personal Property

Vehicle Damage

Environmental Damage

Crop Production Losses

Deer Harvest in D-6



Solutions to High Deer Populations

Non-Lethal	Lethal Options
• Tolerance (Do Nothing) • Supplemental Feeding • Vegetation Management • Use deterrents, scare tactics, repellents • Plant deer resistant plants • Exclusion • Contraceptives	• Hunting ○ With a focus on doe harvest • Sharpshooting

Rupert H Medford
NC Wildlife Resources Commission
District Six Wildlife Biologist
(910) 571 9747
rupert.medford@ncwildlife.org

Exhibit 7

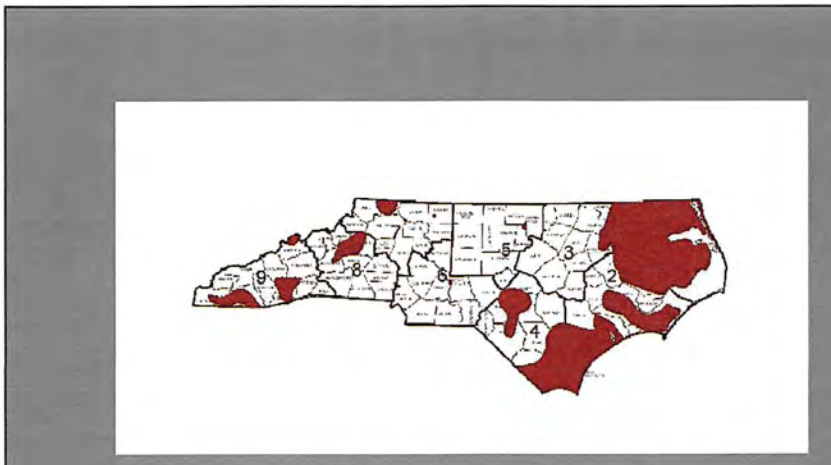
Deer Restoration and Management in North Carolina

Rupert Medford
NC Wildlife Resources Commission

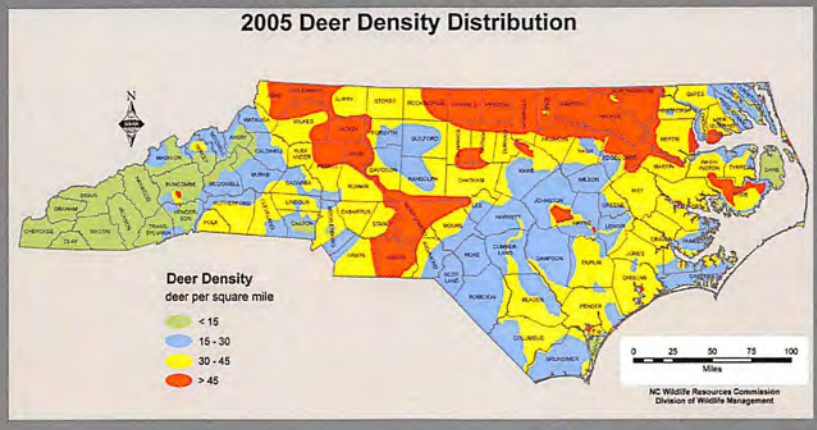
Timeline

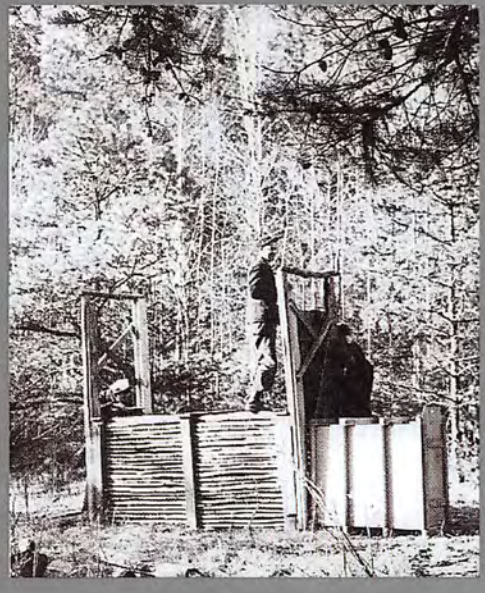
1890 – Deer depleted from most of NC, except remote mountains and eastern swamps.
1890-1900 – Deer stocked on the Vanderbilt Estate in Henderson & Transylvania counties (deer from NC, NY and FL).
1927 – NC passes "Buck Law" which protects does from harvest.
1930s – mountain & foothills counties stocked, including Surry.
1940s – mostly mountains and some Piedmont counties stocked.
1950s – stocking continues; mostly mountains, Piedmont + Pender.
early 1980s – end of the stocking program.

Deer Stocking Locations



1950 Deer Range in North Carolina





Stephenson box trap
or
Michigan deer trap

Photo by Frank Barick
Management of deer herds includes transplanting stock from over-populated areas to new management areas where browse is plentiful. Deer are taken for transplanting only when herds need thinning.

release at Uwharrie GL, 1944-45

134 deer

source:
Devotion, Surry Co.

from 1946 *Wildlife in North Carolina* article

Cannon-netting deer

The primary management tool is hunting

Happy Deer Camp

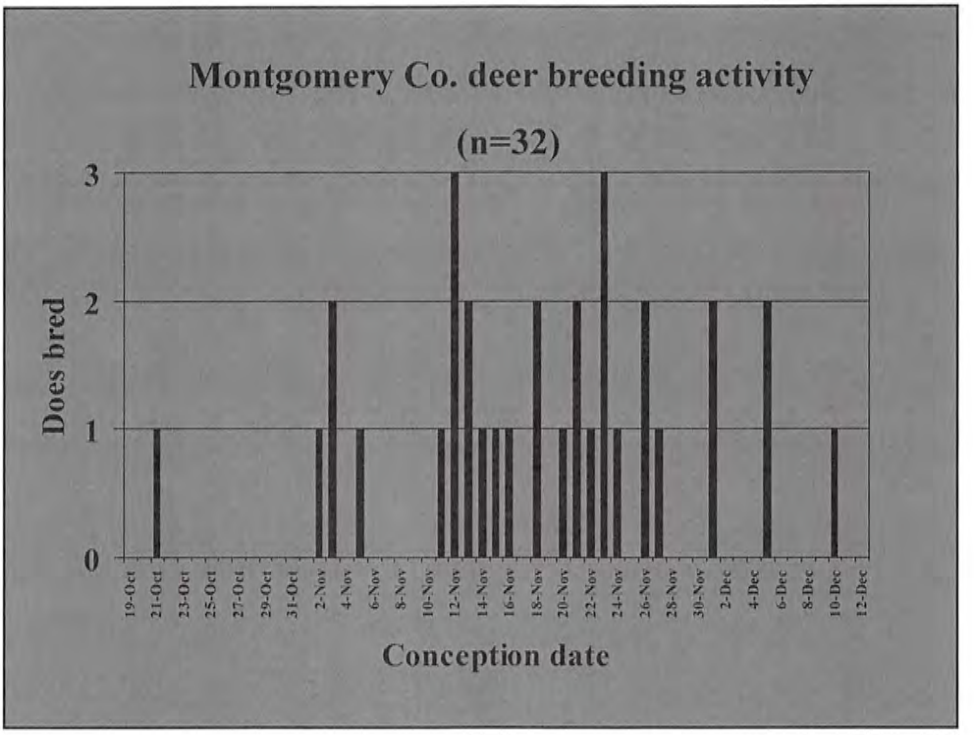
Phases of Deer Management

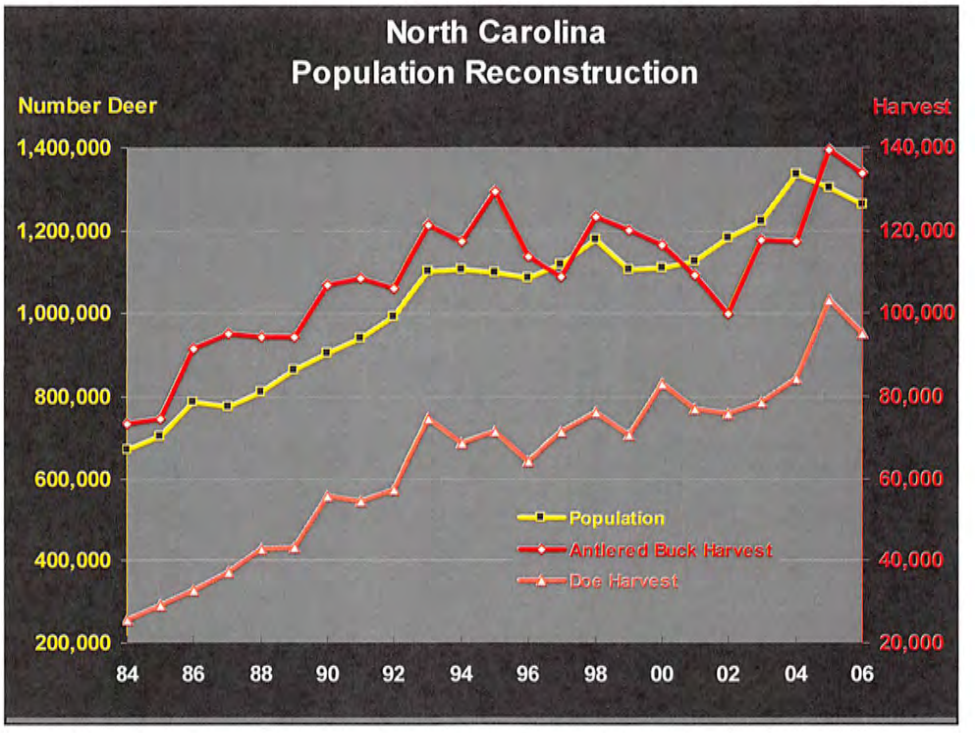
1. Herd growth – protect does
2. Need to slow population growth – some doe harvest
3. Reduce population – heavy doe harvest
4. Trophy or quality deer management = managed buck harvest + heavy doe harvest

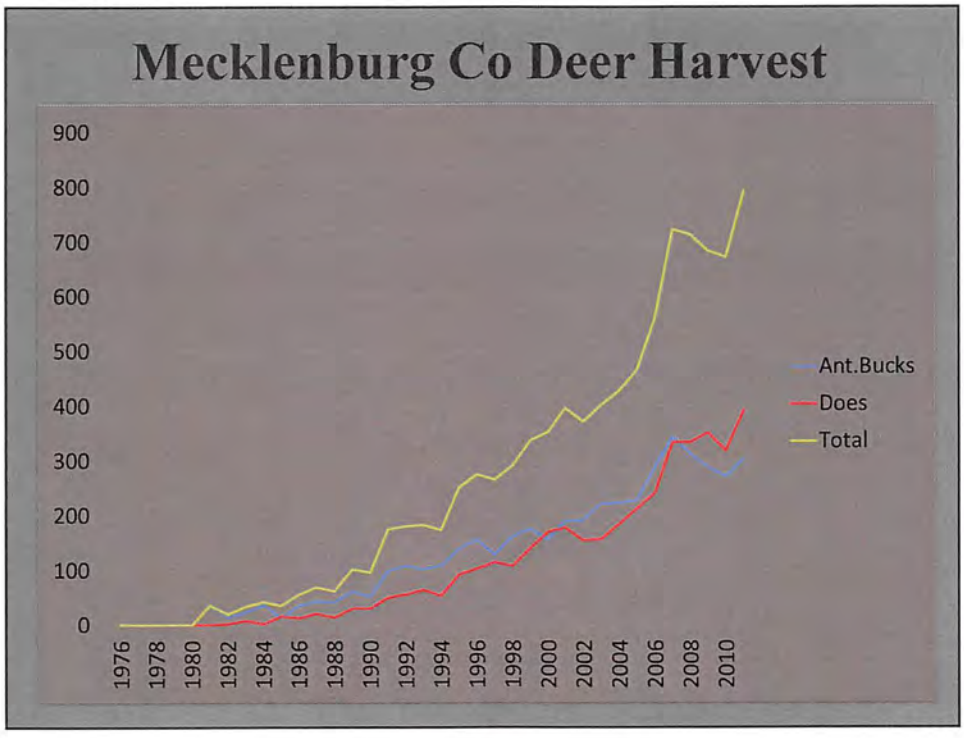
Basic Deer Biology

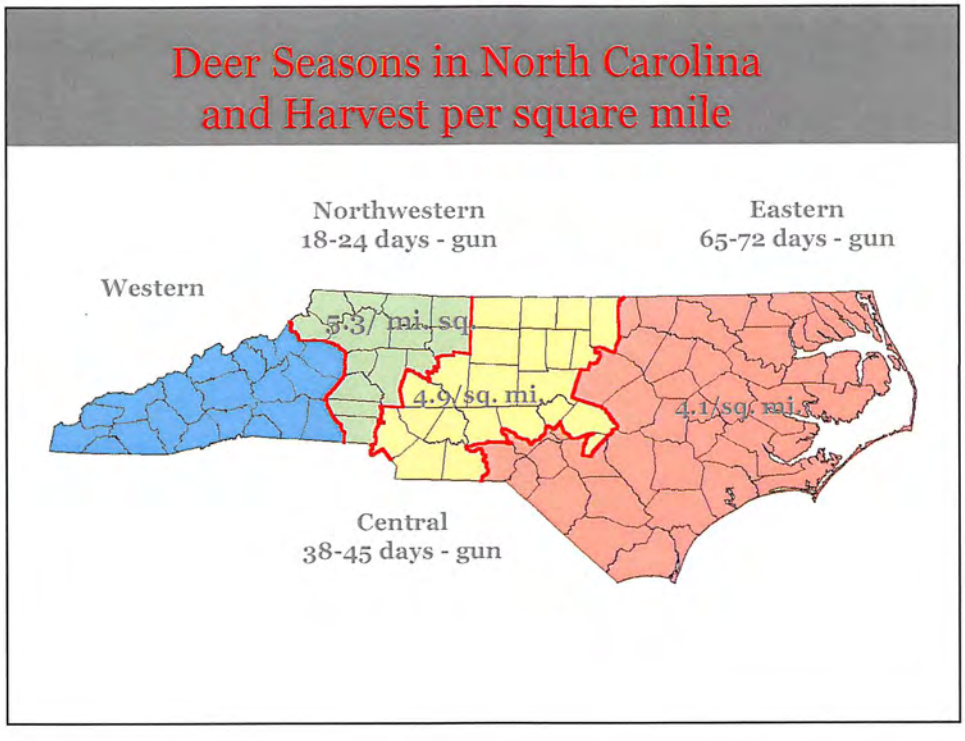
- Relatively low reproductive rate = ~1.5 fawns/doe/year
- Bucks and does are both promiscuous
- Breeding occurs mostly in November
- Gestation is 200 – 210 days
- Fawn drop is mostly in late May – early June
- Winterkill may be high in the North, but is low in the South
- Vehicles are the second highest source of mortality

- Hunting season is early September through 1 January


Montgomery Co. deer breeding activity
(n=32)
Does bred
3
2
1
0
19-Oct
21-Oct
23-Oct
25-Oct
27-Oct
29-Oct
31-Oct
2-Nov
4-Nov
6-Nov
8-Nov
10-Nov
12-Nov
14-Nov
16-Nov
18-Nov
20-Nov
22-Nov
24-Nov
26-Nov
28-Nov
30-Nov
2-Dec
4-Dec
6-Dec
8-Dec
10-Dec
12-Dec
Conception date


North Carolina
Population Reconstruction
Number Deer
Harvest
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
84
86
88
90
92
94
96
98
00
02
04
06
Population
Antlered Buck Harvest
Doe Harvest


Mecklenburg Co Deer Harvest
900
800
700
600
500
400
300
200
100
0
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
Ant.Bucks
Does
Total


Deer Seasons in North Carolina
and Harvest per square mile
Northwestern
18-24 days - gun
Eastern
65-72 days - gun
Western
5.3/ mi. sq.
4.9/sq. mi.
4.1/sq. mi.
Central
38-45 days - gun

Factors that determine antler quality:

- Nutrition (soil quality, agricultural crops)
- Genetics
- Age

Average Weights of Bucks for Selected Zones

Zone	Live Weight (lbs.) by Age 1.5 yrs.	2.5 yrs.
Roanoke	110.2	133.1
Cape Fear	104.2	123.3
So. Piedmont	114.6	150.2
No. Pisgah	95.2	119.8
Nantahalah	93.6	111.4

Hemorrhagic Disease

- Contracted from biting fly carrying the virus EHD or BT
- Clinical Signs
  - Fever
  - Trouble breathing
  - Swelling of head, neck, or tongue
  - Internal lesions
  - Sloughing of hooves
  - Found near water
- Most common viral disease of white-tailed deer
- Not infectious to humans

Cutaneous Fibroma

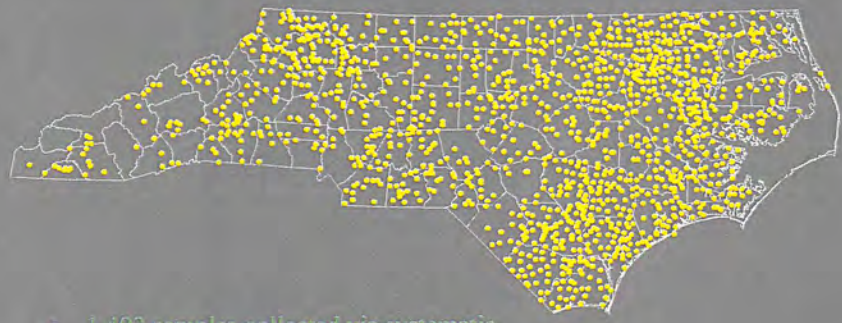
- Caused by a virus
- Results in hairless tumors or warts
- Usually temporary
- Rarely interfere with overall health
- Domestic livestock not susceptible
- Transmitted through biting insects or direct contact of skin abrasions
- No human cases recorded

Chronic Wasting Disease (CWD)

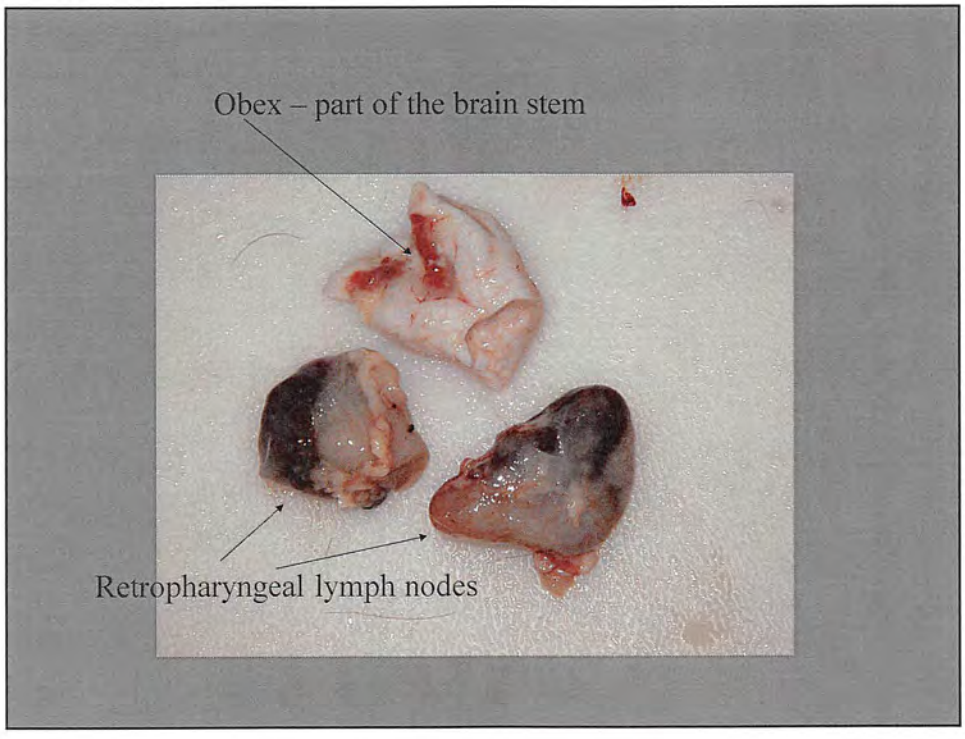
- TSE (abnormal protein of the central nervous system)
- Clinical symptoms
  - Excessive salivation
  - Emaciation
  - Loss of appetite
  - Depression
  - Listlessness
  - Drooping ears
  - Drooping head
  - Teeth gnashing
  - Not detected in NC
  - Never detecting

in humans (do not eat)
(CJD, mad cow)

CWD Tissue Sample Distribution 2008-09



- 1,403 samples collected via systematic sampling and 21 from clinical animals



Damage to Personal Property

Environmental Damage

Deer – Vehicle Collisions

Deer Management Options:

Non-Lethal Options:

Do Nothing/Tolerance
Supplemental Feeding
Vegetation Management
Use Deterrents / Scare Tactics
Plant Deer Resistant Plants
Repellents
Exclusion

Lethal Options:

Regulated Hunting
Controlled Hunting

END

Exhibit 8

Melissa Holt

From:	John C. Strickland
Sent:	Tuesday, November 11, 2014 3:59 PM
To:	bob.farren@pinehurst.com; Earl Phipps; John Eastman; Mallory; melissa@fixandflexinc.com; tagtransportnc@gmail.com; <rpapp@nc.rr.com>; s22williams@earthlink.net
Cc:	Andy Wilkison; Melissa Holt; Jeff Batton
Subject:	FW: Rupet Medford Comments
Attachments:	Density and Culling.docx

Andy and Task Force members, as you know I received this from Rupert Medford yesterday, and read it last night upon my return from Chapel Hill. Andy forwarded Medford's comments to the Task Force earlier today. For the record, here are my additional comments, after a follow-up phone call with Rupert this morning.

To summarize Medford's conclusions:

1. The Village has approximately 300 deer in our jurisdiction but the density varies considerably from one neighborhood to another. He suggests that a herd of about 200 deer is the manageable size for us--manageable meaning for the health of the herd, somewhat based on the natural food suplply of the Sandhills, as well as for human coexistence. This does not mean that the herd should be reduce by 100 in a short time span. The actual number of deer taken in the dense areas of the Village would be much less than that on an annual basis.

2. The Wildlife Commision has historically encouraged hunting where allowed, but the lack of natural predators of deer has allowed the deer population to increase beyond levels that can be managed to desireable levels during the normal hunting season. Specially organized programs using urban archery or firearms, especially in populated areas such as Pinehurst, are a responsible part of the herd management process. One of the issues to be sorted out in that process is the engagement of private and public landowners.

3. Using programs offered by professionals such as Outdoor Wildlife Management Company, and White Buffalo, including the laying out of permanent or temporary "deer parks", are also acceptable measures.

I hope this helps clarify the desity questions which we have had.
Regards,

John C. Strickland, Council Member, Treasurer

John Strickland, Council Member, Treasurer

From: Medford, Rupert H [rupert.medford@ncwildlife.org]
Sent: Monday, November 10, 2014 1:22 PM
To: John C. Strickland
Subject: deer

John,

See (attached) my thoughts on density and culling numbers. Numbers as mentioned to you previously were based on a 17 square mile area. I found that it is a 15 square mile village, however. The difference amounts to about 15 deer and is not significant with so many unknowns.

I hope you recognize the number of unknowns involved here and are not bothered by them but it would be a disservice to imply that we know more than we do about density in such a "busy" landscape. For many folks an exact number is desired but this is usually impossible. It is far better to appreciate that exact numbers are not needed.

Rupert H Medford
District Six Wildlife Biologist
rupert.medford@ncwildlife.org
910.571.9747 (o)
910.975.0577 (m)

Density and Culling

I am writing regarding your request for a deer density and a number of deer to cull. I am perfectly comfortable giving you some numbers however I don't think that the numbers matter very much for two reasons.

1) **Any numbers I give will be based upon generalities rather than a scientific population estimate.**
2) **Other factors** (number of days, methods, safe places, private land access) **affecting any "culling" are more likely to influence numbers than a quota that you receive.** In other words, because of the limitations involved in the actual harvest process, cullers will not likely reach the target number of deer. Even if they do, there will parts of town that do not have adequate harvest because of limitations.

Referring to the deer density map for NC 2010 that I provided, you will note that density estimates for Moore County are in the 15-30 range. As mentioned, this density is based upon a number of factors but a very important metric involved is deer harvest. Since there is no harvest in Pinehurst, we cannot simply assume that the data is correct here. Additionally, being a human-dominated landscape has multiple influencing factors on density. There are scientific methods that can yield a more accurate deer population estimate; however the NCWRC does not have the resources available to conduct such a survey or census. For a more precise estimate Pinehurst should consult a private firm that may or may not be able to conduct and adequate survey. I can't imagine the methods and technologies used would be very accurate or efficient in an area so large, and so densely human-populated.

I believe it is best for the purposes of the Village of Pinehurst not to consider the number of deer per square mile but rather to think of deer in terms of **deer per square mile of habitat**. In a densely human-populated area these are two drastically different things. The difference between these two metrics could be accomplished with a GIS analysis however; I think this is something that is not necessary. Knowing exact numbers is not nearly as important as recognizing that deer management is one aspect of **responsible land stewardship.**

Deer are a prey species that were historically prey to a number of predators, including humans. Humans are now the only significant predator of adult deer in the southern piedmont; therefore the responsibility of effectively managing a rapidly reproducing species should be taken seriously by landowners and managers. The goal in a deer management program should be to have a balanced population. In the longleaf/wiregrass ecosystem, deer densities should be managed at around 15/mi^2 however with the Village being so human dominated, densities greater than this number would represent an overpopulation. Most places can support healthy deer herds at much higher densities but the Sandhills ecosystem is a nutrient poor ecosystem and numbers greater than this have negative impacts on forest regeneration, biodiversity, and overall deer herd health. The 15/mi^2 applies to a landscape that is basically not human-inhabited. The question that I cannot answer is this: how do the human impacts on the landscape affect deer carrying capacity? I believe that landscaping, fertilized lawns, brushy hedgerows, and city owned right-of-ways that increase edge habitat increase the carrying

I am writing regarding [your request/the recent planning application] for [brief description of proposal] at [address/location].

[Optional: I am writing to object to / support / comment on the above proposal.]

[Optional: I have previously written to you on this matter on [date].]

[Optional: I am writing to you as the [Ward Councillor / Parish Council Chair / Local Resident] for [area].]

[Optional: I am writing on behalf of [name of organisation].]

[Optional: I have been asked by [name] to write to you about this matter.]

[Optional: I have a personal interest in this matter as [explain briefly].]

[Optional: I declare a [personal / prejudicial] interest in this matter as [explain briefly].]

[Optional: I have been approached by a number of residents who have asked me to raise the following concerns on their behalf.]

[Optional: I am writing to you in my capacity as [role] to seek your views on the following proposal.]

[Optional: I am writing to you to request [information / a meeting / your support / your comments] on the following matter.]

[Optional: I am writing to you to inform you that [brief description of decision or action].]

[Optional: I am writing to you to follow up on my previous letter dated [date] regarding [subject].]

[Optional: I am writing to you to thank you for your letter dated [date] regarding [subject].]

[Optional: I am writing to you to apologise for the delay in responding to your letter dated [date].]

[Optional: I am writing to you to clarify my position on [subject] following [event / publication / discussion].]

[Optional: I am writing to you to correct a factual error in [publication / statement / report] regarding [subject].]

[Optional: I am writing to you to provide additional information in support of [application / proposal / objection].]

[Optional: I am writing to you to withdraw my [objection / support / comment] on the following matter.]

[Optional: I am writing to you to request a meeting to discuss [subject] in more detail.]

[Optional: I am writing to you to invite you to [event / site visit / meeting] on [date].]

[Optional: I am writing to you to express my concern about [subject] and to ask what action you intend to take.]

[Optional: I am writing to you to express my support for [subject] and to encourage you to [action].]

[Optional: I am writing to you to seek clarification on the following points relating to [subject].]

[Optional: I am writing to you to provide you with an update on the progress of [subject].]

[Optional: I am writing to you to advise you that I will be unable to attend [event / meeting] on [date] due to [reason].]

[Optional: I am writing to you to confirm my attendance at [event / meeting] on [date].]

[Optional: I am writing to you to request that you [action] by [date] at the latest.]

[Optional: I am writing to you to remind you that [subject] remains outstanding and to request an update.]

[Optional: I am writing to you to thank you for your prompt response to my letter dated [date].]

[Optional: I am writing to you to express my disappointment at the lack of response to my letter dated [date].]

[Optional: I am writing to you to request that you [action] as a matter of urgency.]

[Optional: I am writing to you to inform you that I have been unable to [action] due to [reason].]

[Optional: I am writing to you to confirm that I have received your letter dated [date] and will respond in due course.]

[Optional: I am writing to you to acknowledge receipt of your letter dated [date] and to advise you that I will be unable to respond fully until [date].]

[Optional: I am writing to you to request that you [action] as a matter of urgency because [reason].]

[Optional: I am writing to you to request that you [action] by [date] at the latest because [reason

capacity of the **available** habitat. That is to say that there is an overall habitat improvement, not considering that habitat that is completely lost. This does not take into consideration the land areas that are occupied by impervious surfaces, structures, etc. Practicing deer management in urban areas should consider factors other than biological factors. As such, density becomes less important than social factors such as damage to landscaping and gardens, deer-vehicle-collisions and so forth. These are important indicators that should influence deer harvest just as crop damage influences harvest in farmed landscapes.

Based on anecdotal evidence, personal sightings, and habitat it seems likely that the deer density map is fairly accurate with the more populated (human) portions of the village having fewer deer (~15/mi^2) and the less populated areas of the village having more deer (~30/mi^2). These numbers are generalities from a few selected areas that have been applied to other areas that seem similar based on lot sizes and habitat. There are certainly portions where these density estimates will be either too low or too high – but because exact numbers are not important and the land area is so large with so many other factors in play – these generalized numbers will be adequate as a starting point. I believe that these densities are conservative. The areas of greater density apply to about one third of the village with majority of the village being at a lower density. Applying this simple generalization yields a population estimate of around 300 deer within town limits. There are several factors that could introduce a great amount of error in this estimate with the most important one being surrounding landscapes (lands management and hunting pressure). It is likely that deer use along village limits is much higher where adjacent to better habitat. If a census were conducted using camera traps, for example, these deer would be captured as part of the population and densities would be reported as much higher than 15/mi^2.

To manage a population at a maintenance level, harvesting approximately 1/3 of the deer population is desirable. Another unknown that may come into play is "other mortality factors" that occur in the urban environment. Some of these include fawn predation by coyotes and dogs, vehicle mortality, and other non-hunting mortality (fence collisions/entanglements). Again, to be conservative I would recommend that a first year culling target 1/3 of the total estimated population. This buffers against over-harvest. If removing 100 deer is achieved then further evaluation of deer damage, DVC's, and complaints can give us a better idea for numbers for a future cull. Culling is not something that can be done once but rather would be annual or conducted on an every-other-year basis.

Again, to make sure I am being clear, there are many unknowns involved in this and to be precise about a population estimate further studies would be required. Since the harvest number is based on the estimate this would have to be adjusted based on any changes in estimate/density.

Best Regards,

Rupert H Medford

Sincerely,

Ruperta H. Woodford

Exhibit 9

Deer Management Reference List

Article		
Title	**Link**	**Description**
Out of Season (Humane Society)	http://www.humanesociety.org/news/magazines/2014/05-06/out-of-season-alternatives-to-deer-culls.html?credit=web_id254358634	Deer contraception performed by the organization Wildlife Rescue
Managing White-Tailed Deer in Suburban Environments, by Anthony DeNicola	http://wildlifecontrol.info/pubs/Documents/Deer/Deer_management_mechs.pdf	Biology of white-tailed deer as well as management techniques.
An Evaluation of Deer Management Options, by Northeast Deer Technical Committee	http://www.state.nj.us/dep/fgw/pdf/deer_mgt_options.pdf	Overview of various deer management options used in the Northeast
Evaluation of Organized Hunting as a Management Technique for Overabundant Deer in Suburban Landscapes	http://town.east-hampton.ny.us/DocumentsPDF/DeerManagement/EvaluationOrganizedHunting.pdf	This study demonstrates that a reduction in local deer densities using regulated hunting can be achieved.
Hopewell Valley Deer Management Plan, 2010 (NJ)	http://www.hopewelltwp.org/Final_Deer_Task_Force_Report_092710.pdf	The Task Force recommends a set of five comprehensive goals to remedy the deer situation. It also offers eleven specific strategies to meet those stated goals.
Hopewell Township Deer Management Advisory Committee Annual Report, 2013 (NJ)	http://www.hopewelltwp.org/deer_mgmt_committee/DMAC_Annual_Report_2013_07_25.pdf	An update from the Hopewell Valley Deer Management Plan of 2010

Experimental Control of a Suburban Population of White-Tailed Deer Using Immunocontraception, Princeton Township, NJ 2004	http://www.nj.gov/dep/fgw/pdf/bear/policy_lit/princeton_report_denicola04.pdf	The results of attempting immunocontraception in Princeton, NJ
Sharpshooting Suburban White-Tailed Deer by Anthony DeNicola, 2008	http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1068&context=hwi	Results of sharpshooting management projects in Iowa City, IA; Princeton, NJ; and Solon, OH.
Common Ground: Toward Balance and Stewardship	http://bloomington.in.gov/media/media/application/pdf/12811.pdf	Full report from the Bloomington-Monroe County Deer Task Force
Rock Creek Park Record of Decision, 2012	http://www.nps.gov/rocr/parkmgmt/upload/ROCR-Deer-Management-Plan-ROD-May-1-2012.pdf	Deer management plan for Rock Creek Park, Washington, DC.
Deer Management FAQs, 2013	http://www.nps.gov/rocr/parkmgmt/upload/Deer-Management-FAQ-December-31-2013.pdf	FAQs for Rock Creek Park's Deer Management Plan
Princeton Township Deer Mgmt Program Evaluation Committee Report	Print Version Only	A copy of this study is provided in your notebooks
Where to Hunt Whitetails in North Carolina in 2013	http://www.gameandfishmag.com/deer-forecast/north-carolina-deer-forecast-2013/	NC Game and Fish Magazine Website projects declining deer harvests
With $225K to Spend, USDA Cull Kills 192 Deer	http://suffolktimes.timesreview.com/2014/08/51598/fewer-than-200-deer-killed-in-225k-cull-that-didnt-work/	Long Island, NY hired sharpshooters to cull deer
Video		
Title	**Link**	**Description**
Contech Scarecrow Sprinkler - A Demonstration Review	https://www.youtube.com/watch?v=7jHYV6nJksw	A demonstration of deer repellent sprinklers
DVD - Living with White-tailed Deer Community Guide to Urban Deer	http://www.qdma.com/shop/dvd-living-with-white-tailed-deer-community-guide-to-urban-deer-management	Link provided by John Eastman - DVD available for purchase for $19.95
How Wolves Change Rivers	http://www.youtube.com/embed/ysa5OBhXz-Q?feature=player_embedded	Shows how the reducing of certain animals create different impacts
Website		
Title	**Link**	**Description**
American Meadows - company that provides deer resistant plants	www.americanmeadows.com	Link provided by Mary Scoggins - Deer resistant plants

Infographic - Likelihood by state of a car collision with a deer	http://www.iii.org/fact-statistic/deer-vehicle-collisions-infographic	Link provided by John Eastman - Infographic from State Farm indicating the likelihood by state of a car collision with a deer.
Bald Head Island Conservancy website	http://www.bhic.org/wildlife	Deer management program on Bald Head Island
Expert Opinions		
Name	**Organization**	**Contact Information**
Rupert Medford, District Biologist	Wildlife Resources Commission (herd & eating trends)	Office: 910-571-9747 Cell: 910-975-0577
John Young	Pinewild Culling Program	
Chief Earl Phipps	Pinehurst Police Department	910-295-1900
Bob Farren	Pinehurst, LLC (to discuss what other resort towns may be doing)	910-690-8952
Tyler Stowe	Outdoor Wildlife Management (specializes in complete management programs)	919-227-9826
Jim Groeger	Pinehurst resident, lifelong hunter and outdoorsman who understands social, ecological and fiscal decision-making, and solution implementation	jimgroeger@aim.com
	Dept of Public Health (deer-borne illnesses)	
	Landscapers	
	Insurance/Risk Management (accidents in Moore Co.)	
Joe Lasher	Backyard Bow Pro	866-645-1772; www.gamedinner.com