

FINAL REPORT

2023 DEER MANAGEMENT PROGRAM FOR ESSEX COUNTY, NEW JERSEY SOUTH MOUNTAIN RESERVATION HILLTOP RESERVATION

Prepared for

Joseph N. DiVincenzo, Jr., Essex County Executive,

the Essex County Board of Chosen Freeholders,

and

Daniel K. Salvante, Director,

Essex County Department of Parks, Recreation and Cultural Affairs

by

Daniel J. Bernier

Wildlife Management Consultant

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Background

In 1896, a year after the formation of the Essex County Park System, John Durand described the mountain that includes South Mountain Reservation as “a wilderness, as it probably existed at the time of Henrick Hudson, a primitive forest abounding with deer and other wild animals, and traversed by streams alive with trout. Game was plentiful – partridges, quail, woodcock, rabbits, squirrels of every species, raccoons and foxes.”

Today, the County of Essex, like many governmental entities in New Jersey, finds that deer abound in much greater numbers than the other wild animals. In several of its large tracts of parkland and open space, the County sees the problems typically associated with an over-population of white-tailed deer:

- Vegetation in tracts of public open space is being over-browsed, resulting in a loss of vegetative biodiversity;
- Loss of vegetation due to over-browsing is forcing a decline in the number of animal species, particularly songbirds and small mammals, that depend on the herbaceous and shrub layers of the forest and fields for food and cover;
- Over-browsing of native tree seedlings is precluding growth of new trees, altering the age structure of forested areas and stopping the ability of the forest to regenerate as older trees are lost;
- Loss of vegetation is decreasing the ability of forested areas to retain rainwater, increasing the rate and volume of stormwater runoff to streams and rivers, exacerbating erosion and flooding problems;
- Loss of native vegetation is enabling an incursion of invasive exotic plants, which outcompete native species, and provide little or no benefit to native wildlife;
- Trees and shrubs in the surrounding residential areas are being heavily browsed, resulting in huge financial losses for area residents, landscapers and nurseries;
- Deer-related motor vehicle accidents result in personal injury, significant property damage, and mortality or injury of many deer, and could lead to loss of human life;
- The fear of Lyme Disease diminishes enjoyment of the out-of-doors for many people, both in public open space and in their own yards; and
- Destruction of garden plants and the ubiquitous presence of deer droppings hinder the ability of homeowners to enjoy use of their own yards for gardening and recreating.

Officials of the County of Essex, including its Department of Parks, Recreation and Cultural Affairs, have been concerned for almost three decades with the dense population of white-tailed deer in the South Mountain Reservation, and the resultant effect on forest ecology and the surrounding community. Hearings organized by Freeholder Chairman (now County Executive) Joseph DiVincenzo in the mid 1990’s brought out residents complaining of the usual problems associated with high deer density in large tracts of public land surrounded by suburbia - residential landscaping damage, deer-related motor vehicle accidents, fear of Lyme Disease, and the inability of homeowners to enjoy use of their own yards.

Parks Department staff were particularly alarmed by the impact of overbrowsing of deer on the South Mountain Reservation, where the understory had been eaten away from most of the 2,047-acre park and the survival of plant and other animal communities was seriously threatened. In more recent years, expressions of concern for the forest ecology have been echoed by the South Mountain Conservancy and New Jersey Audubon.

In March, 2006, the County of Essex received a Landscape and Infrastructure Assessment and Restoration Management Plan for the South Mountain Reservation, prepared by Professional Planning and Engineering Corporation (PPE). Recommendations for management of deer presented in that plan were based on a Deer Management Report issued by The Louis Berger Group, Inc. in November, 2005.

Louis Berger and PPE noted that deer populations had been browsing on the understory of the forest at levels that were changing the vegetative species composition and disrupting the natural landscape. In addition, deer impacts were affecting the visitor's visual experience and the historic and scenic value of many areas in the largest park in the oldest County park system in the United States.

The impact of the high deer population on the forest ecology in South Mountain Reservation was most evident at the herbaceous and shrub layers of the understory. Tree seedlings, forbs, wildflowers, shrubs and even an accumulation of leaf litter had largely disappeared. The future effect on the forest was foretold as the tree canopy was thinning in some areas and not being replaced due to a lack of seedlings and saplings.

About 80% of the 2,047-acre park is forested. More than 75% of that area consists of an evenly aged stand of trees with low species diversity and minimal understory. The early successional habitat found in seedlings and saplings stands has been eliminated by deer overbrowsing, which precludes the possibility of forest regeneration.

In some areas, the lack of an understory has allowed the incursion of huge quantities of invasive plants, which deer won't eat and which provide little or no food or shelter resources to other wildlife. Massive stands of Japanese knotweed are prevalent along many of the roads and at the edges of meadows and activity areas. Japanese stiltgrass covers acres of the forest floor.

A survey of vegetation species found throughout South Mountain Reservation as part of the PPE study identified 98 different tree, shrub and herbaceous species. Eleven of those species are invasive plants not native to North America.

The loss of vegetation due to overbrowsing by deer was leading to an increase in erosion and a decline in stream and lake water quality. Slope areas and hiking trails that were most badly eroded were in areas where the herbaceous layer of the forest had been stripped away. Instead of rainwater seeping into the porous ground of a healthy forest, thereby filtering pollutants and assimilating nutrients, the water was running quickly over the hardened slopes, washing soil with it and causing a decrease in water quality in the park's streams.

As a first step in trying to deal with the burgeoning deer population, the County of Essex looked at the feasibility of instituting a deer management program in the South Mountain Reservation. The County hoped to draw upon the experience of its neighbor, the County of Union, which successfully addressed similar issues in its 2,143-acre Watchung Reservation.

The Watchung Reservation is similar to South Mountain Reservation in terms of size, ecology, and topography. Implementation of a deer management program there in 1995 achieved a reduction of deer density from 180/square mile to 35/square mile in just four years, and now is maintaining the population at about 30/square mile (though still trying to go lower). Impacts on the Watchung Reservation have been greatly reduced and signs of regeneration are found throughout the forest.

Essex County officials felt that lessons learned during and since the reduction phase of the Watchung Reservation program could be applied to efforts in South Mountain Reservation, and could be expected to achieve deer population reduction with greater efficiency of time and manpower. County Executive DiVincenzo recruited Daniel J. Bernier, a wildlife management consultant, in mid-2007 to design, permit, prepare and implement a deer management program for South Mountain Reservation. As Director of the Union County Division of Park Environmental Services, Bernier had administered the Watchung Reservation Deer Management Program since its inception in 1995.

Numerous meetings were held between the wildlife management consultant, Essex County officials and staff, municipal officials, and representatives of several law enforcement agencies. A set of Program Guidelines was developed that almost replicated the plan successfully used to remove deer by selected agents from the Watchung Reservation. All elements of the shooting program were crafted and carefully reviewed to ensure that deer would be removed in a manner that was safe for program participants, park users, and park neighbors, while at the same time being humane in its treatment of the deer.

Essex County set its initial goal at reducing the deer population to the 20 deer per square mile goal density that had typically been recommended for fostering a forest's ability to regenerate. That density equates to a targeted population size of about 64 deer in the park. Based on Forward Looking Infrared censuses of deer conducted between 1999 and 2005, it was estimated that achieving that density would require the removal of at least 250 deer.

After the New Jersey Division of Fish and Wildlife issued a Special Deer Management Permit, shooting activity began in January, 2008. When the program ended in late February, after 8 ½ days of operation, 213 deer had been harvested from the South Mountain Reservation. Similarly, in January and February of 2009, 83 deer were removed over the course of 9 days of hunting.

The Program Expands

In light of the considerable success achieved in reducing the deer density in South Mountain Reservation in just the first 2 years, County Executive DiVincenzo looked toward beginning to tackle the deer problem in other areas of the Essex County Park System. Two park properties where deer impacts were noticeable and complaints from the surrounding communities were high are Eagle Rock Reservation and the Hilltop Property.

Wildlife Management Consultant Bernier developed population density estimates that, in turn, guided the establishment of goals for removing 50 deer from South Mountain Reservation, 75 deer from Eagle Rock Reservation and 50 deer from the Hilltop Property in the 2010 season.

Because of a disparity in the number of deer killed on afternoon shifts versus morning shifts in 2009, it was recommended that hunting at South Mountain Reservation only be conducted in the afternoons in 2010. In 6 half-day shifts, another 44 deer were removed from the park. Remarkably, in 3 ½ full days of hunting, only 19 deer were removed from Eagle Rock Reservation. However, an incredible 97 deer were taken out of the Hilltop Property in that same time period.

Since 2010, goals have been set annually based on population density estimates. The length of the hunting program for South Mountain Reservation has varied from as short as 3 half-days to as long as 4.5 full days. Anywhere from 31 deer to 101 deer have been harvested in each of those years. At Hilltop Reservation, the harvest has varied from 39 deer to 120 deer in seasons that ranged from 4 half-days to 7 full days.

At Eagle Rock Reservation, between 19 and 23 deer were removed annually in seasons that lasted from 3 ½ days to 7 half-days. In 2013, no hunting was planned for Eagle Rock, as the deer population estimate at that time was lower than the amount that could be efficiently removed in terms of cost and manpower. Hunting has not returned to Eagle Rock Reservation since then, as the deer population has been too low to warrant the expense of a hunting program.

In 2019, 6 half-days of hunting yielded 101 deer from South Mountain Reservation. Ninety-nine deer were taken out of the Hilltop Reservation in another 6 half-days. In a similar schedule in 2020, 37 deer were removed from South Mountain Reservation and 55 from Hilltop Reservation. Deer management programs were planned for 2021 and 2022, but had to be cancelled before implementation due to the global coronavirus epidemic.

The Approval Process

Authority for the conduct of a deer management program of the type conducted in Essex County's parks since 2008 lies with the New Jersey Division of Fish and Wildlife, upon approval by the New Jersey Fish and Game Council. The Fish and Game Council, in January of 1994, adopted a program entitled the Community-Based Plan for the Management of Suburban Deer Populations. That program set forth optional methodology for deer reduction in areas where traditional hunting is not possible due to concerns for safety or public acceptance.

There was again a large number of antlered deer harvested. Of the 75 total males, 49% (37 deer) were antlered, similar to the 48% in 2020 and 49% in 2019, but greatly more than the 23% in 2018. Another 26 males had shed their antlers, and 12 were button bucks (fawns).

At South Mountain Reservation, 25 of the 93 total deer killed (27%) were male or female fawns, which was a slight decrease from the 30%. And at the Hilltop Property, 9 of the 59 total deer harvested (15%) were in that age category, a huge drop from the 58% in 2020 and even the 37% ratio in 2019.

Program Costs

Direct costs to the County of Essex for the operation of the Essex County Deer Management Program in 2023 were as follows:

Personnel overtime	
Park Maintenance	\$ 40,121.42
Sheriff's Department	22,324.08
Contracted services	
Wildlife Management Consultant	11,000.00
Butchering fees	14,345.00
Expendable materials & durable equipment	
Bait (whole corn)	2,000.00
Food	6,520.00
Ammunition	1,300.00
Baiting & processing equipment	3,199.72
Newspaper advertisements	865.87
Postcard printing & mailing	7,909.11

TOTAL program costs	109,585.20

As shown, the total direct program costs amounted to \$109,585.20. With 152 deer having been removed, this expense equates to a cost of \$720.96 per deer. Over the 14 seasons of hunting conducted since 2008, costs have ranged from a low of \$412 per deer (2008) to a high of \$1,044.58 (2020), with an average of \$642.26 per deer. Generally the cost per deer is proportionate to the total number of deer culled, as the fixed costs get spread out over more or less total deer harvested (see Appendix G).

The County of Essex again implemented all reasonable measures to ensure that this effort would be conducted in a manner that would be as safe and humane as possible, and that the general public would be well informed and inconvenienced as little as possible. Some of those measures could be scaled back in subsequent years, thereby resulting in a lower cost per deer.

Post-hunt, the County of Essex County contracted with Raritan Valley Community College to conduct an infrared census of deer in South Mountain Reservation from a drone. They also engaged Ecological Solutions, LLC, at a cost of \$5,815 to conduct a forest health study. Both surveys are essential to assessing the current deer density, its impact on the forest ecology, and the level of success achieved in forest regeneration.

Analysis

The 2023 season was the 14th year of the Essex County Deer Management Program. The average harvest across that span is 137 deer. The 152 total of deer harvested this year was the mean for those years, and only 15 deer (11%) higher than the average.

In 2019, 200 deer were harvested. That was the second highest total of all seasons to date. In 2020, the total dropped to 92, which was not unexpected considering that the population had been greatly impacted the prior year. Hunting did not occur in 2021 and 2022, enabling the population to grow with little restriction. So, it is understandable that the harvest jumped to 152 in 2023.

Subsequent Census Data

Spotlight counts are conducted each year in April in South Mountain, Eagle Rock and Hilltop Reservations to determine post-hunt deer population estimates. In 2023, the County of Essex also contracted with Raritan Valley Community College to conduct a deer population survey of South Mountain Reservation using drone-mounted infrared photography.

The Deer Population Estimator found in Appendix H has been used in the past to predict the overwintering population of deer in each park by starting with the spotlight count or drone survey results and applying formulas which account for estimated new births and non-hunt mortality. The estimated overwintering population then suggests the number of hunters to be recruited and the number of days to conduct hunting in order to reduce the deer density to population levels that minimize deer impacts.

Based on 2023 harvest results, the Estimator assumes that 53% of the deer population in South Mountain and 48% in Hilltop are female. It also assumes that 68% of the females are pregnant, and that the pregnant females will deliver an average of 1.69 offspring each. The number of deer will be reduced by 15% to account for loss to natural or accidental mortality.

Recommendations

The results of the 2023 deer management program show that the populations of deer in South Mountain Reservation and Hilltop Reservation are greatly reduced since deer management activities were first undertaken in 2008. However, those populations, especially in the Hilltop Reservation, are still considerably higher than they should be.

Forest ecologists recommend a deer density no greater than 20 deer per square mile in a healthy forest ecosystem. In a forest that is damaged by overbrowsing by deer, as is certainly the case at South Mountain and Hilltop Reservations, the density should be reduced to 10 deer per square mile or lower in order for forest regeneration to succeed.

For South Mountain Reservation, the Deer Population Estimator calculates an overwintering population for 2023-24 of 134 deer (42 per square mile), which is 70 deer more than the recommended population of 64 deer (20/square mile x 3.2 square miles) for this park, if this park had a healthy ecosystem. At the 10 deer/square mile density recommended for an impaired ecosystem, there is an excess of 102 deer.

Essex County has invested considerable resources to establish 41 fenced enclosures throughout South Mountain Reservation, in which native plantings have been installed to jumpstart the forest's recovery from the impacts of deer. In theory, as the deer population is incrementally decreased in size by the deer management program, the native plantings will have an increasing chance of repopulating themselves as they spread their seed beyond the fenced enclosures.

Therefore, reduction of the deer population in South Mountain Reservation should be continued. It is recommended that hunting occur at 14 baited sites, over the course of 5 days, with a goal of removing 102 deer. Based on past experience, hunting should be limited to afternoon shifts only.

The drone-mounted infrared survey of South Mountain Reservation showed higher densities of deer in some sections of the park versus other. That data should be correlated with the actual yields from the various baited sites when selecting bait sites for 2024.

The estimated 2023-24 overwintering population of deer for the Hilltop Property will be 84 deer (190/sq. mi.), or 80 deer more than the 4 deer recommended for this 0.44 square mile area. Therefore, the effort at the Hilltop Property should be continued in earnest. The extremely high density in and around the Hilltop Property needs to be cut drastically for the safety and welfare of park neighbors and the motoring public. Hunting should occur on 7 afternoons, at 8 baited sites, with a goal of removing 80 deer.

The schedule for hunting in 2024 should follow the same basic schedule as in 2023, hunting South Mountain Reservation on Tuesdays and Hilltop Reservation on Thursdays. However, at South Mountain there would be 5 afternoons of hunting, starting January 16, with 2 possible rain dates. There should be 7 afternoons of hunting at Hilltop Reservation, starting January 11, with 1 possible rain date. The rain dates would not extend beyond February 29. There will be no

conflicts with holidays.

The 2023-24 overwintering population at Eagle Rock will be 44 deer, which is 37 more than the recommended population of 7 deer for this 0.68 square mile park. However, the spotlight counts since 2018 saw such small numbers of deer that the validity of these numbers is questionable. I am hesitant to recommend a commitment of money and manpower to securing the park and hunting until we have better population data. Though an infrared drone survey scheduled in 2023 had to be cancelled due to an early leaf-out, it is hoped that one can be accomplished in 2024.

Infrared drone surveys should be conducted as soon as possible after the 2024 deer removal concludes. They are more reliable than spotlight counts, and important to determining the success of each harvest and in guiding continued deer removal efforts.

Acknowledgments

Essex County Executive Joseph DiVincenzo is to be commended for continuing the Essex County Deer Management Program in two of Essex County's most significant park properties. He recognizes the perilous future of the ecology of these irreplaceable park resources and is fighting to correct it in the most efficient and effective method possible, despite the objections of some County residents. The Essex County Board of County Commissioners showed that they share the County Executive's concern by voting to allow this program to continue.

The success of the Essex County Deer Management Program is due to the hard work, commitment and cooperation of hundreds of people. Thanks are extended to the staff of the Essex County Department of Parks, Recreation and Cultural Affairs, and in particular its Director, Daniel Salvante, and Tara Casella, Environmental Center Director; the Essex County Sheriff's Department, and in particular Sheriff Armando Fontoura and Sergeant Matthew Krug; and the numerous other Essex County and municipal agencies and offices that contributed to this effort.

The County of Essex extends its thanks to Jodi Powers, Senior Biologist with the New Jersey Division of Fish and Wildlife, for her assistance in the conduct of this program.

The residents of Essex County again owe a great deal of thanks to the hunters who took time away from their families, jobs, and their own personal pursuits to serve voluntarily in a program that is saving the ecology of parks in the Essex County Park System for the enjoyment and benefit of future generations of County residents and visitors.



Joseph N. DiVincenzo, Jr.
County Executive

COUNTY OF ESSEX
DEPARTMENT OF PARKS, RECREATION AND CULTURAL AFFAIRS
115 CLIFTON AVENUE
NEWARK, NEW JERSEY 07104
Phone: 973-268-3500
Fax: 973-481-5302
www.essexcountynj.org

Appendix A



Daniel K. Salvante
Director

2023 DEER MANAGEMENT PROGRAM FOR ESSEX COUNTY, NEW JERSEY

Adopted – August 3, 2022

PROGRAM GUIDELINES

INTRODUCTION

- The South Mountain Reservation encompasses 2047 acres (3.2 square miles) in the Townships of Maplewood, Millburn and West Orange.
- The Hilltop Reservation spans over 200 acres (0.33 square mile) in the Borough of North Caldwell and the Townships of Cedar Grove and Verona.
- Forest ecologists recommend that white-tailed deer populations in Northeast hardwood forests should not exceed a 10 deer per square mile in order to support biodiversity and ecosystem structure and function.
- Browse damage, damage to residential landscaping and the numbers of deer-related motor vehicle accidents indicate that white-tailed deer populations in South Mountain Reservation and the Hilltop Reservation far exceed the recommended density.
- Out of concern for the long-term health of the environment in its largest park properties, the County of Essex began in 2008 to reduce the density of deer.
- Achieving the goal density would curtail over-browsing of native vegetation and allow forest regeneration, minimize browsing of residential landscaping surrounding the County properties, and minimize the incidence of deer-related motor vehicle accidents.
- The County of Essex undertook programs in 2008 through 2020, with the assistance of community-minded licensed hunters with a proficiency in marksmanship, to reduce the population of deer in the South Mountain Reservation, Eagle Rock Reservation and the Hilltop Reservation. A total of 1,774 deer were removed as a result of those efforts.
- In 2023, the County of Essex will continue to reduce the number of deer in the South Mountain Reservation and the Hilltop Reservation.

GENERAL DESCRIPTION OF PROGRAM

- The County of Essex will continue to reduce the size of the South Mountain Reservation deer herd over the course of six (6) half days (afternoons) in January and February, 2023.
- The County of Essex will continue the removal of deer from the Hilltop Reservation over the course of six (6) half days (afternoons) in January, February and March, 2023.
- Such removal will again be accomplished through the efforts of selected agents, shooting over baited sites.
- 14 agents will be selected from among experienced, licensed hunters who can demonstrate a proficiency in marksmanship and some of whom participated in the previous deer management programs conducted in Essex County in 2008 through 2020.
- Agents will take part in this program on a voluntary basis.
- This program is designed to address a problem of population control; it is not intended to provide sport or recreational opportunities.

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PERMITS

- The County of Essex, through its Department of Parks, Recreation and Cultural Affairs, will submit an application for a Special Deer Management Permit to the New Jersey Division of Fish and Wildlife (NJDFW).
- If a permit is granted, the County of Essex will administer and conduct all deer management activities in South Mountain Reservation and the Hilltop Reservation.
- As agents of the County, participants will not be required to purchase hunting season or zone permits.
- Agents selected for this program will be required to purchase a 2023 hunting license prior to participation.
- Specific details of the deer control program may be adjusted as field conditions necessitate while conforming to statutory law and NJDFW policy and maintaining the highest standards of safety.

PROGRAM LENGTH

- The shooting program will occur on Tuesdays in South Mountain Reservation and Thursdays in Hilltop Reservation during the 8-week period starting January 10, 2023 and ending March 2, 2023.
- The program will occur on twelve (12) days only. The schedule includes two (2) rain dates for hunting in South Mountain Reservation and two (2) rain dates for hunting in Hilltop Reservation, to replace days of hunting that might need to be cancelled due to inclement weather.
- There is no limit on the number of deer to be removed.
- The number of agents to be utilized and the number of days of operation are based on a goal to remove 50 deer from South Mountain Reservation and 50 deer from the Hilltop Reservation.
- South Mountain Reservation and the Hilltop Reservation are closed to traditional hunting at all times.

HOURS OF PROGRAM OPERATION

- Agents may be in the field between 12:00 noon and approximately 8:00 pm for each afternoon shift.
- Shooting will occur only during daylight, the hours of which will vary as sunset changes daily.
- Each shift begins with the deployment of agents into the field and ends after all deer taken on that shift have been processed for transport to a butcher.

SELECTION AND QUALIFICATION OF AGENTS

- Applicants must meet the following qualifications:
 - be at least 21 years old;
 - be able to speak and understand the English language;
 - possess a valid New Jersey Firearm Hunting License or All-Around Sportsman License;
 - possess a valid New Jersey Firearm Purchaser Identification Card;
 - have not been convicted of any firearms violation, in any state, in the last 10 years, or of any fish and game code violation in the last 5 years;
 - have at least 5 years successful experience in hunting white-tailed deer with a shotgun;
 - be able to demonstrate an expertise in marksmanship; and
 - be available and willing to contribute voluntary service to the program for a minimum of seven (7) shifts.
- Agent Applications must be returned in person or by mail to the Essex County Dept. of Parks, Recreation and Cultural Affairs, 115 Clifton Ave., Newark, NJ, 07104, by Friday, September 30, 2022 no later than 4:30 PM.
- Applications may be sent via FAX or e-mail, to addresses stated on the application, before the deadline, but the original must follow by mail.
- The 14 agents will be selected in the following manner:
 - Applicants will be divided into two categories – 1.) those who participated as an agent in the Essex County Deer Management Program between 2008 and 2020, and 2.) all new applicants.
 - Applicants in the first category will be evaluated with respect to their hunting proficiency, availability, and adherence to program ethics and objectives.
 - Based on the evaluation and the number of applicants, up to 12 agents will be selected from among the applicants in the first category.
 - The remainder of the available agent positions will be filled with hunters chosen by lottery from the category of new applicants. Essex County residents or those who are employed within Essex County will be given preference in the lottery process.

- All agents will be informed whether or not they have been selected, via telephone call, letter or e-mail.
- All selected agents will be required to pass a marksmanship proficiency test and attend an orientation program on or about October 29, 2022.
- If information about one or more agents is requested by the general public through an Open Public Records Act request, the agents' names, addresses, and other personal identifiers will be redacted by the County of Essex from all requested documentation. The County of Essex has a responsibility and an obligation to safeguard from public access a citizen's personal information with which it has been entrusted when disclosure thereof would violate the citizen's reasonable expectation of privacy.

SCHEDULING OF AGENTS

- Applicants are required to indicate their availability for program activities on the Agent Application.
- A schedule, assigning hunters to a specific park or parks and to particular days and shifts, will be set and distributed to all agents, based on the availability of agents as indicated on their applications.
- The program is scheduled to occur on Tuesdays between January 10 and February 14 at South Mountain Reservation and on Thursdays between January 12 and February 16 at the Hilltop Reservation.
- In the event of inclement weather, as judged by the Director of the Department of Parks, Recreation and Cultural Affairs, program activities may be postponed to February 21 or February 28 for South Mountain Reservation and February 23 or March 2 for Hilltop Reservation.

PUBLIC NOTIFICATION

- The County of Essex will again utilize press releases, signage and mailings to inform the general public of the details of this program.
- All informational signage and documents will clearly state the schedule by which the Deer Management Program will operate for each property.

PROGRAM OPERATION

- Baiting stations will be set up in a multitude of locations throughout South Mountain Reservation and the Hilltop Reservation.
- Baiting stations will be carefully selected to provide the marksman with a clear and open view of the deer.
- Agents must utilize 12 gauge shotguns with telescopic sights, shooting only slugs.
- All shooting will occur from portable tree stands, shooting near or over bait, with hunters positioned on platforms at least 20 feet above the ground. Agents must provide their own stands. The use of ladder stands is not permissible.
- In order to achieve a reduction in population size as quickly as possible, a bias for the taking of deer will be adhered to again, in the following order – injured or sick deer, does, fawns, antlerless bucks, antlered bucks.
- The antlers of any antlered buck harvested will be cut off and retained by the County or destroyed.
- At any one time, up to 14 agents may be deployed into the South Mountain Reservation and 8 in the Hilltop Reservation.
- Agents will not be restricted as to the number of deer each individual can harvest.
- Some park roads and the access drives to some park areas will be closed during program activities.

DISPOSITION OF DEER

- Harvested deer will be transported to a County-operated, NJDFW-supervised check station at a location within a County park where agents will clean the deer and complete reports about the age, sex, and weight of the deer, the disposition of all shots fired, and the number of volunteer man-hours expended.
- All deer will be transported by the County to a NJDOH-approved butcher for processing.
- Any agent who completes at least seven (7) shifts of voluntary service to this program will receive 40 pounds of dressed venison at the conclusion of the program.
- The remainder of the venison will be distributed to the needy and the homeless through the Community Food Bank of New Jersey.

Joseph N. DiVincenzo, Jr., *Essex County Executive*
and the Board of County Commissioners

County of Essex
Office of the Essex County Executive
Hall of Records, Room 405
465 Martin Luther King Jr., Boulevard
Newark, NJ 07102

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ATTENTION

The 2023 Essex County Deer Management Program

will be conducted in

South Mountain Reservation

on Jan. 10, 17, 24, 31; Feb. 7, 14

*If a session is cancelled because of inclement weather,
it will be made up on Feb. 21 or 28*

and Hilltop Reservation

on Jan. 12, 19, 26; Feb. 2, 9, 16

*If a session is cancelled because of inclement weather,
it will be made up on Feb. 23 or March 2*

EXPERIENCED MARKSMEN WILL BE ON SITE

*For Safety Reasons, the Reservations
will be **CLOSED** to the Public*

For Information, Call 973-621-4400



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Joseph N. DiVincenzo, Jr., Essex County Executive
and the Board of County Commissioners



2023 Essex County Deer Management Program

For Safety Reasons,

South Mountain Reservation will be closed on Jan. 10, 17, 24, 31; Feb. 7, 14
*(*In the event of inclement weather, make-up days are Feb. 21 & 28)*

Hilltop Reservation will be closed on Jan. 12, 19, 26; Feb. 2, 9, 16
*(*In the event of inclement weather, make-up days are Feb. 23 & March 2)*

For Information, Call 973-621-4400

<u>January/February 2023</u>						
SUN	MON	TUE	WED	THU	FRI	SAT
8	9	<u>10</u> <u>SMR</u>	11	<u>12</u> <u>HR</u>	13	14
15	16	<u>17</u> <u>SMR</u>	18	<u>19</u> <u>HR</u>	20	21
22	23	<u>24</u> <u>SMR</u>	25	<u>26</u> <u>HR</u>	27	28
29	30	<u>31</u> <u>SMR</u>	1	<u>2</u> <u>HR</u>	3	4

<u>February/March 2023</u>						
SUN	MON	TUE	WED	THU	FRI	SAT
5	6	<u>7</u> <u>SMR</u>	8	<u>9</u> <u>HR</u>	10	11
12	13	<u>14</u> <u>SMR</u>	15	<u>16</u> <u>HR</u>	17	18
19	20	<u>21</u> <u>SMR*</u>	22	<u>23</u> <u>HR*</u>	24	25
26	27	<u>28</u> <u>SMR*</u>	1	<u>2</u> <u>HR*</u>	3	4

SMR – South Mountain Reservation; HR – Hilltop Reservation; * – Make up days if needed

Appendix G

ESSEX COUNTY DEER MANAGEMENT PROGRAM																	
Multi-Year Summary																	
Harvest	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total to date
South Mountain Reservation	Shifts: 8.5 days	9 days	6 p.m.'s	3 p.m.'s	4.5 days	3 p.m.'s	3 p.m.'s	3 p.m.'s	5 p.m.'s	2 p.m.'s	5 p.m.'s	6 p.m.'s	6 p.m.'s	0	0	0	1005
	Deer:	83	44	48	50	43	52	31	75	48	87	101	37	0	0	93	1005
	Fetuses:	147	55	15	26	29	19	22	13	33	34	43	41	18	0	0	544
	Total:	360	138	59	74	79	62	74	44	108	82	130	142	55	0	0	1549
Eagle Rock Reservation	Shifts:		3.5 days	7 p.m.'s	7 p.m.'s												61
	Deer:		19	19	23												54
	Fetuses:		23	13	18												115
	Total:		42	32	41												
Hilltop Reservation	Shifts:		3.5 days	7 days	7 days	2.5 days	4 p.m.'s	4 p.m.'s	5 p.m.'s	4 p.m.'s	6 p.m.'s	6 p.m.'s	6 p.m.'s	0	0	0	860
	Deer:		97	120	102	61	56	39	79	41	52	99	55	0	0	59	860
	Fetuses:		54	113	52	29	25	20	53	22	30	59	37	0	0	39	533
	Total:		151	233	154	90	81	59	132	63	82	158	92	0	0	98	1393
All properties combined	Deer:	213	83	160	187	175	108	70	154	89	139	200	92	0	0	152	1926
	Fetuses:	147	55	92	152	99	47	33	86	56	73	100	55	0	0	88	1131
	Total:	360	138	252	339	274	155	103	240	145	212	300	147	0	0	240	3057
Post-hunt density	SM	240 #	27	43	38	18	41	24	11	37	47	29	?	21 >	30 >	18	
	ER		42	105	24	15	19	29	20	18	18	29	?	27 >	47	41	
	HT		227	246	145	91	238	231	100	97	204	114	?	76 >	145	145	
			# Estimate based on harvest results														
			? No count due to COVID														
			> 2021 drone survey results														
Cost per deer culled	\$	412.00	985.57	617.12	595.02	744.13	461.75	736.10	486.90	500.89	571.65	521.44	1,044.58	-	-	720.96	642.26
Venison donated to Community FoodBank	lbs.	8,000	3,000	5,717	4,824	4,572	2,577	1,668	3,803	1,968	3,439	5,216	2,700	0	0	4,405	54,180
Number of deer carcasses picked up from County roadways		363	284	233	n/a	185	251	272	242	259	249	198	228	231			3,217

2024 Essex County Deer Management Program Deer Population Estimator

Appendix H

Park	Park size (sq. mi.)	% of view-able area	Pop. Goal at 20/sq. mi.	Pop. Goal at 10/sq. mi.	2022 Spotlight/drone count			Overwinter pop.		2023 Harvest			
					# of deer seen	Est. total deer	Est. density per sq. mi.	Est. total deer	Est. density per sq. mi.	Harvest goal	# of shifts	# of sites	Result
South Mountain	3.2	35%	64	32	81	96	30	118	37	50	6	13	93
Hilltop	0.44	40%	9	4	32	64	145	92	209	50	6	8	59
Eagle Rock	0.68	30%	14	7	8	32	47	43	63	0	0	0	0

Park	Park size (sq. mi.)	Survey area (sq mi)	Pop. Goal at 20/sq. mi.	Pop. Goal at 10/sq. mi.	2023 Spotlight/drone count			Overwinter pop.		Recommended 2024 Harvest			
					# of deer seen	Est. total deer	Est. density per sq. mi.	Est. total deer	Est. density per sq. mi.	Harvest goal @ 20/sq. mi.	Harvest goal @ 10/sq. mi.	# of shifts	# of sites
South Mountain	3.2	5.74	64	32	98	98	18	134	42	70	102	5	14
Hilltop	0.44	1.65	9	4	32	64	145	84	190	75	80	7	8
Eagle Rock	0.68	1.52	14	7	7	28	41	44	65	30	37	4	6

To calculate overwintering population for 2023-2024:	
Est. total deer - from 2023 spotlight or drone survey	
x 53% @ SM	(48% @ HT) (50% @ ER)
x 68%	# of females in population
x 1.69	# of females pregnant
=	births per pregnant deer
+ =	# of new births
=	Est. total deer - from 2023 spotlight or drone survey
x 85%	Sub-total
=	Loss to mortality
=	Estimated 2023-24 overwintering population

To determine # of hunting days:	
Start with harvest goals @ 10/sq. mi.	
Multiply x # of hours expended last season (increase to account for smaller population)	
Divide by number of hunters/bait sites	
Divide by average afternoon shift (7 hours)	
Result is number of days to hunt.	

All percentages/#'s taken from 2023 season