



VILLAGE OF DOBBS FERRY BOARD OF TRUSTEES
WORKSHOP MEETING AGENDA

MEETING DATE: April 23, 2024

AGENDA ITEM SECTION: Discussions

AGENDA ITEM NO. : 1

AGENDA ITEM:

Discuss options regarding deer management

ITEM BACKUP DOCUMENTATION:

1. New York State Department of Environmental Conservation
Management Plan for White-Tailed Deer in New York State, 2021-2030 (May 2021)
2. Irvington Woods Park
 - Letter dated March 15, 2024 to the Village of Irvington Mayor and Board of Trustees from Zoe Hamilton-vom Baur/Chair of the Irvington Woods Committee and members
 - Irvington Woods Ecosystem Protection
 - Irvington Woods Park Deer Management Plan
 - Irvington Woods Park Deer Management Proposal, Irvington Woods Committee, January 12, 2024
 - Irvington Woods Park Woodland sustainability for all species of animals and plants
 - Saw Mill River Audubon Statement on Deer Management



Department of
Environmental
Conservation


Management Plan for White-Tailed Deer in New York State, 2021–2030

May 2021

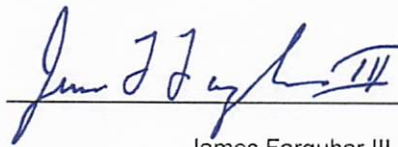
Andrew M. Cuomo, Governor | Basil Seggos, Commissioner



Management Plan for White-Tailed Deer in New York State, 2021–2030



Anthony Wilkinson
Director, Division of Fish and Wildlife



James Farquhar III
Chief, Bureau of Wildlife

June 7, 2021

Date

NEW YORK STATE DEER MANAGEMENT PLAN

Mission of the Bureau of Wildlife

To provide the people of New York the opportunity to enjoy all the benefits of the wildlife of the State, now and in the future. This shall be accomplished through scientifically sound management of wildlife species in a manner that is efficient, clearly described, consistent with law, and in harmony with public need.

Acknowledgments

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Introduction

The white-tailed deer (*Odocoileus virginianus*) is New York's most popular game animal and is found throughout the state. Residents and visitors to the state derive countless hours of enjoyment from the white-tailed deer resource. While interests vary, a healthy deer herd provides opportunities to enrich our lives and our appreciation for the natural world. As large herbivores, deer also play a role in shaping the landscape and can compete with human interests. Abundant deer populations can negatively affect plant communities and the other wildlife dependent on those communities. Deer can also cause problems for farmers, tree growers, and homeowners and are a frequent hazard for motorists. Management of deer in New York seeks to maximize the benefits of this important resource while being mindful of the human and ecological concerns associated with abundant deer populations.



The purpose of New York's deer management plan, the *Management Plan for White-Tailed Deer in New York State, 2021–2030* is two-fold: the first is to outline the components of New York's deer management program in a single document, allowing for public review, comment, and understanding, which are important elements as DEC seeks to manage deer in the public interest. The second purpose of this plan is to provide strategic direction for deer management in New York over the next 10 years.

This plan maintains six primary goals identified in the previous *Management Plan for White-Tailed Deer in New York State: 2012–2016* that encompass the priorities for deer management and the values and issues expressed by the public: 1) manage deer populations at levels that are appropriate for human and ecological concerns; 2) promote the benefits of deer hunting and enhance its usefulness as a management tool in New York; 3) reduce the negative impacts caused by deer; 4) foster understanding and communication about deer ecology, management, economic aspects, and recreational opportunities while enhancing DEC's understanding of the public's interest; 5) manage deer to promote healthy and sustainable forests and enhance habitat conservation efforts to benefit deer and other species; and 6) ensure that the necessary resources are available to support the proper management of white-tailed deer in New York. DEC seeks to achieve these goals through implementation of sound scientific management principles in a manner that is responsive to the complex ecological, cultural, recreational, and economic dynamics associated with deer in New York.

This plan calls for continued review and modification of management practices as needed to improve program efficiency and effectiveness. Many of the strategies identified in this plan are descriptions of activities that are already occurring in the deer management program. Other strategies reflect new work or propose new concepts to be more fully explored or implemented during the 10-year period of this plan. Deer management must be dynamic, adapting to changes in deer population status, associated impacts,

and public values. As such, elements of this plan (e.g., population trajectories, deer-hunting strategies) will be reviewed and modified as necessary within the 10-year plan period.

Successful implementation of many aspects of this plan will require greater levels of cooperation and partnership within divisions of DEC and between DEC and other organizations and agencies. Further, deer populations and deer management are influenced by long-term cultural and ecological changes (e.g., declines in hunter numbers, changes in land use and

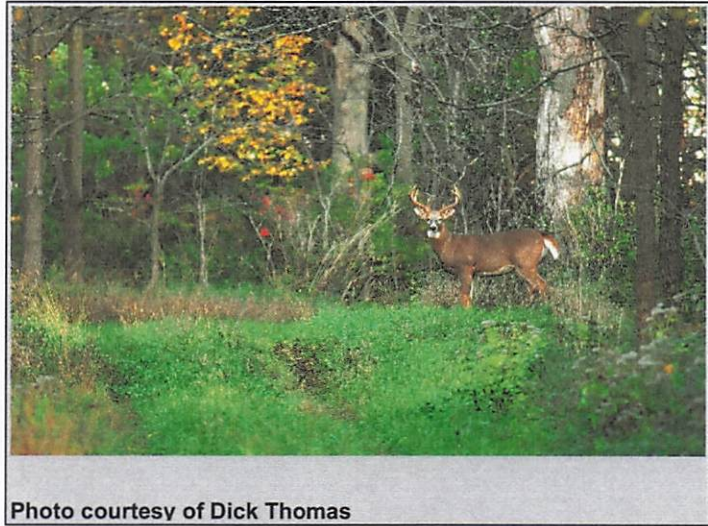


Photo courtesy of Dick Thomas

human development, and climate change). DEC's ability to understand, predict, and respond to these influences will be foundational to maintaining effective deer management in the future. This plan identifies the need for long-term planning and research but also provides recommendations for immediate actions that will help to reduce human-deer conflicts and better align deer population objectives with impacts of deer on their habitat.

By focusing on the goals of this plan, DEC strives to provide a deer management program that balances the diverse interests and values of the public with the biological needs and ecological relationships of deer, for the benefit of New York's white-tailed deer herd and its people.

Complementary Programs

The management activities outlined in this plan will guide the work of deer management program staff within DEC's Division of Fish and Wildlife. However, deer populations and deer management in New York benefit from the work of a variety of DEC units. Deer program staff often work closely with other DEC units on many complementary activities, though these activities may primarily exist for other purposes and may be guided by management plans and policies of the other DEC units.

Complementary activities include, but are not limited to:

- habitat management on Wildlife Management Areas, including the creation of [young forest](#);
- State Forest management planning;
- State land acquisition and conservation easements;
- private land forest management and habitat conservation;
- hunter education;
- wildlife health; and
- law enforcement and forest protection.

Legal Mandate

The basis for New York's deer management program is established in the New York State Environmental Conservation Law (ECL) Article 11, which spells out the authority, responsibility, and policy related to management of the white-tailed deer resource. DEC is granted authority by the ECL to establish rules and regulations for some, but not all, aspects of deer hunting and deer management. Briefly paraphrased, the predominant statutes include:

Section 11-0105

The State of New York owns all fish, game, wildlife, shellfish, crustaceans, and protected insects in the state, except those legally acquired and held in private ownership.

Section 11-0303

DEC is directed to restore, maintain, and improve the state's fish and wildlife resources, and make these resources accessible for recreational purposes to the people of the state. DEC is directed to carry out programs that (a) promote natural propagation and maintenance of desirable species in ecological balance, and (b) lead to the observance of sound management practices, having regard to (1) ecological factors, including the importance of ecological balance in maintaining natural resources; (2) the compatibility of production and harvesting of fish and wildlife crops with other necessary or desirable land uses; (3) the importance of fish and wildlife resources for recreational purposes; (4) requirements for public safety; and (5) the need for adequate protection of private premises and of the persons and property of occupants thereof against abuse of privileges of access to such premises for hunting, fishing, or trapping.

ECL § 11-0521

DEC is authorized to issue permits to take deer that are destructive to public or private property or are a threat to public health or safety.

ECL § 11-0903

DEC is granted limited authority to establish regulations for the open seasons, bag limits, and manner of taking deer.

Additionally, DEC's wildlife management activities and their impacts are described in the *Programmatic Environmental Impact Statement on Wildlife Game Species Management Program of the Department of Environmental Conservation Division of Fish and Wildlife* (DEC, 1980) and reiterated in the *Supplemental SEQR Findings and Decisions* (DEC 1994). DEC's white-tailed deer management program, as outlined in this plan, is consistent with the accepted principles, practices, and actions specified in these documents and in accordance with the authorities established in the state's Fish and Wildlife Law, ECL Article 11.

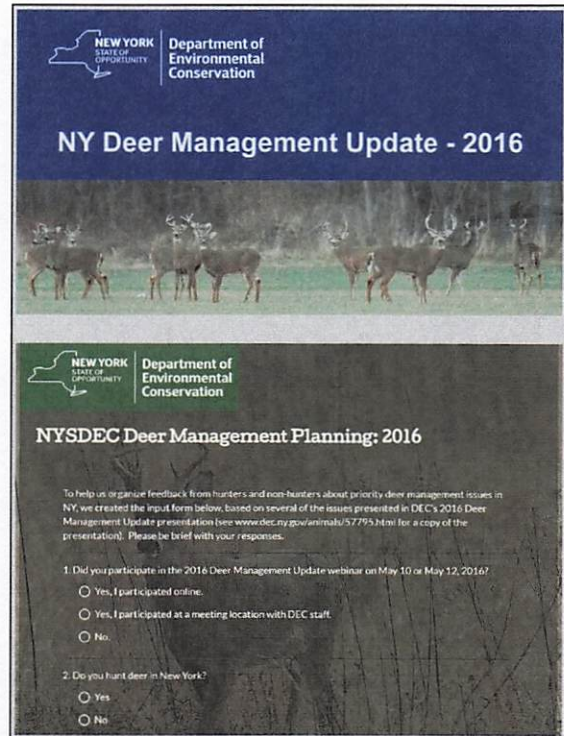
Plan Update Process

This plan updates the *Management Plan for White-Tailed Deer in New York State, 2012–2016* (DEC, 2011). Revisions largely reflect continued progress and evolution of the deer management program, with completed actions removed from the plan, continued actions modified and clarified as appropriate, and new actions recommended in accordance with current management priorities and needs.

Public input is a critical component of the deer management program, and the plan revision process included the following components:

- 1. 2016 public meetings and input process**

In May 2016, DEC hosted an information sharing event in which the public was invited to connect with staff in-person at 20 meeting venues across the state or participate remotely via the internet. DEC presented a status update of the deer management program, identified priority issues and several key challenges, and created an opportunity for the public to provide feedback with their concerns and interests for deer management in New York. Concurrent with the public meetings, DEC posted a Deer Management Planning Public Input Form online for meeting participants and other interested individuals and groups to share their perspective on a variety of deer management topics. The feedback that DEC received helped inform several aspects of this plan, including antlerless and buck harvest management, urban and suburban deer management, setting population objectives with data on deer impacts to forests and public preferences, and protecting New York deer from chronic wasting disease (CWD).



- 2. Public surveys for deer population preferences**

From 2018 to 2020, DEC and the Center for Conservation Social Science at Cornell University conducted surveys of New Yorkers to understand their interests and concerns related to deer and how they would like the deer population to change in their local area in the future ([Appendix 2](#)).

- 3. Plan writing**

DEC reviewed the various forms of public input received, as well as input gathered through regular informal interactions with the public, in conjunction with current deer management priorities to establish the goals, objectives, and strategies laid forth in this plan.

4. Public review and comment

A draft of this deer management plan was released on November 27, 2020, for 30 days of public comment. DEC received comments from over two thousand individuals and organizations. Subsequently, DEC reviewed and summarized the most substantive comments and made several significant changes to the final version of this plan. An *Assessment of Public Comment on the Draft NYS Deer Management Plan, 2021–2030* is available on [DEC's Deer Management webpage](#). Primary changes from the draft plan include:

- [Introduction](#) – emphasized that deer management is adaptive, and modifications can be made as needed within the 10-year time frame of this plan.
- [Complementary programs](#) – added this section to acknowledge other program areas and activities of DEC which benefit deer and deer management.
- [Goal 1 description](#) – added information about how DEC addresses non-hunting mortality sources of deer (e.g., predation, deer-vehicle collisions).
- [Goal 2 description](#) – added more information about the mandatory antler restriction program.
- [Strategy 2.2.1](#) – added a new routine activity to clarify that DEC continually monitors and evaluates existing hunting seasons and will make changes as needed.
- [Strategy 2.4.3](#) – clarified that DEC will also work with federal land managers to increase land access for deer hunters.
- [Strategy 4.2.2](#) – clarified intent for DEC staff to participate in periodic meetings of hunting organizations and other conservation or civic organizations to provide information and gather feedback about deer management.
- [Strategy 5.1.2](#) – clarified that the Assessing Vegetation Impacts of Deer (AVID) protocol will be prioritized in areas where forest regeneration is compromised, and that as data are acquired, the AVID protocol will be used to inform decisions about deer population trajectories.
- [Strategy 6.2.2](#) – added a new strategy to seek opportunities to engage elected officials on deer management issues.
- [Appendix 2: Deer Population Trajectories](#) – modified the decision framework for setting deer population trajectories to acknowledge that regeneration debt levels of 1 represent vulnerable forests and to emphasize the benefit of AVID as an additional metric of deer impacts in WMU Aggregates with regeneration debt. We also added information on public survey methodology and demographics of respondents.
- [Appendix 3: Recommendation to Prohibit Cervid Biofluid Products](#) – updated the text and cited new research that found the infective dose of prions is substantially smaller than previously thought.
- [Appendix 8: Legal Matters](#) – emphasized that in relation to matters governed by the Environmental Conservation Law (e.g., crossbows, hunter age, areas closed to deer hunting, tax incentives), DEC can only provide recommendations. Law changes can only be accomplished through the legislative process.
 - [Hunter Age](#): clarified that youth hunters require supervision by licensed, experienced adult hunters; corrected text to reflect that New York is the only state that does not allow youths 12 years old or younger to hunt deer with a firearm.

While this plan indicates DEC's intended direction for deer management and deer hunting, implementation of some strategies will require new or amended state regulations. As such, all regulation proposals will be subject to an additional 60-day public comment period during the formal rule-making process.

Summary of Accomplishments from 2012–2016 Deer Management Plan

The Big Game Team, comprised of DEC biologists tasked with deer management responsibilities, was responsible for carrying out the tasks outlined in the previous management plan. Below are summaries of accomplishments for each goal of the plan.

Goal 1: Population Management

In addition to completing routine annual tasks of monitoring deer abundance, calculating deer harvest, issuing deer management permits (DMPs), and monitoring deer for disease, DEC:

- delineated Wildlife Management Unit (WMU) Aggregates based on key ecological criteria associated with deer biology and abundance to strengthen deer harvest data;
- enhanced the data inputs used to calculate the winter severity index for deer;
- piloted a modified citizen task force process to provide input on deer population objectives;
- surveyed New Yorkers across the state to understand public perceptions of deer impacts and determine the public's desire for deer population change; and
- adopted CWD surveillance, response, and risk-minimization plans and adopted regulations to further protect wild deer from CWD.

Resulting publications (see [Literature Cited](#) section for full citations)

White-tailed deer productivity in New York (Hurst and Kirsch, 2012)

Surveillance plan for chronic wasting disease in New York State (DEC, 2013)

Challenges for multilevel stakeholder engagement in public trust resource governance (Pomeranz et al., 2014)

Can managers compensate for coyote predation of white-tailed deer? (Robinson et al., 2014)

New York State Interagency chronic wasting disease response plan, 2015–2025. (DEC, 2015)

Residents' attitudes about deer and deer management in the Central Finger Lakes Management Unit (Siemer et al., 2015)

Evaluation of a pilot program to improve public input about deer and deer impacts (Pomeranz et al., 2017)

Participant evaluation of webinar series to support deer management in the Central Finger Lakes WMU Aggregate (Siemer et al., 2017)

New York State interagency CWD risk minimization plan (DEC, 2018)

Understanding local residents' deer population preferences: Results from a 2018 survey of 7 Wildlife Management Unit Aggregates (Siemer et al., 2018)

Local residents' deer population preferences: Results from a 2019 survey of 8 Wildlife Management Unit Aggregates (Siemer et al., 2019)

Local residents' deer population preferences: Results from a 2020 survey of 8 Wildlife Management Unit Aggregates (Siemer et al., 2020)

Goal 2: Hunting

Because hunting is a critically important deer management tool, DEC staff routinely work to maintain hunting regulations that balance deer management needs with hunter satisfaction and broader public interests. Following recommendations of the previous plan, DEC:

- established a youth-only Big Game Hunt over the Columbus Day Weekend;
- expanded bowhunting seasons in the Northern and Southern Zones;
- changed regulations to allow Deer Management Permits (DMPs; antlerless tags) to be used during bowhunting and early muzzleloader season in the Northern Zone;
- tested a strategy to increase antlerless harvest in areas where deer populations were above desired levels by expanding the use of Bonus-DMPs and making a portion of the early bowhunting and late muzzleloading season restricted to antlerless deer only;
- expanded mandatory antler point restrictions into seven additional WMUs;
- conducted an extensive, structured decision-making process to identify the optimal strategy for buck harvest, then initiated an education campaign to encourage hunters to voluntarily [*Let Young Bucks Go and Watch Them Grow*](#);
- expanded open areas and lengthened the January firearms deer season in Suffolk County; and
- worked with the Office of Parks, Recreation and Historic Preservation to allow deer hunting in several additional State Parks and expand deer hunting opportunity in others.

Resulting publications (see [Literature Cited](#) section for full citations)

A structured decision-making approach to white-tailed deer buck harvest management in New York State (Robinson et al., 2015)

Hunter satisfactions with deer harvest opportunities in New York State (Siemer et al., 2015)

Delineation of management zones for buck harvest decision making (Kelly and Hurst, 2016)

Structured decision making as a framework for large-scale wildlife harvest management decisions (Robinson et al., 2016)

Effects of antler point restrictions on white-tailed deer harvest in New York State (Kellner et al., *in review*)

Goal 3: Deer Damage

To address deer-related impacts on cropland, managed forests, and in developed areas, DEC staff annually issue Deer Damage Permits (DDPs) and administer the Deer Management Assistance Program (DMAP) to provide property-specific deer management for landowners. Additionally, DEC:

- increased enforcement of regulations and permit conditions associated with the DDP and DMAP programs;
- updated guidelines and procedures for issuing DDPs and DMAP permits;
- created a deer management focus area, with liberal harvest limits and extended seasons, in Tompkins County (www.dec.ny.gov/outdoor/82382.html) to test the “focus area” strategy for alleviating deer overabundance problems in urban/suburban areas;
- updated DEC’s deer management guidance document for communities (www.dec.ny.gov/docs/wildlife_pdf/commdeermgmtguide.pdf);

- reported to the New York State Legislature on *Deer Management in Urban and Suburban New York* (www.dec.ny.gov/docs/wildlife_pdf/decdeerreport18.pdf); and
- approved research projects investigating the utility of sterilization and immuno-contraception for controlling deer populations in five communities: Cayuga Heights, East Hampton, Hastings-on-Hudson, Head-of-Harbor, and Staten Island.

Resulting publications (see [Literature Cited](#) section for full citations)

Hunter, landowner, and local resident viewpoints on the Central Tompkins County Deer Management Focus area (Siemer et al., 2015)

Goal 4: Education and Communication

In addition to routine press releases, e-newsletters, and social media posts, DEC staff provide numerous presentations to school, community, and conservation groups to inform the public about deer biology and management and gather feedback about public concerns and interests. Following recommendations of the previous plan, DEC also:

- hosted a series of online and in-person public meetings on deer management;
- collected public feedback about deer management via an internet survey in 2016;
- updated deer management webpages on the DEC website and created webpages on deer overabundance (www.dec.ny.gov/animals/104911.html) and community deer management (www.dec.ny.gov/animals/104961.html);
- produced a special issue of DEC's *Junior Naturalist Journal* featuring white-tailed deer; and
- developed flyers about [forest impacts caused by deer](#) and [what DEC is doing about chronic wasting disease](#).

Goal 5: Habitat

Because most land in New York is privately owned, DEC indirectly influences habitat conditions by increasing or decreasing antlerless harvest and educating the public on how to improve habitat for deer. To better understand deer impacts on habitat, and promote habitat management efforts, DEC collaborated with researchers from the State University of New York College of Environmental Science and Forestry (SUNY ESF) and Cornell University to:

- model deer impacts on forest regeneration; and
- develop a simple protocol for landowners to monitor deer vegetation impacts on their property (Assessing Vegetation Impacts from Deer – AVID; <http://aviddeer.com/>).

Resulting publications (see [Literature Cited](#) section for full citations)

Assessing Vegetation Impacts from Deer: a rapid assessment method for evaluating deer impacts to forest vegetation (Sullivan et al., 2017)

Modelling white-tailed deer impacts on forest regeneration to inform deer management options at landscape scales (Lesser et al., 2019)

Goal 6: Operational

Tasks associated with this goal were routine in nature and included:

- training in aging deer by tooth-wear and replacement; and
- training in chemical immobilization and the safe use of firearms for wildlife collection.

History of Deer and Deer Management in New York

When European settlers arrived in New York, white-tailed deer were apparently present throughout the state, but densities varied greatly by region. Relatively high densities of deer lived in open areas maintained by Native Americans primarily through periodic burning. However, the majority of New York was covered in mature forest, suitable only for relatively low densities of deer.

Throughout the state, deer were an important source of meat, bone, and hide for both Native Americans and settlers. As forests were cleared for agriculture, habitat conditions improved for deer, and their populations initially increased. Though periodic laws were enacted to afford some protection to deer (the earliest occurring in 1705), by the mid-1800s, excessive deer harvest by settlers and extensive habitat loss to agriculture caused deer populations to decline dramatically. By the 1880s, less than 25% of New York State was forested, and deer were absent in most of New York except the central Adirondack Mountains (Severinghaus and Brown, 1956; Figure 1).



Photo courtesy of the New York State Archives

Following extirpation of deer from most of the state, the Legislature formed the New York State Fisheries, Game and Forest Commission in 1895, and deer populations received better protection, predominantly by closed seasons and very limited antlerless harvest ([Appendix 1](#)). Deer recolonized New York via migration from remnant populations in the Adirondacks, Vermont, Massachusetts, and Pennsylvania, and a small herd relocated from the Adirondacks to the southern Catskills (Figure 1). The deer population increased in distribution and density through the 20th century, reinhabiting all areas of the state.

As deer populations grew in number and distribution, hunting seasons resumed incrementally until nearly all the state was open to deer hunting. Abandonment of farms

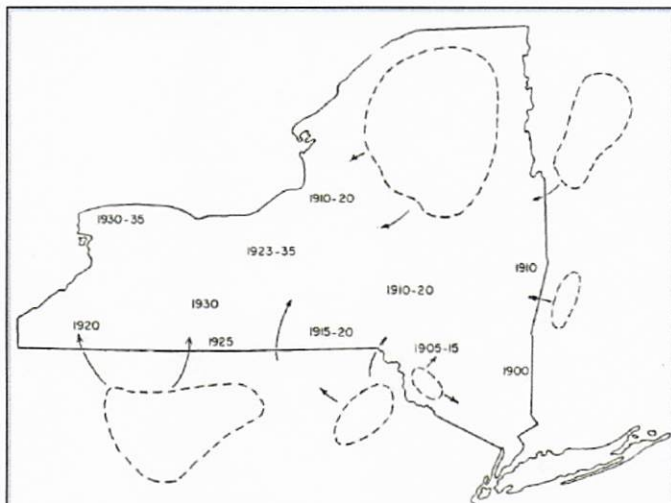
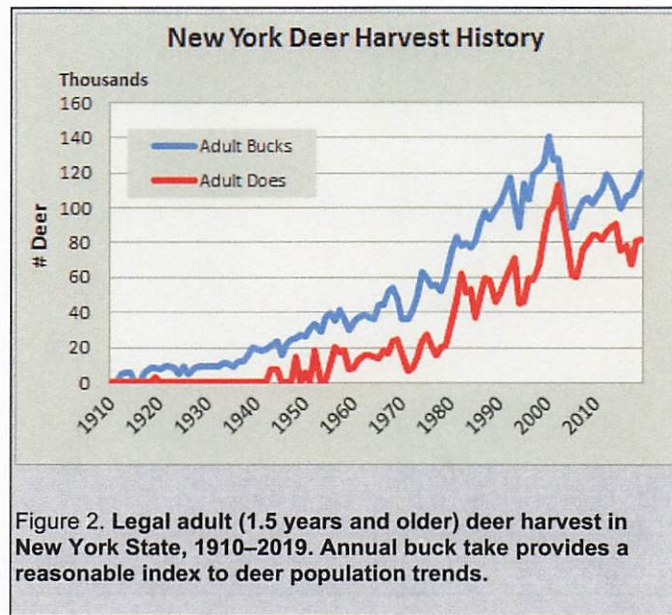
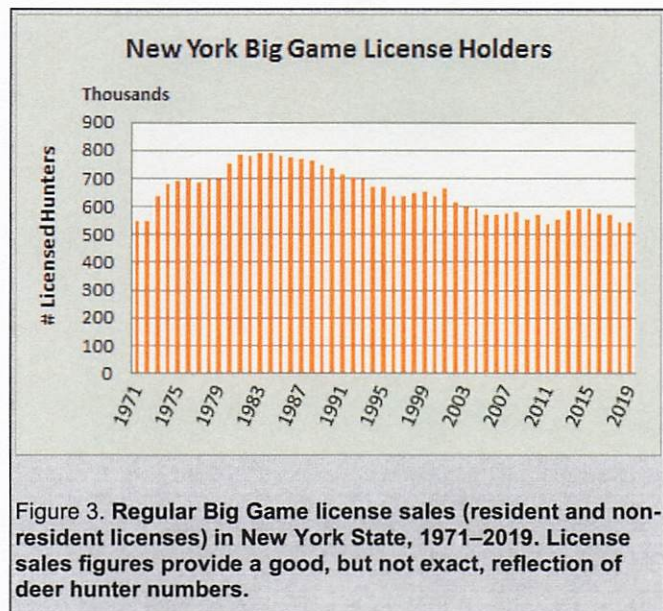


Figure 1. Major centers of deer population in 1890–1900 in New York and vicinity from which deer spread throughout the state. Dates represent approximate times that deer appeared in various parts of New York (Severinghaus and Brown, 1956).

on marginal lands led to increased early successional and young forest cover and better deer habitat throughout the state. By the 1940s, locally abundant deer populations resulted in higher levels of agricultural damage and over-browsing of winter range in some locations. Short either-sex or doe-only hunting seasons were used periodically to stem population growth (Figure 2). In the 1960s, through establishment of the Party Permit system (i.e., one antlerless tag per group of hunters), antlerless harvest became routine in some areas. Party Permits later transitioned into Deer Management Permits (DMPs) which are issued to individual hunters for use in specific Wildlife Management Units (WMUs). These permits allow deer managers to accurately distribute the necessary antlerless harvest throughout the state.



Concurrent with deer population changes over the past century, the number of participating deer hunters has also fluctuated. After reaching a peak in the mid-1980s, hunter numbers in New York began to decline at a rate of roughly 2% per year through the early 2000s (Figure 3). Reflective of nationwide trends, the decline in hunters is understood to be driven by changing demographic factors of society, primarily increasing urbanization (Responsive Management/National Shooting Sports Foundation, 2008). Because hunting is the primary tool used by state agencies to manage deer populations, these trends present unique challenges for the future of deer management.



Goal 1: Population Management

Manage deer populations at levels that are appropriate for human and ecological concerns.

The white-tailed deer is the most popular game animal in the state, providing many hours of recreation (e.g., observation, photography, and hunting) and nearly 11 million pounds of high-quality meat to New Yorkers each year. Through these sustainable uses of the deer resource, hundreds of millions of dollars are generated annually for the state's economy (see sidebar on page 16). Conversely, the potential for deer populations to exceed carrying capacity, impact other plant and animal species, conflict with land-use practices, and affect human health and safety necessitate efficient and effective herd management.

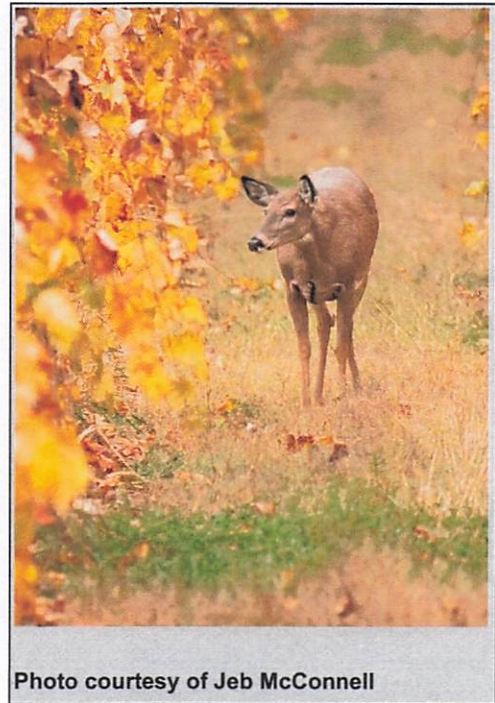


Photo courtesy of Jeb McConnell

DEC is legally mandated to manage deer with consideration of ecological impacts, human land uses, recreation, and public safety. Balancing the deer population with the often-conflicting demands of the various stakeholders impacted by deer is a fundamental challenge for deer managers. DEC has a long history of and commitment to involving the public in deer management decision making. This began in the early 1990s with the implementation of citizen task forces (CTFs), when DEC convened small groups of local stakeholders to determine population objectives for each WMU. While groundbreaking at the time, the CTF model had a limited reach and the need emerged for broader-scale public engagement. From 2014–2017, DEC collaborated with the Cornell University Center for Conservation Social Science on a pilot program to test several new methods of gathering public input (Pomeranz et al., 2014; Siemer et al., 2015; Pomeranz et al., 2017). Based on the results of the pilot program, DEC will no longer convene CTFs, but has transitioned to the use of questionnaires to understand public preferences about deer populations. Beginning in 2018, a survey ([Appendix 2](#)) was mailed to property owners throughout the state and asked respondents about:

- their interests and concerns related to deer;
- how they would like to see the deer population in their local area change in the near future (increase, decrease, remain the same); and
- how important deer management issues are to them.

Deer hunters have an inherent interest in the size of local deer populations. However, people from all sectors of society also experience the positive and negative impacts of deer and have important perspective on deer population management. Thus, use of surveys allows DEC to better understand concerns and preferences of all New Yorkers, including deer hunters and everyone else.

Survey results, in combination with data on deer impacts on forest regeneration, will guide future deer population management decisions (see detailed description in [Appendix 2](#)). In order to capture changes in deer population preferences, DEC intends to repeat the public surveys periodically and adapt management directions as necessary to fit the most recent sociological and forest regeneration data.

Deer management in New York has historically been implemented at the WMU level, which were established and modified over time to reflect local differences in land uses, human population densities, forest and soil types, climate conditions, and other factors that affect the quantity and condition of deer. Current WMUs range in size from 92 to 3,047 square miles but average only 530 square miles. At this relatively small scale, it was difficult to obtain sufficient data for analyzing and managing deer populations with a high degree of confidence. To make better use of deer population data, DEC grouped WMUs into larger units based on similarities in ecological conditions and human and deer population characteristics (Figure 4). These 23 WMU Aggregates, excluding areas where deer hunting is prohibited by statute, will be used by deer managers for the purposes of collecting and analyzing data relevant for deer population management; however, individual WMUs will remain in place for regulatory purposes and deer tag issuance.

Successful deer population management requires assessing public desires, ecological impacts, and population trends. Then, goals and management activities can be identified, implemented, and evaluated. Though estimates of deer population abundance and density are frequently sought by the public, meaningful estimates are difficult and expensive to acquire for free-ranging deer populations. Moreover, population estimates may not provide essential information for management. Deer managers use population indices rather than an absolute measure of abundance to monitor trends in population size, condition, and impact on the

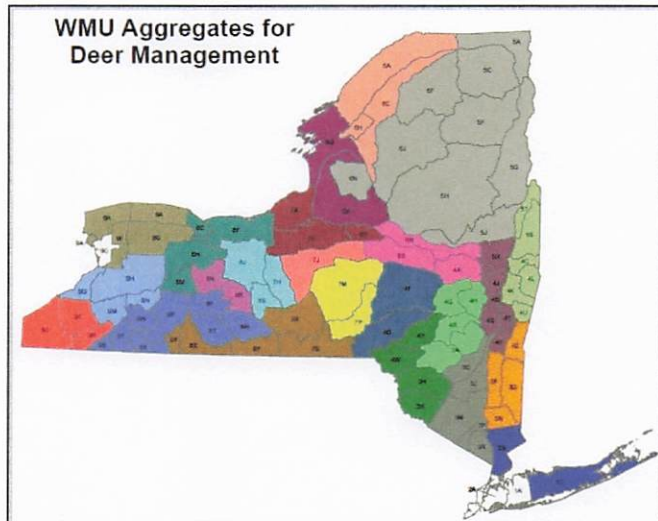


Figure 4. Wildlife Management Unit Aggregates for deer management in New York.

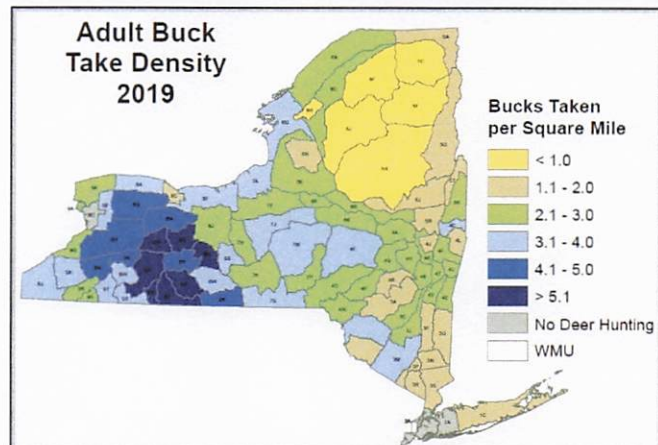


Figure 5. Harvest density of adult bucks (1.5+ years old) by Wildlife Management Unit in 2019, illustrating variation in relative population density across New York State.



Photo courtesy of Dick Thomas

environment. Together, these factors are more valuable than precise knowledge of the number of deer. In New York, DEC uses the annual buck harvest density (bucks taken per square mile, Figure 5) as an index to monitor trends in deer abundance and age and sex of harvested deer to monitor trends in population demographics. However, as patterns in access to land for deer hunting become less uniform and hunters become more selective by choosing not to take young, small-antlered bucks, annual buck harvest density may become a less sensitive index of population change. To compensate, DEC will explore mechanisms to enhance current indices and integrate alternative methods to monitor population trends.

Deer populations are managed principally through manipulation of mortality rates of adult female deer. On the landscape scale, regulated hunting is the only viable tool available to accomplish this management. In portions of northern New York, deer populations are low, limited by severe winter conditions and marginal habitat quality. In many of these management units, DEC lacks statutory authority to issue DMPs (i.e., antlerless deer tags). Therefore, while not ideal, antlerless harvest in much of northern New York must currently be addressed through periodic adjustments in harvest regulations of muzzleloader hunting seasons. Through the rest of New York, DEC modifies the number of DMPs available to hunters and regulations for hunting during special bow and muzzleloader seasons to manipulate harvest of adult female deer and affect population change consistent with data on deer-related impacts to forests and public preferences.

While this system works well most of the time, in some WMUs, particularly those in highly developed landscapes and those with very productive agriculture, the current season structure and tag system have been inadequate to effectively stabilize or reduce deer populations as needed. In these areas, DEC must create additional opportunity for antlerless harvest. If such measures continue to be ineffective for population management, DEC must then consider regulations that prioritize antlerless harvest over antlered deer harvest (e.g., earn-a-buck requirements).

Aside from hunting, deer populations are impacted by other mortality sources such as predation, deer-vehicle collisions, fawn loss to agriculture equipment, severe weather, localized outbreaks of epizootic hemorrhagic disease, and other health issues (e.g., physical injury, pneumonia).



Photo courtesy of John Major

Value of White-Tailed Deer in New York

Deer-Viewing Facts ^a

- 539,000 residents and 157,000 non-residents routinely travel in New York to view deer.
- 1,182,000 New Yorkers enjoy viewing deer near their home.

Deer-Hunting Facts ^{b, c, d}

- 540,380 deer hunters in New York
- 49.5 years, average age of hunters
- 31 years, average hunting experience
- 17.7 average days per deer hunter
- >10,150,000 pounds of venison
- >5,500 jobs
- \$410.9 million in retail sales
- \$221.4 million in salaries & wages
- \$61.3 million in state & local taxes
- \$56.7 million in federal taxes

Sources:

^A U.S. DEPT. OF INTERIOR 2008

^B NYSDEC LICENSE SALES

^C ENCK, STEDMAN, AND DECKER, 2011

^D SOUTHWICK ASSOCIATES, 2007

Although the exact levels of mortality from each cause are generally unknown, DEC's management approach is flexible to address non-hunting-related deer mortality. DEC routinely monitors winter weather conditions and disease situations, and following significant mortality events, adjusts hunting seasons or allocations of DMPs as appropriate in the affected areas. For other mortality sources that are generally widespread and likely relatively constant from year to year (e.g., predation, deer-vehicle collisions) DEC monitors trends in sex and age ratios of harvested deer to detect variations that may be influenced by these other sources. Again, DEC modifies annual antlerless harvest as needed to accomplish the appropriate population management considering other forms of deer mortality.

In addition to population management, DEC has the responsibility of preventing the introduction or spread of any disease that endangers the health and welfare of wild white-tailed deer in New York State. Specifically, New York State ECL section 11-0325 authorizes DEC to adopt control measures or regulations necessary to eliminate, reduce, or confine disease. Effective management of any wildlife disease requires an understanding of avenues of disease transmission and associated risk factors. DEC has partnered with Cornell University's College of Veterinary Medicine Animal Health Diagnostic Laboratory to create the New York State Cooperative Wildlife Health Program (WHP). DEC works through the WHP and in collaboration with the New York State Department of Agriculture and Markets (DAM) to diagnose illnesses and conduct surveillance for important wildlife diseases such as chronic wasting disease (CWD).

CWD is a fatal disease of deer, elk, and moose that poses a serious threat to wild populations nationwide. CWD is caused by an abnormally shaped protein, called a prion. Healthy deer, elk, or moose can pick up the disease by direct contact with an infected animal's body fluids or by eating contaminated sources of food or water. In 2005, DEC and DAM discovered CWD in five captive and two wild deer in Oneida County. Thankfully, DEC has found no additional cases since 2005 despite intensive sampling in the immediate area and statewide. Nonetheless, CWD remains a major threat to New York's deer herd and has the potential to impact all the benefits associated with deer in New York. As CWD continues to spread across North America, New York's deer population is at high risk for exposure to the disease. DEC is committed to pursuing strategies to minimize the risk of CWD entry and spread in New York. To that end, DEC and DAM have adopted a suite of CWD regulations and actions, including:

- restricting the importation of live deer, elk, and moose;
- restricting the importation of whole carcasses and intact heads of hunter-harvested CWD-susceptible cervids from all areas outside of New York;
- banning the intentional feeding of white-tailed deer and moose; and
- increased cooperation and enforcement by DEC and DAM.

As part of DEC and DAM's [NYS Interagency CWD Risk Minimization Plan](#) (PDF), DEC also committed to assess the risk posed by the use of products composed of urine and excreted substances from CWD-susceptible cervids. Because deer urine and other biofluids may contain CWD prions, and because commercial biofluid products lack regulatory oversight, DEC advises hunters to avoid using natural deer urine-based scent lures and recommends the possession, use, and sale of cervid biofluid products be prohibited in New York ([Appendix 3](#)).

Early detection allows the best options for management of CWD. DEC's ongoing strategic surveillance efforts include an annual weighted-sampling approach for collecting and testing hunter-harvested deer and responding to reports of sick wild deer and testing them for CWD. Learn about the [NYS CWD Surveillance Plan](#) (PDF).

Should CWD be detected in New York, aggressive action will be necessary. DEC is prepared to immediately respond by taking these measures:

- determine the scope of the outbreak by intensive removal and testing of wild deer. This may involve changes to increase hunting harvest in select WMUs and/or sharpshooting, depending on the time of year when CWD is detected;
- prevent disease movement by emergency regulations to prohibit movement of harvested deer and live captive cervids from the affected area to other portions of New York; and
- engage local communities to support disease control efforts.

Learn about the [NYS Interagency CWD Response Plan](#) (PDF).

Objective 1.1. Assess and monitor deer population size and condition using best available techniques.

Routine Activities

Strategy 1.1.1: Use hunter harvest reports and field check of harvested deer to estimate the annual legal deer harvest to $< \pm 5\%$ with 90% confidence in each WMU Aggregate ([Appendix 4](#)).

Strategy 1.1.2: Annually collect sex, age, antler measurements, and other biological data as needed to monitor trends in deer condition and population dynamics by WMU Aggregate.

Special Projects

Strategy 1.1.3: Evaluate deer management data to identify opportunities to improve efficiency of data collection and quality of information.

Objective 1.2. Identify population objectives within each WMU Aggregate and adjust harvest of antlerless deer to achieve desired deer population trajectories.

Routine Activities

Strategy 1.2.1: Use input from public surveys and a deer-forest impact index ([Goal 5: Habitat](#)) to establish objectives for deer population change within each WMU aggregate ([Appendix 2](#)).

Strategy 1.2.2: Set target allocations of DMPs each year and/or periodically modify special seasons to achieve the desired deer population change in each WMU ([Appendix 5](#)).

Special Projects

Strategy 1.2.3: Modify DEC's licensing system to allow more flexibility in the issuance of DMPs.

Objective 1.3. Conduct scientific research to support deer management.

Routine Activities

Strategy 1.3.1: Develop DEC projects, as needed, for the scientific study of deer ecology and population dynamics; hunter demographics, attitudes, and behaviors; public interests in deer management; impacts of potential regulation changes; and deer impacts to native vegetation and forest ecosystems. Establish formal agreements with universities and non-governmental organizations, when necessary, to accomplish such work.

Objective 1.4. Monitor wild deer for disease incidence and prevalence and reduce the potential for non-endemic disease introduction and spread.

Routine Activities

Strategy 1.4.1: Understand deer-related diseases that may threaten deer populations, the livestock industry, or human health. Maintain a response approach to minimize those threats and prevent establishment of non-endemic diseases in New York.

Strategy 1.4.2: Sample New York's wild deer herd for disease and investigate unique incidences of deer exhibiting clinical symptoms.

Strategy 1.4.3: Work with New York State DAM to implement actions outlined in the New York State Interagency CWD Risk Minimization Plan.

Strategy 1.4.4: Maintain and enforce the prohibition on the feeding of wild white-tailed deer.

Strategy 1.4.5: Remove escaped captive cervids from the New York landscape to protect wild deer, moose, and human health and safety.

Special Projects

Strategy 1.4.6: Work with stakeholders in the wildlife rehabilitation community to assess current rehabilitation practices for deer, and take appropriate measures to ensure that such practices are effective, ensure public safety, and do not pose a threat to the wild deer population.

Goal 2: Hunting and Recreation

Promote the benefits of deer hunting and enhance its usefulness as a management tool in New York.

Deer hunting is a long-standing tradition in New York and an important part of many New Yorkers' outdoor heritage. Deer hunting was essential for the survival of Native American groups in the Northeast and played an integral role in sustaining early European settlements here. Today, deer hunting continues to be an important activity for many families, providing a valuable source of food, a means of shared recreation, and an opportunity to pass on family traditions and reverence for nature. Additionally, deer harvest through regulated hunting remains the most effective and equitable tool for managing deer populations across the state.



Photo courtesy of DEC

These cultural, social, and management values of hunting are reinforced in the North American Model of Wildlife Conservation (Geist et al., 2001), a series of principles that underpins wildlife management throughout North America. At the heart of the model is the concept of wildlife as a public resource, owned by no one, but held in trust by the government for the benefit of the people. Further, access to wildlife by hunters is provided equally to all, regulated by law or rulemaking with public involvement rather than market pressures, wealth, social status, or land ownership. Management policy and decisions are rooted in science and support an ethic of fair chase and legitimate use (e.g., fur and food) of harvested wildlife. Adherence to these tenets has allowed game management to function successfully while retaining strong support among the generally non-hunting public. For this reason, the principles of New York's deer management program are based upon the North American Model of Wildlife Conservation.

A strong majority (78%) of Americans support legal hunting while only 16% disapprove of hunting (Responsive Management, 2008), yet public opinion varies when motivation for hunting is considered. Public support is strong when hunting is conducted for food, to protect humans, and for population management, but support decreases sharply for hunting perceived as conducted simply for recreational purposes, for the challenge, or for a trophy. Additionally, public perceptions of hunter behavior and safety greatly influence acceptance and support for hunting as an activity (Responsive Management 2008). Though most perceived problems are not directly associated with legal or ethical hunting, even among hunters, poor behavior of other hunters (e.g., illegal activity, perceived unsafe or unethical practices) is a leading cause of dissatisfaction with their deer hunting experience (Enck and



Photo courtesy of Sharon Tabor

Decker 1991). Therefore, it is important that New York's deer management program continue to reflect the primary values associated with public acceptance of hunting, and DEC must continue to promote safe and ethical hunting practices through education programs for new and seasoned hunters, as well as inform the public about the strong safety records of New York's hunters.

In rural New York, the concept and practice of deer hunting are well ingrained. The majority of New York hunters hail from rural areas (Lauber and Brown, 2000; Enck et al., 2011). However, as people continue to settle in more urban environments, they tend to seek other pastimes, becoming further removed from the natural environment and less familiar with the values and validity of hunting. Thus, as the proportion of New York's population living in rural areas decreases, the proportion of New York's population that is likely to hunt also decreases. This societal change has contributed to the long-term decline (nearly 40%) in deer hunting participation in New York since the mid-1980s. The average age of hunters is getting older and recruitment of new hunters is insufficient to fully replace older hunters who drop out through attrition. Thus, for deer management to continue effectively in the future, DEC must consider management options that engage new hunters while also improving efficiency and retention of existing hunters.



Photo courtesy of Jeremy Hurst

Concurrent with declining numbers of hunters, access to privately owned huntable land has also decreased in New York. In 1991, over 60% of all private lands in upstate New York were posted against trespass and hunting without permission, and rates of posting had increased 13% during the previous decade (Siemer and Brown, 1993). While many people who posted their properties still allowed hunting, most lands were reserved for exclusive use by relatively few people, and at that time, an estimated 25% of private lands were essentially closed to hunting. The trend in posting and closure of private lands to hunting has very likely continued over the past 29 years, and this has strong implications for deer management efficacy. Perhaps most troubling, lands that receive only nominal hunting pressure or that are closed to hunting completely can function as refuge areas for deer, thereby compromising DEC's ability to manage deer numbers to levels desired by the public. Frequently, this results in locally overabundant deer populations that negatively impact forests, create problems for homeowners and motorists, and may decrease the value attributed to deer by the affected public.

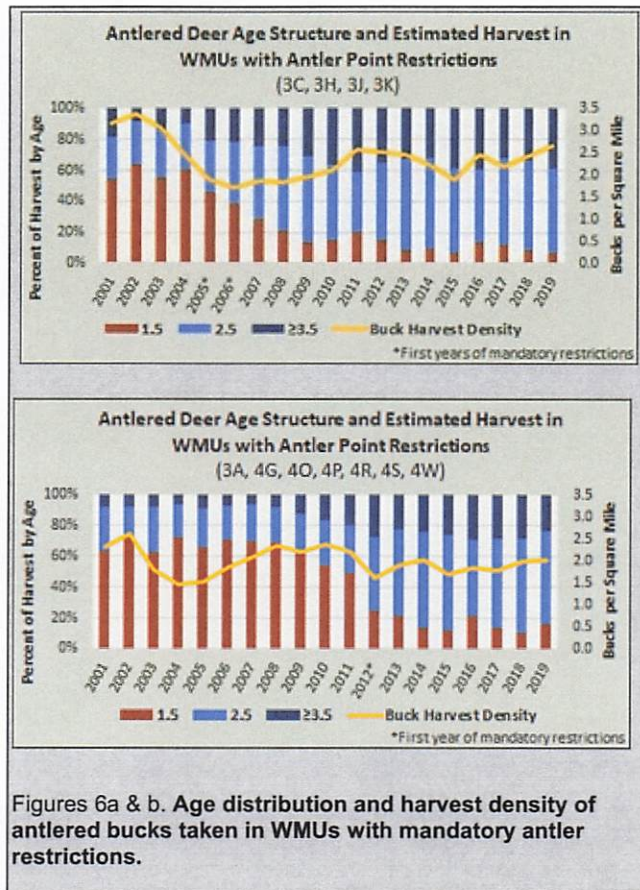
Thus, local and state land and deer managers are and should be involved in efforts to enhance land access for hunting, particularly as they may increase management effectiveness. However, substantial improvements to hunter access will require cooperation of New York hunters and hunting organizations as well as communities and citizens concerned about deer impacts, and likely will necessitate changes to state laws and local ordinances. Efforts to inform landowners about the ecological value and social benefits of deer hunting, and the laws related to land posting and landowner liability, may convince additional property owners to allow deer hunting on their lands. Opportunities exist to participate in federal programs (e.g., [U.S. Department of Agriculture's Voluntary Public Access and Habitat Incentive Program](#)), establish new cooperative hunting areas through the [New York State Fish and Wildlife Management Board](#), expand conservation easements, acquire new public lands through strategic open-space planning,

and develop new incentive-based access programs. Hunters, too, can preserve existing access by respecting landowner rights and interests and by recognizing that permission is needed to hunt private land, whether or not it is posted.

Harvest of antlerless deer will remain a priority in this plan. Flexibility in the regulations pertaining to antlerless harvest throughout the state must be fluid so changes can be made whenever necessary. Likewise, the door must remain open to new and novel approaches to antlerless harvest where deer numbers exceed public desire and current harvest levels are inadequate. In some areas of the Northern Zone, this may include modifying muzzleloader seasons (e.g., opening or closing seasons, limiting take to buck-only or doe-only, or setting antlerless bag limits) and seeking legislative authority to issue DMPs in additional WMUs to address changing deer populations; in the Southern Zone, increased antlerless harvest may entail an early firearms season, expansion of late seasons, increased antlerless bag limits, broader implementation of the DMAP program, and creation of an urban season framework.

Many hunters are motivated in part by the opportunity to take older, larger antlered bucks. For decades, hunters in New York were accustomed to taking mostly small-bodied, small-antlered yearling bucks (1.5 years old), which constituted 65–75% of the annual antlered buck harvest. Dissatisfaction of some hunters with this pattern led DEC to adopt mandatory antler point restrictions, which limit harvest of yearling bucks, in 11 WMUs in southeastern New York between 2005 and 2012. As expected, the mandatory antler restriction reduced the proportion of 1.5-year old bucks in the harvest from >60% to <20%, and at the same time, the proportion of older bucks (≥ 2.5 years old) in the harvest increased from 40% to 80%. The restriction resulted in an immediate decrease in antlered harvest density in all units, but buck harvest returned to pre-antler restriction levels in units where DEC managed for the overall population to grow (Figures 6a and 6b).

In 2016, following an assessment of hunter values and a scientific decision-making process that considered potential expansion of mandatory antler point restriction programs or other hunting strategies, DEC found that a non-regulatory, educational approach would better balance hunters' desires for older bucks and their freedom of choice. DEC initiated a campaign to encourage hunters broadly to voluntarily [Let Young Bucks Go and Watch Them Grow](#). This effort built upon a movement that was already occurring in New York and nationally, and the shift from yearlings to older bucks in the annual harvest has accelerated.

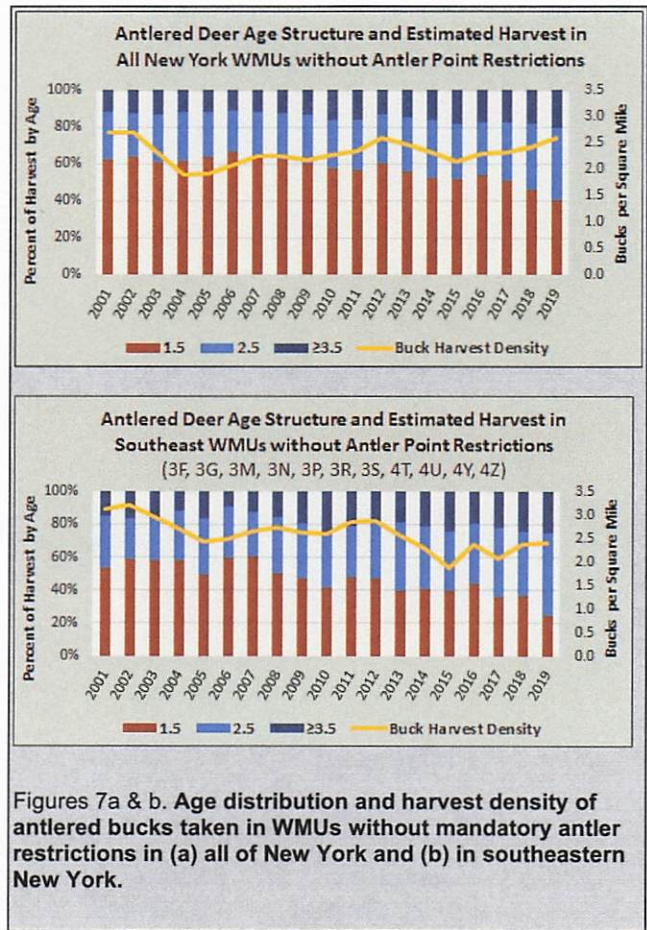


Now, in WMUs across the state without mandatory restrictions, hunters are voluntarily passing on young bucks more than ever before and enjoying the benefits. Statewide, buck harvest has shifted from >60% yearlings to 60% 2.5-year-old and older bucks, through the voluntary choice of hunters (Figure 7a). Notably, harvest patterns in several WMUs in southeastern New York without antler restrictions demonstrate that the voluntary choice of hunters can result in very low yearling buck harvest (25% of total buck harvest; Figure 7b). In these units, 75% of the bucks taken by hunters are now 2.5 years old or older, suggesting voluntary efforts may be nearly as effective in shifting harvest age structure as mandated restrictions. As the portion of yearling bucks in the harvest declines elsewhere through voluntary choice, this plan recognizes that DEC should continue to evaluate whether the antler restriction regulations are consistent with hunter interests and values and deer management needs.

Additionally, this plan proposes to expand legal deer hunting hours to cover a longer period of daylight, including the dawn and dusk periods when deer are most active. Currently, deer hunting in New York is lawful only between the meteorologically defined times of sunrise and sunset despite the fact that ambient light conditions typically extend 30 minutes or more beyond the technical sunrise and sunset. New York has the most restrictive deer hunting hours in the United States. All other states allow deer hunting beginning 30 minutes before sunrise or earlier, or simply specify daylight hours, and 46 of 50 states allow deer hunting until some period (mostly 30 minutes) after sunset. Other states report similarly positive safety experiences of hunters and non-hunters during these periods as during full daylight hours.

Finally, DEC recognizes that deer hunting activities and deer management decisions may impact other wildlife, hunters of other game species, landowners, and non-hunting wildlife enthusiasts. For example, the traditional use of lead-based ammunition by deer hunters can have toxic effects on other wildlife that may inadvertently consume lead fragments when feeding on lead-contaminated gut piles or unrecovered carcasses. Non-lead ammunition is better for people and better for wildlife. The Wildlife Society (2017) and Association of Fish and Wildlife Agencies (2010) have adopted position statements advocating for action to address impacts of lead-based ammunition on wildlife health. DEC will continue to educate and encourage deer hunters on [the availability and benefits of using non-lead ammunition and will work with partner organizations and stakeholders to identify possible strategies to reduce risks posed by lead ammunition](#).

Additionally, DEC routinely hears from the non-deer-hunting public who express their thoughts about deer hunting and deer management, and this input is important for DEC to make informed decisions.



Much input comes unsolicited through general correspondence with DEC staff, but DEC periodically conducts surveys to understand the public's interests and concerns related to deer and deer-related impacts. Also, public review periods for proposed regulatory actions provide focused comments to drive specific decision-making processes. Because understanding diverse perspectives improves our ability to manage responsively toward public interests, DEC will continue to gather input from non-hunters and other wildlife user groups when making deer management decisions.



Objective 2.1. Promote regulated hunting as a safe, enjoyable, and ethical tool to manage deer populations and opportunity for the public to acquire venison. Contribute to efforts to improve hunter participation, recruitment, retention, and satisfaction.

Routine Activities

Strategy 2.1.1: Emphasize recreational hunting as the most cost-effective option for controlling deer populations at the landscape scale.

Strategy 2.1.2: Encourage participation in the Venison Donation Program and similar programs as a mechanism to encourage deer harvest and foster local use of the deer resource.

Strategy 2.1.3: Contribute to DEC efforts to enhance skills and effectiveness of existing hunters and engage new hunters by improving safety education courses and implementing additional education programs as needed to encourage hunter safety, ethical behavior, and success.

Strategy 2.1.4: Ensure that any new deer hunting regulations or modifications of existing regulations promote safe and ethical hunter behavior and equitable opportunity. Evaluate legislative options and policies using the same criteria.

Strategy 2.1.5: Encourage use of non-lead ammunition by New York deer hunters.

Objective 2.2. Establish deer hunting seasons, regulations, and programs that are effective for deer population management.

Routine Activities

Strategy 2.2.1: Monitor and evaluate deer hunting seasons and programs relative to deer population management objectives and the interests of hunters and the public. Recommend modifications as needed.

Special Projects

Strategy 2.2.2: Incorporate a firearms deer hunting opportunity for youth in Suffolk County.

Strategy 2.2.3: Modify the Deer Management Focus Area to be a statewide urban/suburban hunt program for which municipalities can opt-in to expanded antlerless hunting opportunities (e.g., longer seasons and/or additional antlerless tags).

Strategy 2.2.4: Establish a firearms season for antlerless deer in mid-September in specific WMUs where existing harvests are inadequate to achieve population management objectives.

Strategy 2.2.5: Establish a January deer season in Westchester County.

Strategy 2.2.6: Establish a late bow and muzzleloader season between Christmas and New Year's in the Southern Zone.

Strategy 2.2.7: Assess either-sex hunting opportunities in Northern Zone WMUs and modify to equitably distribute antlerless harvest and achieve desired harvest intensity.

Strategy 2.2.8: Extend daily deer hunting hours to 30 minutes before sunrise and 30 minutes after sunset, consistent with most legal hunting hours around the country.

Objective 2.3: Maintain and increase opportunity for hunters to see and take older bucks while preserving hunters' freedom of choice.

Routine Activities

Strategy 2.3.1: Educate hunters on their role in affecting local deer populations and herd composition. Encourage those hunters who desire to see and take more 2.5-year-old and older bucks to voluntarily restrain from harvesting young, small-antlered bucks.

Strategy 2.3.2: Provide reports and maps illustrating the geographic variation in characteristics of harvested bucks (e.g., harvest by age class, antler point distribution by age class) to guide hunters in making harvest decisions that are appropriate for their hunting area and congruent with their goals.

Strategy 2.3.3: Promote landowner-hunter cooperatives for voluntary implementation of specialized deer management programs on private land.

Special Projects

Strategy 2.3.4: Assess the preexisting mandatory antler restriction program for consistency with hunter values and impacts on population management and recommend changes if warranted.

Objective 2.4. Improve hunter access to public and private lands.

Routine Activities

Strategy 2.4.1: Maintain a current understanding of the impediments to private land access for deer hunting through periodic public surveys and solicitation of comments.

Strategy 2.4.2: Explore the feasibility of programs to improve private land access for deer hunting and assist with implementation of programs deemed to be the most effective.

Strategy 2.4.3: Work with municipalities, State and local parks, federal land managers, and private preserves to allow or increase deer hunting on their lands.

Objective 2.5. Consider other forms of outdoor recreation associated with or affected by deer management.

Routine Activities

Strategy 2.5.1: Review impacts to small game hunting, furbearer hunting, trapping, and other forms of recreation when considering changes to deer hunting regulations, seasons, or programs.

Goal 3: Conflict and Damage Management

Reduce the negative impacts caused by deer.

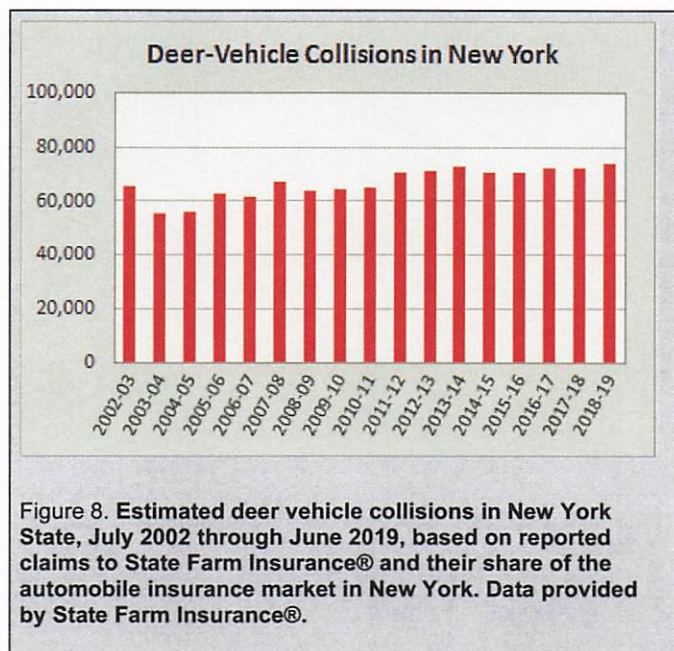
One of the principal philosophies guiding DEC is that the public shall not be caused to suffer inordinately from the damaging effects of, and conflicts arising from, resident wildlife. This philosophy has its roots in statute (see [Legal Mandate](#)), but it is also common sense and a practical necessity if New Yorkers are to coexist with deer. DEC is committed to providing site-specific options for landowners to control deer damage on their property and fostering a climate of understanding, cooperation, and communication among those affected by deer.

While deer have many positive attributes, when they cause damage, it can be severe. In 2002, New York farmers estimated their deer-related crop damage losses to be approximately \$59 million, and about one-quarter of farmers indicated that deer damage was a significant contributing factor affecting the profits of their farm (Brown et al., 2004). Deer-vehicle collisions are another major type of deer-related damage in New York (Figure 8). They are a substantial concern for motorists, particularly in suburban areas with abundant deer populations. The average total cost of each deer-vehicle collision has been estimated to be more than \$6,600 (Huijser et al., 2009).

Ecological damage caused by deer is receiving increasing attention as awareness spreads of the negative impacts of high deer densities on forested ecosystems and the loss of ecological



Photo courtesy of Dick Thomas



services of those ecosystems. An overabundance of deer results in profound and persistent changes to ecosystem structure and function (White, 2012; Nuttle et al., 2014; see www.dec.ny.gov/animals/104911.html). Additionally, many parts of New York are considered high-risk areas for human infection with Lyme disease (Diuk-Wasser et al., 2012), based on the density of infected black-legged ticks (*Ixodes scapularis*). As the primary food source for adult female black-legged ticks, abundant deer populations may contribute to elevated tick densities.

Each year, DEC responds to countless inquiries and complaints about nuisance and damaging deer or situations of deer overabundance (Appendix 6), and sometimes these contacts can be satisfied with technical advice alone. However, protective actions that landowners can take on their own are often not adequate to reduce damage. In many cases, deer population reduction is necessary, and DEC's primary method of controlling deer density continues to be the harvest of antlerless deer during the fall hunting seasons. DEC has structured a tiered system of harvest management to provide meaningful scales of management intensity to meet varying stakeholder objectives (Figure 9).

Regulated hunting as a tool for reducing deer-related damage generally works best over large areas or when damage is not severe. For intensive local site control during the hunting seasons, qualifying landowners can receive Deer Management Assistance Program (DMAP) permits. These permits provide antlerless tags for use on specified properties. In addition to addressing damage situations, DMAP facilitates custom deer management efforts by hunter-landowners who want to remove more does to change their buck harvest opportunities. In situations where significant crop damage occurs outside of normal hunting time frames or regulated hunting doesn't remove enough deer to reduce damage to a sustainable level, Deer Damage Permits (DDPs) are an additional option with more flexibility. Most DDPs are exclusively for take of antlerless deer, and they often authorize methods that are not legal for hunters, like shooting at night with lights and taking deer outside of hunting seasons. DMAP and DDPs are designed for local effect; impact of these permits on regional deer populations is minor compared to overall harvest of antlerless deer by hunters (Figure 10).

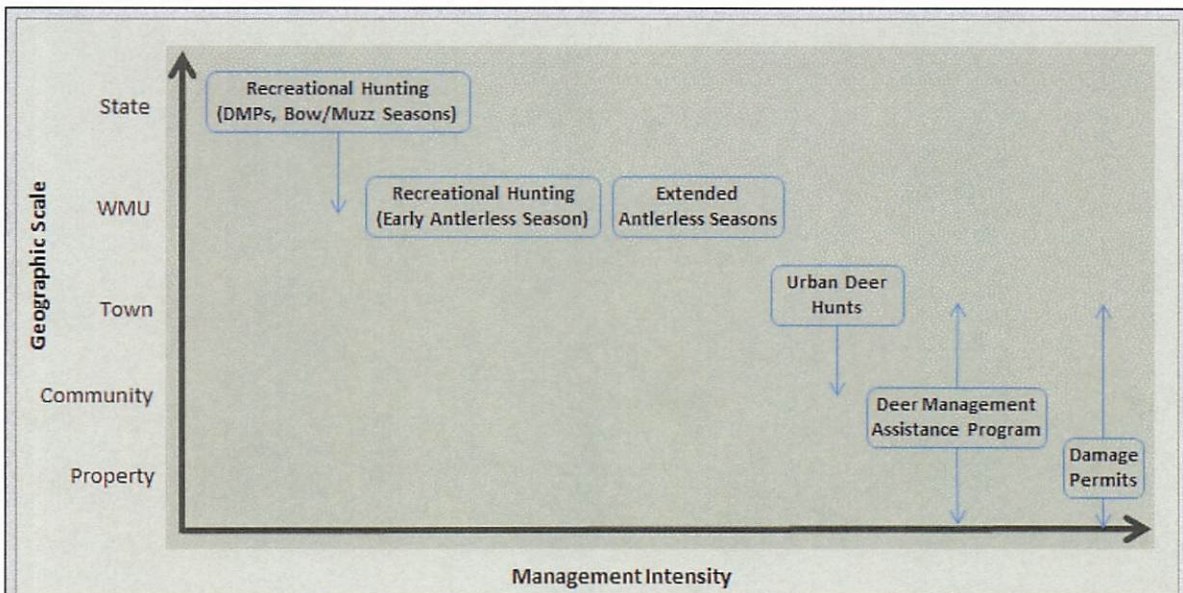
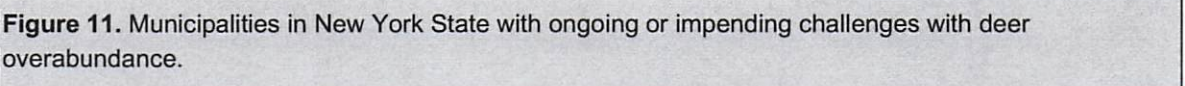
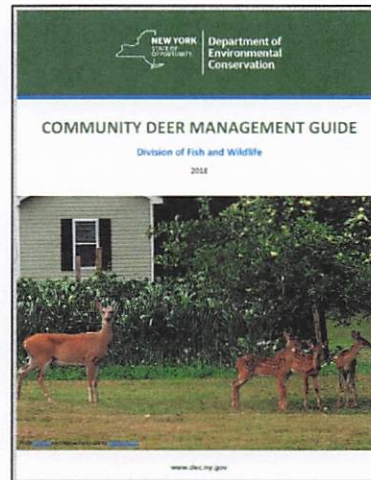


Figure 9. Conceptual framework of deer harvest management in New York across varying degrees of geographic scale and management intensity. Note that some programs have applicability at multiple geographic levels. Early antlerless seasons and urban hunt programs are discussed in Objective 2.2.



offset the high reproductive rate of deer. The simplest and least expensive way for communities to control local deer populations is to act before deer populations become overabundant and impacts are severe by allowing regulated hunting to occur on public and private lands within their boundaries. This requires that local codes and ordinances do not preclude otherwise safe and lawful use of firearms, bows, or crossbows for hunting. Many communities are recognizing this and taking steps to facilitate hunting and/or additional forms of management. Unfortunately, most communities wait to act until the local deer population has become severely overabundant, requiring more intense and costly population control measures.

In communities with overabundant deer populations, general deer hunting may not be adequate to reduce excessive impacts. Communities may intensify deer removal by actively facilitating controlled hunts during the regulated hunting seasons with DMAP, enlisting volunteers or professionals as sharpshooters for a deer cull via a DDP, or developing a program that strategically integrates lethal control in some areas with non-lethal surgical sterilization ([Appendix 7](#)) in other portions of the community where lethal control may not be feasible. Communities may also seek to directly manage other deer-related impacts by modifying vehicle speed limits and expanding roadway buffers, planting species that are less palatable to deer, and using exclusionary fences on high-value commercial or natural resource areas.



DEC does not fund the implementation of community deer removal programs or non-lethal management actions, but DEC provides technical assistance to communities seeking to develop such programs. Our [Community Deer Management Guide](#) helps communities work through the process of making decisions on deer management and developing plans for addressing the problems they're experiencing. DEC also collaborated with Cornell University on the development of the Community Deer Advisor website (<https://deeradvisor.dnr.cornell.edu>), which contains links to many additional helpful resources. DEC biologists routinely give educational presentations to community officials and residents and, if desired, can serve in an advisory capacity on local committees tasked with developing recommendations and strategies for community action.

Communities and landowners desiring to reduce risks of tick-borne diseases may best focus on efforts to increase tick-bite prevention and techniques that directly reduce tick densities (https://www.cdc.gov/ticks/avoid/in_the_yard.html). Reducing deer populations to very low levels can reduce tick densities (Kugeler et al., 2016) and probably Lyme disease rates (Kilpatrick et al., 2014). However, such intense deer population reductions may not be achievable or acceptable in many communities, and less drastic reductions may not lower the chances of human Lyme infection (Jordan et al., 2007; Kugeler et al., 2016). With appropriate permitting, communities may consider applying pesticide to the ground, vegetation, or with devices to treat small mammals with pesticide as effective tick control. Additionally, treating deer with pesticide via devices called 4-Posters™ can control tick numbers in the immediate vicinity of the devices under certain circumstances (Wong et al., 2017). 4-Posters™ are bait stations designed to attract deer and treat them with permethrin while they are eating the bait. Because the constant availability of extra food for deer and other animals can lead to many negative consequences (e.g., increased presence of nuisance animals, increased risk of deer-vehicle collisions, increased deer populations, ecological and residential damage), communities and landowners wishing to

use 4-Posters™ must apply to DEC for a [License to Use 4-Poster™ Devices](#) and implement deer population control programs to prevent the negative impacts.

In many ways, effective community-based deer management is hampered by constraining state and local laws that were established when New York's deer population was low and deer-related conflicts were rare (see [Appendix 8](#) and DEC's 2018 report to the New York Senate and Assembly, [Deer Management in Urban and Suburban New York](#)). Nevertheless, this plan contains several new initiatives designed to help communities address their deer-related problems. To make hunting a more useful tool for communities, DEC plans to create a statewide, extended urban/suburban antlerless season for which municipalities can apply to participate ([Strategy 2.2.2](#)). This type of season, which already exists in some other states, provides greater opportunities for hunters and facilitates more effective population reduction. DEC intends to explore the possibility of offering small grants to communities to help cover the costs of deer management planning. DEC also will explore development of a training workshop that could be offered to hunters in communities that are considering using hunting as a deer management strategy. The workshop would cover the special concerns and constraints inherent to hunting in developed areas and would be designed to prepare hunters to function more effectively in those settings.

Objective 3.1. Provide opportunities for landowners to achieve deer management objectives on lands they own or control.

Routine Activities

Strategy 3.1.1: Provide technical assistance on various lethal and non-lethal approaches to management of deer-related damage to agriculture, forests, and residential interests.

Strategy 3.1.2: Continue to use and improve the Deer Management Assistance Program (DMAP) to provide additional antlerless deer tags to landowners, land managers, and municipalities for site-specific deer management by hunters.

Strategy 3.1.3: Continue to offer and improve the Deer Damage Permit (DDP) program to mitigate acute deer-related damage and increase public tolerance for deer on the landscape.

Strategy 3.1.4: Enforce compliance by DMAP-permit and DDP recipients with permit conditions.

Strategy 3.1.5: Maintain and update DEC's guidelines and procedures for handling deer damage complaints and issuing DMAP permits or DDPs.

Strategy 3.1.6: Work with DEC's Special Licenses Unit to review applications and oversee licenses for 4-Poster deer-feeding devices so as to minimize the potential negative impacts on local ecosystems, deer behavior and population abundance, and public safety.

Special Projects

Strategy 3.1.7: Work with DMAP permit recipients to evaluate program effectiveness for meeting their goals. For DMAP permits that require a management plan (i.e., forest regeneration, municipalities, significant natural communities, and custom deer management), develop standard forms for submission of monitoring data (e.g., regeneration success, browse impact, deer weights, ages, or antler measurements) in addition to general harvest reports.

Objective 3.2. Facilitate community-based deer management to address locally abundant deer populations.

Routine Activities

Strategy 3.2.1: Work with municipal officials and residents in urban and suburban communities to increase understanding of deer-related problems, clarify community desires for local deer populations, and identify deer management strategies that suit the community's needs.

Strategy 3.2.2: Encourage and assist landowners, land managers, municipalities, or organizations to establish controlled hunting programs when appropriate.

Strategy 3.2.3: Maintain a current understanding of the potential usefulness of fertility control and other emerging or experimental management techniques (Appendix 7); facilitate well-designed research to develop or test such techniques.

Special Projects

Strategy 3.2.4: Explore creation of a small-grants program to assist communities in developing deer management programs.

Strategy 3.2.5: Develop and offer, in communities that are considering or embarking on deer management, a hunter-training workshop focused on approaches, behavior, and skills that may enable hunters to function more effectively in urban and suburban residential settings.

Goal 4: Education and Communication

Foster understanding and communication about deer ecology, management, economic aspects, and recreational opportunities while enhancing DEC's understanding of the public's interest.

White-tailed deer are one of the most valued and recognizable wildlife species in New York. Because of their large size, easy identification, broad geographic distribution, and adaptability to suburban and urban landscapes, deer are a highly visible species across the state throughout most of the year. As a result, there is a high level of public interest in white-tailed deer life history and management, and associated opportunities for people to enjoy the myriad benefits that deer provide to New Yorkers.

DEC routinely conducts education and outreach activities, though these efforts are insufficient to fully satisfy the public interest about deer. Moreover, as public familiarity and comfort with the natural world declines through increased urbanization, and as the public is further distanced from New York's hunting heritage, greater effort is needed to bolster an understanding of the importance and process of deer management in New York.

Hunters play a major role in deer population management, and DEC staff are routinely invited to meetings and events of various hunting organizations to speak about relevant deer management and deer hunting issues. DEC staff also periodically contribute to outdoor-related publications and newspapers, which affords additional opportunities to educate hunters on important management topics. While developing an informed public, including hunters and wildlife viewers, is essential, DEC also prioritizes obtaining routine

feedback from these groups and the broader public, giving all New Yorkers opportunity to engage in deer management decision making. Understanding public attitudes about deer and deer management is critical for maintaining an effective management program that is compatible with the needs, concerns, and expectations of the public.

Objective 4.1. Ensure public participation processes are inclusive, providing all beneficiaries an opportunity to express their values and interests regarding deer management decisions.

Routine Activities

Strategy 4.1.1: Conduct periodic surveys of the public and hunters to assess current attitudes, beliefs, and desires for deer populations and management.

Strategy 4.1.2: Inform the public about proposed regulations through publication in the State Register, press releases, on the DEC website and social media sites, and in the Environmental Notice Bulletin.

Objective 4.2. Increase public awareness of deer biology, deer management, impacts associated with deer populations, the safe and ethical practice of regulated hunting, and the benefits of hunting for obtaining locally sourced meat.

Routine Activities

Strategy 4.2.1: Provide press releases, e-newsletters, and social media content covering subjects related to deer management.

Strategy 4.2.2: Host or participate in meetings, events, and webinars with local and state hunting groups, conservation or civic organizations, or the general public to provide information and gather input about the positive social, economic, and ecological impacts of deer hunting and the negative social, economic, and ecological impacts of overabundant deer populations.

Special Projects

Strategy 4.2.3: Prepare a Conservationist for Kids issue or Junior Naturalist Journal specific to deer biology and management and the social and ecological benefits of hunting.

Goal 5: Deer Habitat

Promote healthy and sustainable forests and enhance habitat conservation efforts to benefit deer and other species.

Deer are intricately connected to the habitat in which they live, relying on habitat resources for food, water, and cover. Yet as herbivores feeding on a wide variety of herbaceous and woody plants, deer are capable of dramatically altering the structure and composition of their forest habitat. Accordingly, deer

impacts on forest ecosystems are an important consideration for managing deer populations throughout New York.

The extent of deer impacts on forests reflects the relationship of deer abundance and forage availability, such that as forage availability increases the impact of deer on forest resources decreases (Marquis et al. 1992). In areas with abundant food resources, deer impacts may be slight even at moderate to high densities. But, in areas with limited food resources, even low-density deer populations may negatively impact forest condition and have cascading effects on other wildlife species. By selectively feeding on the highest quality and most palatable forage available, excessive deer browsing can result in mortality or reduced growth of young plants and prohibit successful regeneration of preferred forage species. Highly preferred herbaceous and woody plants may be suppressed, and the forest may slowly transition toward less palatable and browse-tolerant vegetation (Horsley et al., 2003). This reduces the ability of a forest to replace itself and creates conditions that favor exotic and invasive species (Baiser et al., 2008). Chronic loss of forest seedlings reduces the carbon sequestration capacity of healthy forests and compromises commercial value of private and industrial forests.

Areas heavily impacted by deer are typified by clear browse lines and reduced diversity of tree seedlings and wildflowers and lack much of the understory vegetation up to the height deer can reach (Figures 12 and 13). Such changes to forest structure and composition not only reduce the value of the habitat for deer but can substantially reduce the habitat suitability for many other wildlife species resulting in local declines in biodiversity. Loss of understory vegetation from excessive deer browse has been linked to reduced diversity and abundance of forest-breeding birds (deCalesta, 1994; McShea and Rappole, 1994), and deer may affect interactions between small mammals and birds, through direct competition for mast resources, particularly in years of low mast production (McShea, 2000).

In New York, deer impacts on forest ecosystems are most apparent in areas where deer populations are unmanaged or hunting activity is severely constrained (e.g., parks and suburban green spaces), but detrimental deer impacts are also evident across a



Figure 12. Browse line on Stissing Mountain, Dutchess County. Photo courtesy of Tom Rawinski.



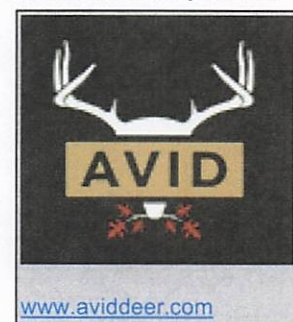
Figure 13. Deer-damaged forest in Rhinebeck, Dutchess County. Photo courtesy of Tom Rawinski.

range of deer densities and forest habitats. Foresters practicing in New York estimated that forest regeneration, in stands opened up for regeneration of desirable timber species, was moderately or highly successful only 30% of the time. However, the lack of interest or unwillingness of landowners to implement timber stand improvement activities or other measures to control less desirable tree species was also considered a contributing factor to poor regeneration success of desirable timber species (Connelly et al., 2010). Regeneration success is influenced by abiotic site factors (e.g., soil, moisture, and light conditions), abundance of invasive species or commercially undesirable tree species, and past silvicultural practice, but the impacts of excessive browsing by deer can exacerbate other challenges and impede regeneration even in well-managed forest stands.

The relationship between deer abundance and impact levels will vary among forests depending on forest type, site quality, stand history, stand age, and landscape context (proximity of alternative food sources). Therefore, no standard deer abundance objective can be established to maintain deer impacts below an acceptable threshold. Rather, assessment of deer impact (e.g., browse intensity or regeneration success) provides a meaningful metric for evaluating the appropriateness of an existing deer density relative to forest condition. In the past, DEC conducted routine assessments of browse impact in winter concentration areas (Doig, 1968; Dickinson 1986) and used these data to inform recommendations for deer population change. This method isn't suitable for statewide application. WMU-Aggregate-scale assessment of deer impacts on forests and integration of those data into the deer harvest quota-setting process is, therefore, a critical need for future deer management in New York.

To assess forest regeneration and deer impacts within each WMU Aggregate, DEC will use a multistep process ([Appendix 2](#)) that first involves mapping the level of regeneration debt, or mismatch between the species composition or abundance of the forest canopy and understory (Miller and McGill, 2019). Then, in areas identified as having unacceptable forest regeneration, DEC will apply a model that indicates areas where deer are a principal factor limiting regeneration (Lesser et al., 2019). This combination of regeneration debt analysis and deer browse impact modeling allows managers to identify parts of the state where deer browsing is threatening forest sustainability and where deer populations should be reduced.

To help forest owners understand the effects deer are having on their property and provide additional data for deer management decision-making, DEC worked with the Cornell University Department of Natural Resources and SUNY ESF to develop a vegetation monitoring protocol called AVID, which stands for Assessing Vegetation Impacts from Deer. AVID is an easy-to-use method for volunteers, foresters, landowners, and others to monitor deer impacts on forests. It focuses on specific wildflower and tree species that are eaten by deer in New York. The AVID website and mobile app guide users through laying out monitoring plots, plant identification, and data collection. Within the plots, individual plants of the focal species are counted, marked, and measured. Measuring these same individuals each year will show whether browsing pressure from deer is changing over time, and may help communities, landowners, and managers determine the success of past management decisions and make appropriate changes in local deer abundance moving forward. Deer and forest managers expect that increased use of AVID will provide valuable data of deer impacts within each WMU Aggregate, yielding an additional metric to inform deer population management decisions.



Habitat improvement activities can increase the quality and resilience of the habitat for a given deer population, potentially even supporting greater numbers of deer without detrimental effects. Habitat improvements frequently involve maintaining a diversity of forest age-classes, including establishment of early successional forest and shrub habitat, promotion of nut- and fruit-producing trees and shrubs, and creating and maintaining woodland openings containing native grasses and forbs. Habitat improvement should be encouraged, where possible, throughout New York. On State-owned forest lands, DEC conducts habitat improvements on a limited basis.

Further, approximately 63% of State-owned land is Forest Preserve, in which no cutting or manipulation is lawful. Consequently, as forests continue to age, much of State-owned forest land is deteriorating in quality as deer habitat. However, DEC launched the Young Forest Initiative (www.dec.ny.gov/outdoor/104218.html) on State-owned Wildlife Management Areas (WMAs) in 2015, with the goal of considerably increasing young forest habitat on WMAs across the state to benefit a multitude of wildlife species (Figure 14).

Nevertheless, because more than 80% of New York's nearly 18.6 million acres of forest are held in private ownership, private landowners have a great ability to affect the relationship between deer and forests by managing deer populations to benefit the forests and managing forests to benefit the deer. To that end, many existing state (www.dec.ny.gov/lands/4972.html) and federal programs (www.fsa.usda.gov/programs-and-services/conservation-programs) provide direction and financial incentive to landowners who practice sustainable forestry, land conservation, and habitat improvements to benefit wildlife. DEC will promote greater awareness and participation in these programs to improve private land value as deer habitat.

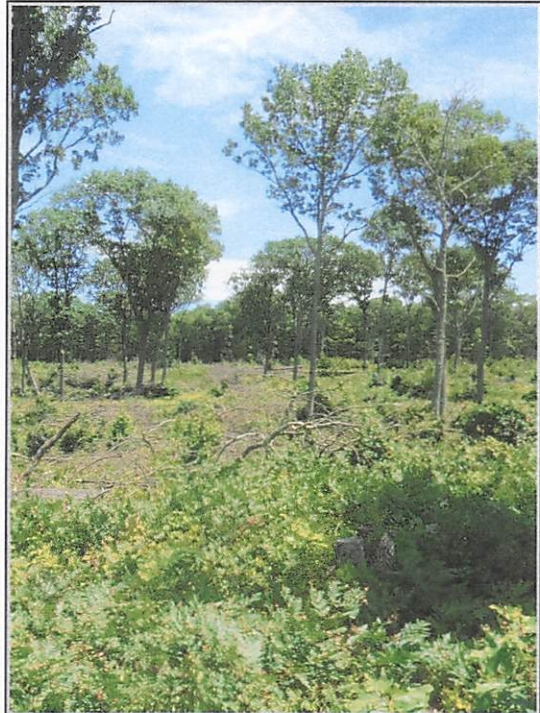


Figure 14. Seed tree cut to stimulate young forest growth at Mongaup Valley WMA. Photo by Malcolm Grant, DEC.

Objective 5.1. Improve understanding of deer-related impacts on forested ecosystems to support deer management that fosters sustainable forest habitats.

Routine Activities

Strategy 5.1.1: Update the deer-forest impact index (Appendix 2) every five years to inform population management decisions within each WMU aggregate by reassessing the level of regeneration debt coupled with predicted outcomes of reduced deer abundance on seedling abundance.

Special Projects

Strategy 5.1.2: Promote the use of the AVID protocol to public land managers and private landowners, particularly where forest regeneration is vulnerable or not acceptable, and use AVID data to inform deer population management decisions.

Strategy 5.1.3: Evaluate the sensitivity of the regeneration debt index and the AVID protocol to changes in deer abundance.

Objective 5.2. Increase habitat conservation and management on public and private land to benefit deer and other species.

Routine Activities

Strategy 5.2.1: Promote landowner awareness of and participation in state and federal land conservation and forest stewardship programs that benefit deer and deer habitat.

Strategy 5.2.2: Stress the importance of habitat conservation with outreach efforts to various segments of the public, including farmers, educators, hunters, forest landowners and managers, and community land planners, and develop materials to aid in outreach efforts.

Strategy 5.2.3: Provide input to promote enhancement of deer habitat and protection of deer wintering areas during management planning of state forests, wildlife management areas, and other state-managed lands.

Goal 6: Operational Resources

Ensure that the necessary resources are available to support effective management of white-tailed deer in New York.

Achieving the desired goals associated with this plan will require sustained commitment of a variety of resources. Maintaining a group of trained staff able to dedicate time to deer management is critical.

In New York, deer management, and most wildlife management, is funded principally by sportspersons through the New York State Conservation Fund and the U.S Fish and Wildlife Service (USFWS) Federal Aid in Wildlife Restoration Act (also known as the Pittman-Robertson Act). The Conservation Fund consists of hunting, fishing, and trapping license revenues and miscellaneous other fees and fines collected by DEC's Division of Fish and Wildlife. The Federal Aid in Wildlife Restoration Act derives funds through a federal excise tax on firearms, ammunition, and bowhunting equipment. Though sportspersons provide most of the funding for deer management in New York, they represent only a small fraction (<4%) of New York State residents and are just one of the many stakeholder groups that appreciate and are impacted by deer. A broader funding base would more effectively ensure that adequate resources are available to conserve and manage deer.

Additionally, DEC must be responsive to long-term cultural and ecological changes that affect deer populations and management and must identify opportunities to adapt to shifting values and new challenges. DEC is currently investing in efforts to better understand the dynamics of hunter recruitment, retention, and reactivation in New York and to identify mechanisms to sustain or increase hunter

participation. Outcomes from this effort will be incorporated in future deer management planning. DEC also recognizes that global climate change will alter the future landscape of wildlife management in New York. Efforts to understand and predict the impacts to deer are necessary for long-term management planning.

Objective 6.1. Maintain a staff of well-trained, properly equipped, and adequately protected employees to conduct deer-related work in New York.

Routine Activities

Strategy 6.1.1: Conduct annual training for staff in the techniques used to collect biological data from harvested deer (e.g., aging deer by tooth-wear and replacement) to ensure robust data, and maintain staff capacity and expertise to effectively manage and analyze deer-related data.

Strategy 6.1.2: Maintain clear policy and protocols to direct staff in the conduct of duties, particularly in regard to human health and safety and any actions that may generate high public interest or potential controversy (e.g., lethal removal of animals for disease monitoring or removal of illegally held or escaped captive cervids).

Strategy 6.1.3: Monitor new developments in capture techniques, firearms, and immobilization drugs and delivery equipment. If appropriate, incorporate into staff training.

Strategy 6.1.4: Maintain fluency with the research, issues, and deer management practices of other states and Canadian provinces.

Objective 6.2. Maintain effective communication within DEC on issues related to deer management.

Routine Activities

Strategy 6.2.1: Review proposed laws that would affect deer management and deer hunting and provide position statements to DEC administrators. Identify statutes that constrain effective and efficient deer management and provide recommended modifications (Appendix 8).

Strategy 6.2.2: Deer program managers will work with DEC's Legislative Affairs office to seek opportunities to engage elected officials on deer management-related issues.

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Informational Resources

New York-Specific Resources

DEC Deer Management Program

www.dec.ny.gov/animals/7211.html

Deer Hunting

www.dec.ny.gov/outdoor/7857.html

Deer Harvest Reporting and Harvest Calculation

www.dec.ny.gov/outdoor/47738.html

Annual and Historic Deer Harvests

www.dec.ny.gov/outdoor/42232.html

DMP Quota Setting and Permit Selection

www.dec.ny.gov/outdoor/47743.html

What New York is Doing About Chronic Wasting Disease

www.dec.ny.gov/docs/wildlife_pdf/cwdbooklet2019.pdf

Assessing Vegetation Impacts from Deer (AVID)

<http://aviddeer.com>

Let Young Bucks Go and Watch Them Grow

www.dec.ny.gov/outdoor/27663.html

Deer Hunter Surveys

www.dec.ny.gov/outdoor/74971.html

Deer Overabundance

www.dec.ny.gov/animals/104911.html

Community Deer Management Guide

www.dec.ny.gov/docs/wildlife_pdf/commdeermgmtguide.pdf

Deer Management in Urban and Suburban New York

www.dec.ny.gov/docs/wildlife_pdf/decdeerreport18.pdf

History of the White-Tailed Deer in New York (Severinghaus and Brown, 1956)

www.dec.ny.gov/docs/wildlife_pdf/histdeernewyork.pdf

General Deer Management Resources

An Evaluation of Deer Management Options

www.dec.ny.gov/docs/wildlife_pdf/Deermgtopt08.pdf

Community Deer Advisor

<https://deeradvisor.dnr.cornell.edu>

Baiting and Supplemental Feeding of Game Wildlife Species. Wildlife Society Technical Review 06-1.

<http://wildlife.org/TechnicalReview>

Caring for Deer & Forests: A Resource Center for Eastern North America

www.deerandforests.org

Community-based Deer Management A Practitioners Guide

<http://wildlifecontrol.info/wp-content/uploads/2016/04/Deer-Practitioner-Guide.pdf>

Managing White-Tailed Deer in Suburban Environments – A Technical Guide

http://wildlifecontrol.info/wp-content/uploads/2016/04/Deer_management_mechs.pdf

Reducing Deer-Vehicle Crashes: Wildlife Damage Management Fact Sheet

http://wildlifecontrol.info/wp-content/uploads/2016/04/Deer-Vehicle_factsheet1.pdf

Reducing Deer Damage to Home Gardens and Landscape Plantings

<http://wildlifecontrol.info/wp-content/uploads/2016/04/reducing-deer-damage.pdf>

White-Tailed Deer: Wildlife Damage Management Fact Sheet

http://wildlifecontrol.info/wp-content/uploads/2016/04/Deer_factsheet.pdf

Appendix 1. Timeline of Major Changes in New York State Deer Management

<u>Year</u>	<u>Subject</u>	<u>Area*</u>	<u>Description</u>
1705	Season	Counties	First known law protecting deer. Killing deer prohibited January through July.
1788	Season	State	First statewide law protecting deer, season closed January through July.
1880	Government	State	Eight Game Protectors hired by the Governor of New York
1895	Government	State	Fisheries, Game and Forest Commission formed
1900–1911	Sex/age	Adk & Cat	Deer of either sex may be hunted, except spotted fawns
1900–1908	Sex/age	C&W	"
1911	Government	State	Conservation Department formed from the Fisheries, Game and Forest Commission
1909–1937	Season	C&W	Closed to deer hunting
1912–1955	Sex/age	Adk & Cat	Bucks only, with antlers >3", scattered antlerless seasons
1938–1955	Sex/age	C&W	Bucks only, with antlers >3", short antlerless seasons ½ of years
1940	Implement	State	Longbow legal for deer hunting
1949	Licensing	State	Hunter education is required for all new hunters.
1956	Licensing	State	Special Archery License established with separate license fee
1962	Licensing	State	Party Permit system established
1970	Government	State	Department of Environmental Conservation formed from the Conservation Department (and others)
1973	Implement	State	Muzzleloader rifles are allowed during the regular season
1978	Hours	State	Hunting hours changed from 7:00 a.m.-5:00 p.m. to sunrise to sunset
1981	Implement	SZ	Handguns of .35 caliber or larger can now be used in the Southern Zone
1982	Season	SZ	Southern zone late muzzleloading season established
1985	Licensing	State	Preference given to disabled veterans for receiving a DMP
1986	Licensing	State	Successful archers can apply for second tag good for regular season

<u>Year</u>	<u>Subject</u>	<u>Area*</u>	<u>Description</u>
1988	Implement	State	Shotguns with rifled barrels allowed for hunting deer
1988–1995	Season	State	DMP use allowed in increasing portions of archery and muzzleloading seasons (depends on Zone)
1991	Licensing	State	Successful muzzleloaders can apply for second tag good for regular season
1991	Sex/age	State	Authority to restrict DMP harvest to antlerless deer only
1991	Licensing	State	Authority to issue more than one DMP to an individual
1993	Sex/age	State	All DMPs restricted to antlerless deer only
1993	Season	Region 7	Sunday hunting expanded to include Region 7
1997	Season	SZ	Sunday hunting expanded to include most of Western NY
1998	Season	State	DMUs changed to Wildlife Management Units (WMUs)
1998	Season	State	Deer Management Assistance Program (DMAP) initiated
1999	Sex/age	SZ	Deer of either sex may now be taken in the Southern Zone muzzleloading season.
1999–2003	Season	NZ	DMPs phased into several Northern Zone WMUs in 1999, 2002, and 2003.
2002	Feeding	State	Established a prohibition on feeding wild white-tailed deer
2002	Licensing	State	DECALS, a computerized license sales system was implemented
2002	Licensing	State	License structure changed to separate tags for RBG (buck), Archery/Muzzleloader either sex, and Archery/Muzzleloader antlered only
2002	Disease	State	Statewide chronic wasting disease (CWD) surveillance started
2002	Licensing	State	DMPs may be transferred or signed over from hunter to hunter
2003	Implement	State	Scopes allowed on muzzleloader rifles during any season
2005	Disease	Region 6	CWD found in five captive and two wild deer in Oneida County
2005	Season	SZ	Opening day of the Early Bow Season and Regular Firearms Season changed to Saturday; late bow and muzzleloader season extended to nine days
2005–2006	Sex/age	Region 3	Antler restriction (3 points on one side) pilot study in WMUs 3C and 3J (2005) and WMUs 3H and 3K (2006)

<u>Year</u>	<u>Subject</u>	<u>Area*</u>	<u>Description</u>
2008	Licensing	State	Junior Hunter Mentoring Program established allowing youths aged 14–15 to hunt big game with a firearm when appropriately accompanied by an experienced adult hunter
2008	Licensing	State	Online game harvest reporting
2010	Disease	State	CWD Containment Area decommissioned; restrictions on intrastate transport of harvested deer lifted
2011	Implement	State	Crossbows legalized for deer hunting during any season when shotguns or muzzleloaders are used, except in Suffolk County
2011	Licensing	State	Harvest reporting period extended from 48 hours to 7 days after harvest
2011	Sex/age	Cat	Mandatory antler point restrictions imposed by statute (Environmental Conservation Law 11-0914) in the southern portion of WMU 3A
2012	Season	State	Youth Firearms Deer Hunt established over Columbus Day Weekend for junior hunters to take 1 deer of either sex
2012	Season	State	Bowhunting season in the Southern Zone and the regular season in Westchester County changed to begin on October 1. A late Northern Zone bowhunting season was established for the 7-day period after the regular season in WMUs that have a late muzzleloader season
2012	Sex/age	Cat	Mandatory antler point restrictions continued in WMUs 3C, 3H, 3J, and 3K and extended by regulation in WMUs 3A, 4G, 4O, 4P, 4R, 4S, and 4W
2012	Season	Region 7	Deer Management Focus Area established in the Ithaca area of Tompkins County, authorizing hunters to take 2 antlerless deer per day and creating a special firearms season in January
2012	Season	NZ	DMPs allowed during all seasons in Northern Zone WMUs where DMPs are issued
2013	Implement	State	Crossbow use for big game hunting prohibited because the law expired
2014	Licensing	State	License year adjusted from 10/1–9/30 to 9/1–8/31
2014	Implement	State	Crossbows again legalized for big game hunting during the regular season, late muzzleloader season, and a portion of the early bowhunting season (last 10 days of the NZ bowhunting season; last 14 days of the SZ bowhunting season). Crossbows continued to be prohibited for use in bowhunting-only areas

<u>Year</u>	<u>Subject</u>	<u>Area*</u>	<u>Description</u>
2014	Implement	State	Setback distances for bowhunting reduced to 150 feet for vertical bows and 250 feet for crossbows
2015	Season	NZ	Early muzzleloading season in WMU 6A limited to antlered deer only to reduce antlerless harvest
2015	Season	SZ	First 2 weeks of early bowhunting season and all of the late bow/muzzleloader season limited to antlerless deer only in WMUs 1C, 3M, 3S, 4J, 8A, 8C, 8F, 8G, 8H, 8N, 9A, and 9F to increase antlerless harvest
2015	Data	State	Wildlife Management Unit Aggregates established to compile biological and Bowhunter Sighting Log data over multiple WMUs
2016	Sex/age	State	DEC initiates campaign for hunters to voluntarily <i>Let Young Bucks Go and Watch Them Grow</i> after a structured decision-making process found mandatory antler point restrictions to be less compatible with hunter values. Existing mandatory antler restriction rules were retained
2016	Season	SZ	Rescinded the antlerless-only portion of the season in WMUs 1C, 3M, 3S, 4J, 8A, 8C, 8F, 8G, 8H, 8N, 9A, and 9F
2016	Season	NZ	Early muzzleloading season in WMUs 6F and 6J limited to antlered deer only to reduce antlerless harvest
2018	Disease	State	Interagency CWD Risk Minimization Plan adopted by DEC and NYS DAM
2019	Feeding	State	Strengthened prohibitions on feeding deer; prohibited sale of commercial deer foods unless labeled as illegal for use
2019	Disease	State	Prohibited importation of whole carcasses of deer, elk, moose, and caribou into New York

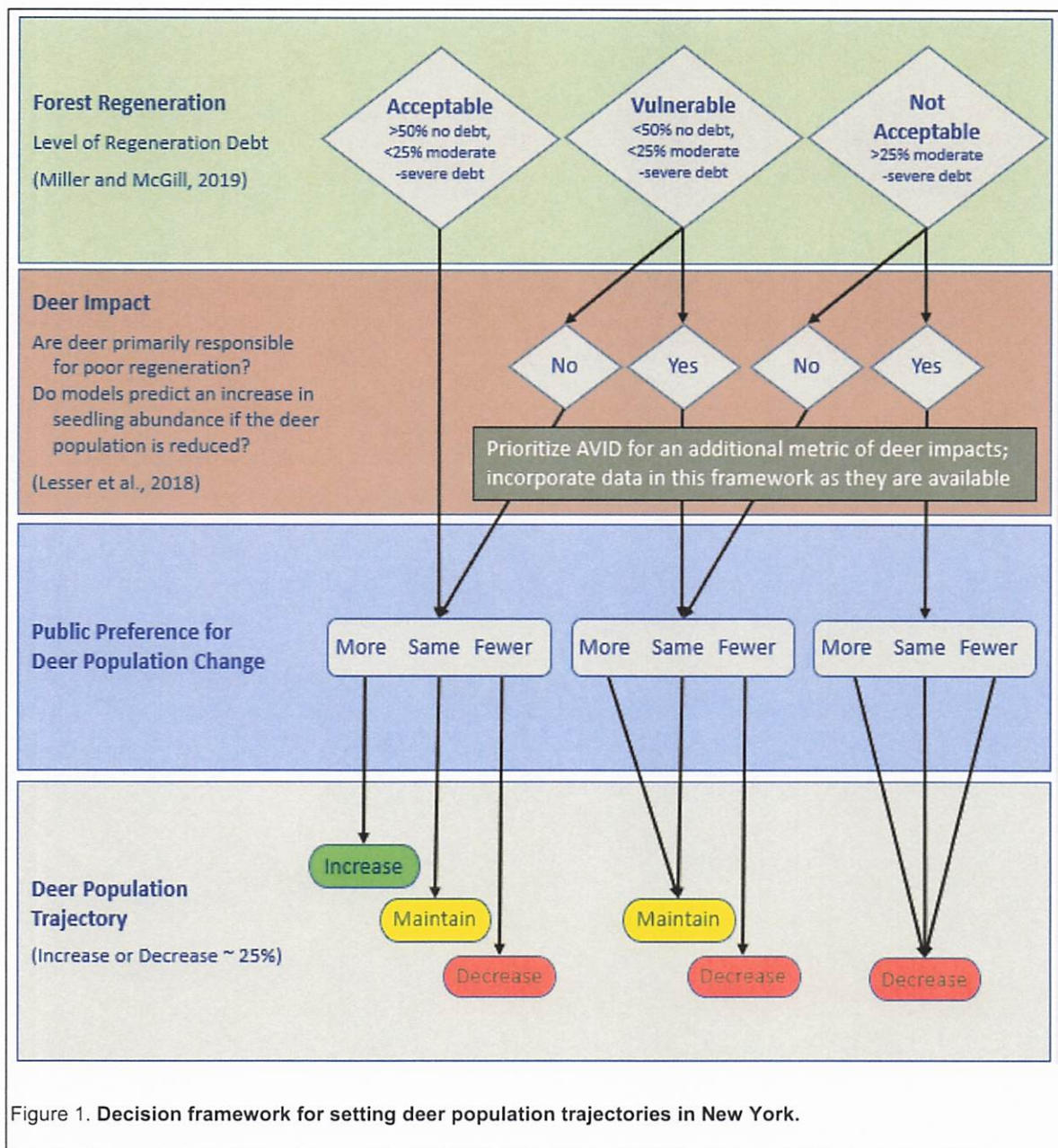
* Adk = Adirondack
Cat = Catskills
NZ = Northern Zone
SZ = Southern Zone
C&W = Central-Western New York (DEC Regions 7, 8, and 9)



Photo courtesy of Jeb McConnell

Appendix 2. Identifying Desired Deer Population Trajectories

In 2020, DEC began using a two-part approach to establish deer population trajectories for each Wildlife Management Unit (WMU) Aggregate, incorporating data about the status of deer impacts on forest sustainability and public desires for deer population change (Figure 1). Outcomes of this process yield a recommendation to manage the deer population toward an approximate 25% increase, a 25% decrease, or for the local population to remain stable for the next 10-year period. Objectives for deer population



trajectories will apply equally for all WMUs within a WMU Aggregate, though the deer population may vary slightly across WMUs. DEC will continue to manage deer populations within individual WMUs toward the objective using DMP allocations and/or modifying special seasons as needed ([Strategy 1.2.2](#)).

Part 1: Deer Impacts on Forest Sustainability

To assess forest sustainability across the landscape of New York, we adopted the regeneration debt analysis published by Miller and McGill (2019). The term “regeneration debt” describes a condition that predicts the eventual loss of canopy species due to limited abundance of seedlings and saplings or a mismatch in species composition relative to the forest canopy. Essentially, regeneration debt exists when the number of seedlings and saplings is inadequate to fully replace the mature trees or when the species of seedlings and saplings present suggests a broad transition in forest composition. The regeneration debt index is calculated for each 10 km² block in New York and ranges from 0 (no debt) to 4 (severe debt) (Figure 2). When regeneration debt is absent, the forest is typically sustainable and capable of replacing itself. Forests with a low level of regeneration debt are vulnerable, compromised by inadequate seedling or sapling abundance or species mismatch. When regeneration debt is moderate to severe, the existing forest is unlikely to replace itself in the current form.

For our deer management purposes, we calculated the proportion of each WMU Aggregate within each regeneration debt index value (0–4) and then assigned each aggregate a forest sustainability classification of acceptable, vulnerable, or not acceptable. We classified WMU Aggregates having >50% of the area with no regeneration debt (index of 0) and no more than 25% of the area with moderate to severe regeneration debt (index values ≥ 2) as “acceptable.” We classified WMU Aggregates having >50% of the area with low regeneration debt (index value of 1) and no more than 25% of the area with moderate to severe regeneration debt (index values ≥ 2) as “vulnerable.” Finally, because the presence of moderate to severe regeneration debt (index values ≥ 2) within a WMU Aggregate is a significant ecological concern, we classified aggregates with >25% index values ≥ 2 as “not acceptable” (Figure 3).

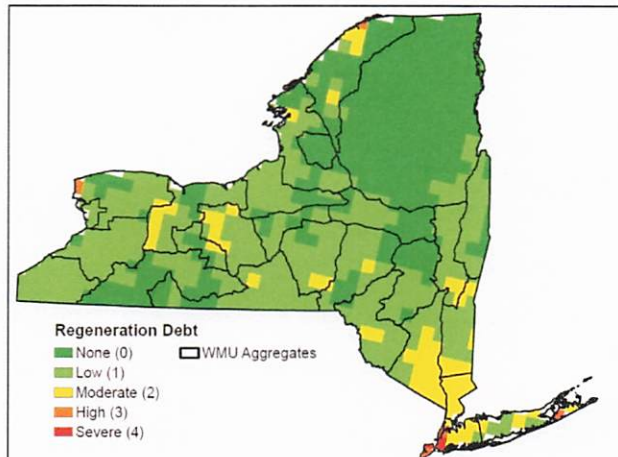


Figure 2: Regeneration debt indices in New York (Miller and McGill, 2019).

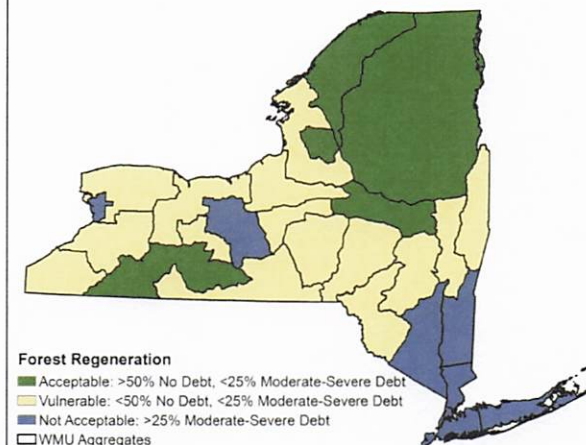


Figure 3: Forest sustainability in New York based on regeneration debt indices.

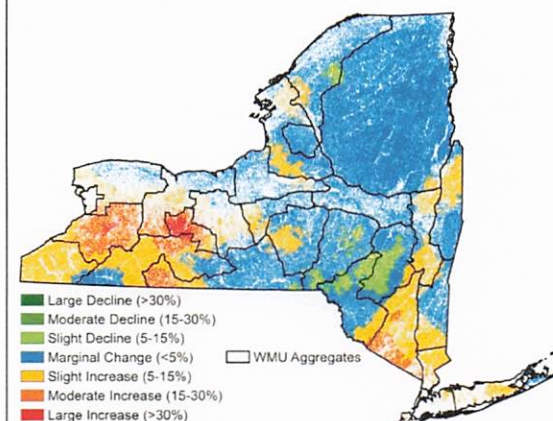
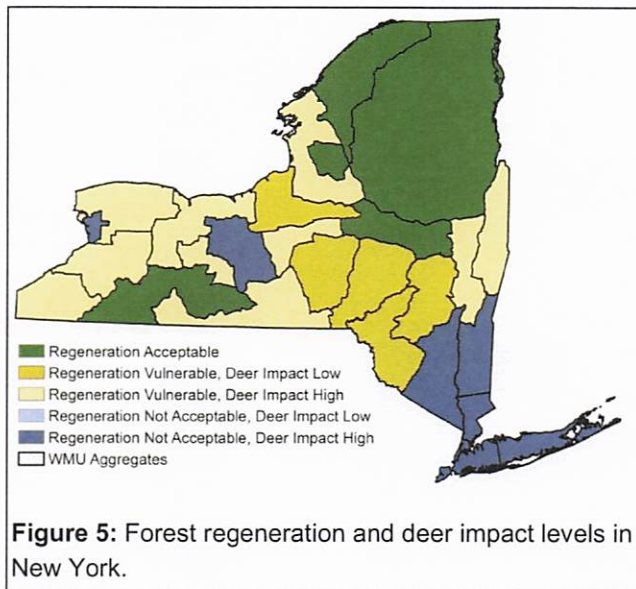


Figure 4: Predicted change in seedling density with a 25% reduction in deer abundance (Lesser et al.,)

Regeneration debt may be influenced by a variety of factors (e.g., abiotic factors, invasive plant species, forest management practices), not just excessive deer browse. To parse out areas where deer impact is the primary contributing factor to poor regeneration, we used a model developed by Lesser et al. (2018), which predicts changes in seedling abundance following a potential reduction in deer abundance (Figure 4). In portions of New York, a modest reduction in deer abundance was predicted to yield either marginal change or a slight decrease in seedling abundance, suggesting deer impacts are not a substantial factor in forest regeneration in those areas. In other areas, seedling abundance was predicted to increase.



Of primary concern for deer management are the areas where forest regeneration was vulnerable or not acceptable and models predicted a likely increase in seedling abundance if deer populations are reduced. Thus, in WMU Aggregates classified as vulnerable or unacceptable regeneration (Figure 3), we calculated the portion of the aggregate in each category of predicted change in seedling abundance (i.e., decrease, marginal change, increase). We then classified aggregates as having high deer impact if seedling abundance was predicted to increase in >25% of the area (Figure 5). We prioritized aggregates with unacceptable regeneration and high deer impacts for deer population reduction as maintaining or increasing existing deer populations would be ecologically irresponsible. In aggregates with vulnerable forests or with unacceptable regeneration but low deer impacts, we will limit potential population management objectives to maintaining or decreasing existing deer populations, depending on public preferences in those areas.

Additionally, we will prioritize forest monitoring through the AVID protocol (Strategy 5.1.2; Figure 1) in any WMU Aggregate with a forest regeneration classification of vulnerable or not acceptable. AVID is a more sensitive, site-specific measurement than the impact modeling and will provide valuable metrics at the WMU Aggregate level. As AVID data become available, we will use them to further inform our decision for setting deer population trajectories. When AVID metrics are increasing (a sign of low deer impacts) managers know that the current deer population is not negatively affecting forest regeneration and wildflower abundance, suggesting that deer abundance could be maintained or increased as desired by the public. In contrast, decreasing or stagnant AVID metrics (a sign of high deer impacts) suggest an increase in deer abundance is not appropriate.

Because we set deer population objectives at the WMU Aggregate scale, we also assessed deer impacts at that scale. However, deer impacts vary within an aggregate and may be severe on individual properties despite relatively good forest regeneration and low deer impact in the aggregate as a whole. The AVID protocol is a helpful tool for landowners or property managers to monitor deer impacts at smaller scales. To address deer impacts on smaller scales, DEC provides the [Deer Management Assistance Program](#) for landowners or groups of landowners to accomplish tailored, site-specific deer management.

Part 2: Public Input on Deer Population Size

To gather public input about deer population management, DEC and the Cornell University Center for Conservation Social Science conducted a survey of New Yorkers about their interests and concerns related to deer in areas where DEC has authority to manage deer populations through hunting. We implemented the survey geographically in stages from 2018–2020 and distributed the survey to 25,750 property owners across the state. We excluded non-resident landowners but targeted owners of 1-family, 2-family, and 3-family year-round residences, rural residences with acreage, properties used in agricultural production that contained a primary residence, recreational use properties, estates, and mobile homes.

2018 Survey Report: www.dec.ny.gov/docs/wildlife_pdf/2018deersurveypart1.pdf

2019 Survey Report: www.dec.ny.gov/docs/wildlife_pdf/2019deersurveypart2.pdf

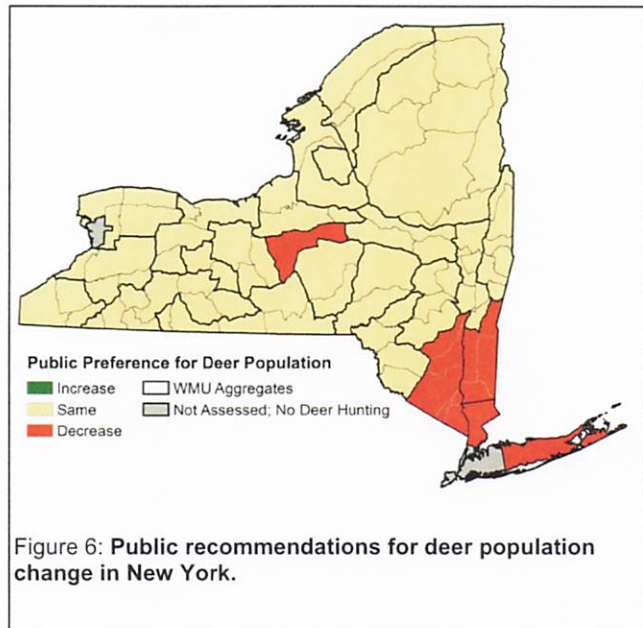
2020 Survey Report: www.dec.ny.gov/docs/wildlife_pdf/2020deersurveypart3.pdf

With a 42% response rate, we heard from New Yorkers in all Wildlife Management Units. Approximately 54% of respondents were from rural areas, 28% from villages or hamlets, 15% from small cities, and 4% from large cities. Interestingly, despite the random sampling process, 31% of respondents identified themselves as hunters, which is considerably greater than the 3% of New York residents who are licensed hunters.

Though responses varied by WMU Aggregate, overall, more people reported enjoying deer but worrying about deer-related damage (54%) than enjoying deer and not worrying about damage (35%) or not enjoying deer and regarding them as a nuisance (6%). However, most respondents (47%) indicated feeling that the benefits of deer and problems caused by deer are an even tradeoff, whereas nearly the same proportion felt the benefits of deer outweighed the problems (27%) or problems outweighed the benefits (26%).

Importantly, the survey asked how New Yorkers would like the deer population to change in their local area in the future. Most respondents (range = 85.8%–96.3%) expressed a clear preference, and overall, most respondents preferred the deer population to stay about the same. Only in four WMU Aggregates did the public prefer a decrease in deer abundance (Figure 6).

For our decision framework for setting deer population trajectories (Figure 1), we used the population change category (i.e., increase, decrease, stay the same) that received the greatest support among respondents with a preference (Table 1). We set the default recommendation as “stay the same” when the confidence interval of the top choice overlapped with one or both of the others.



Deer Population Trend Objectives for 2021–2030

Using the combined inputs of forest impacts and public recommendations, we followed the previously described decision framework to establish objectives for deer population trends for each WMU Aggregate (Figure 7, Table 1).

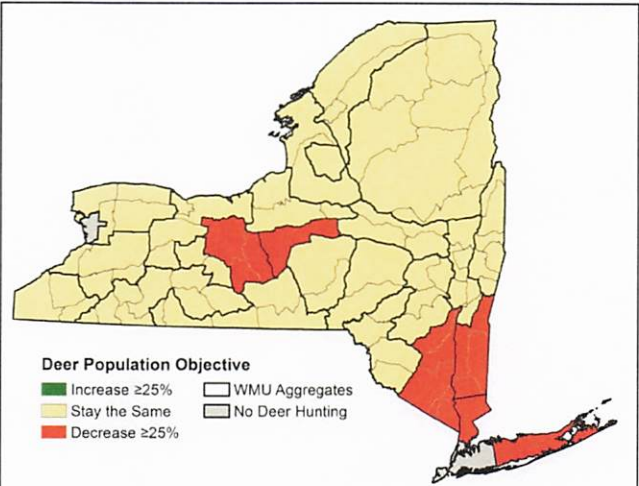

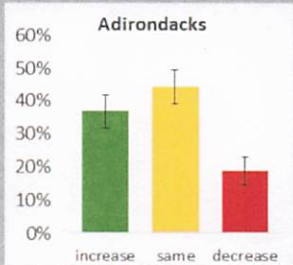

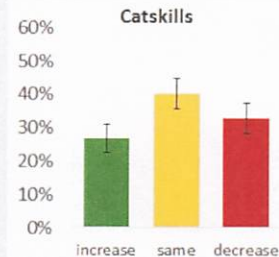



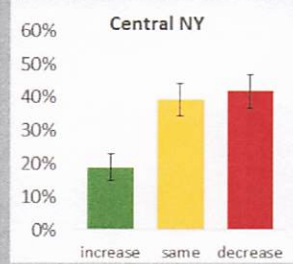

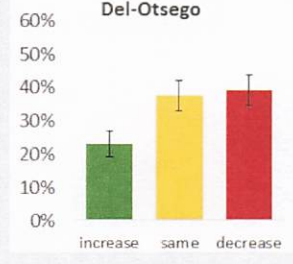

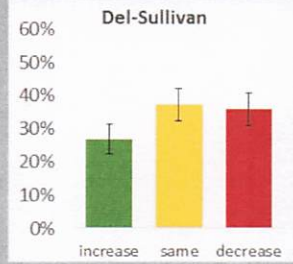



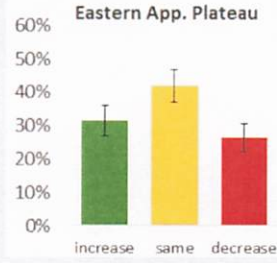

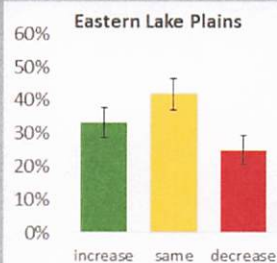

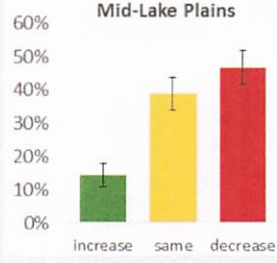
Figure 7: New York deer population trend objectives for 2021–2030 based on public recommendations and deer impacts to forests.


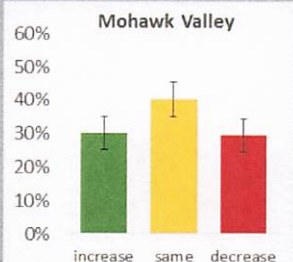

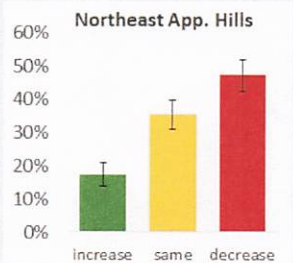

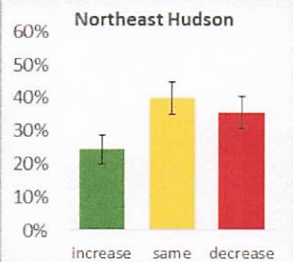
Table 1. Summary data used with the decision framework of Figure 1 to establish deer population trajectories for each Wildlife Management Unit Aggregate in New York.



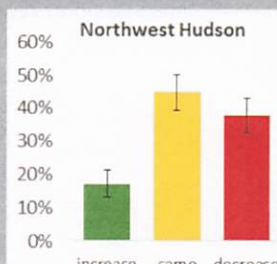
WMU Aggregate	Forest Regeneration: Do regeneration debt indicators suggest forest conditions are acceptable, vulnerable, or not acceptable?	Deer Impact: Do models predict an increase in seedling abundance if the deer population is reduced?	Public Preference for Deer Population Change	Deer Population Trajectory												
Adirondacks WMUs 5A, 5C, 5F, 5G, 5H, 5J, 6F, 6J, 6N 	Acceptable <table><thead><tr><th>Index</th><th>%</th></tr></thead><tbody><tr><td>0</td><td>93.1</td></tr><tr><td>1</td><td>6.9</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></tbody></table>	Index	%	0	93.1	1	6.9	2	0	3	0	4	0	NA	Stay the Same 	Maintain
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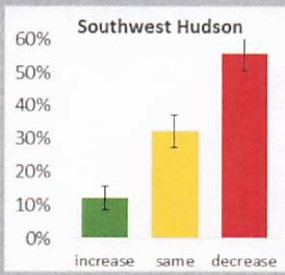

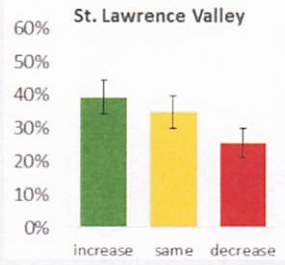

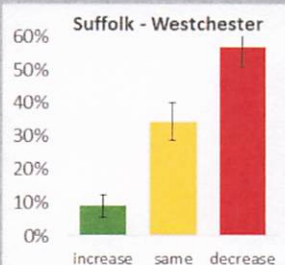
WMU Aggregate	Forest Regeneration	Deer Impact	Public Preference for Deer Population Change	Deer Population Trajectory												
Catskills WMUs 3A, 4G, 4H, 4R 	Vulnerable <table><thead><tr><th>Index</th><th>%</th></tr></thead><tbody><tr><td>0</td><td>45.3</td></tr><tr><td>1</td><td>54.7</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></tbody></table>	Index	%	0	45.3	1	54.7	2	0	3	0	4	0	No Monitor local conditions with AVID	Stay the Same 	Maintain
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Central Appalachian Plateau WMUs 7R, 7S, 8X, 8Y, 9Y 	Vulnerable <table><thead><tr><th>Index</th><th>%</th></tr></thead><tbody><tr><td>0</td><td>19.8</td></tr><tr><td>1</td><td>76.7</td></tr><tr><td>2</td><td>3.5</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></tbody></table>	Index	%	0	19.8	1	76.7	2	3.5	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Maintain
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Central Finger Lakes WMUs 7H, 8J, 8S 	Not Acceptable <table><thead><tr><th>Index</th><th>%</th></tr></thead><tbody><tr><td>0</td><td>2.0</td></tr><tr><td>1</td><td>72.0</td></tr><tr><td>2</td><td>25.7</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></tbody></table>	Index	%	0	2.0	1	72.0	2	25.7	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Decrease
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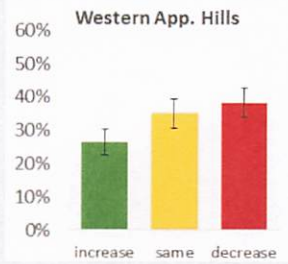

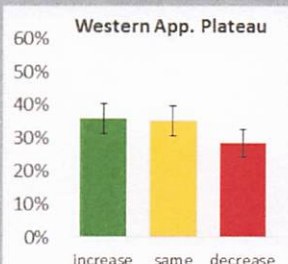

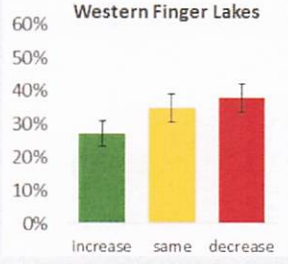
Central NY WMUs 6P, 7A, 7F 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>26.1</td></tr><tr><td>1</td><td>73.9</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	26.1	1	73.9	2	0	3	0	4	0	No Monitor local conditions with AVID	Stay the Same 	Maintain
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Delaware-Otsego WMUs 4F, 4O 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>31.7</td></tr><tr><td>1</td><td>62.9</td></tr><tr><td>2</td><td>5.4</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	31.7	1	62.9	2	5.4	3	0	4	0	No Monitor local conditions with AVID	Stay the Same 	Maintain
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Delaware-Sullivan WMUs 3H, 3K, 4P, 4W 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>3.5</td></tr><tr><td>1</td><td>87.7</td></tr><tr><td>2</td><td>8.8</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	3.5	1	87.7	2	8.8	3	0	4	0	No Monitor local conditions with AVID	Stay the Same 	Maintain
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Eastern Appalachian Plateau WMUs 7M, 7P 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>12.6</td></tr><tr><td>1</td><td>79.7</td></tr><tr><td>2</td><td>7.8</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	12.6	1	79.7	2	7.8	3	0	4	0	No Monitor local conditions with AVID	Stay the Same 	Maintain
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Eastern Lake Plains WMUs 6G, 6K 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>38.8</td></tr><tr><td>1</td><td>57.6</td></tr><tr><td>2</td><td>3.6</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	38.8	1	57.6	2	3.6	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Maintain
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WMU Aggregate	Forest Regeneration	Deer Impact	Public Preference for Deer Population Change	Deer Population Trajectory												
Mid-Lake Plains WMUs 8C, 8F, 8H, 8M 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>21.3</td></tr><tr><td>1</td><td>57.4</td></tr><tr><td>2</td><td>21.4</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	21.3	1	57.4	2	21.4	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Maintain
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Mohawk Valley WMUs 4A, 6R, 6S 	Acceptable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>54.0</td></tr><tr><td>1</td><td>46.0</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	54.0	1	46.0	2	0	3	0	4	0	NA	Stay the Same 	Maintain
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Northeast Appalachian Hills WMU 7J 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>41.2</td></tr><tr><td>1</td><td>58.8</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	41.2	1	58.8	2	0	3	0	4	0	Yes Monitor local conditions with AVID	Decrease 	Decrease
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Northeast Hudson WMUs 4C, 4K, 4L, 4U, 5S, 5T 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>22.6</td></tr><tr><td>1</td><td>77.4</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	22.6	1	77.4	2	0	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Maintain
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WMU Aggregate	Forest Regeneration	Deer Impact	Public Preference for Deer Population Change	Deer Population Trajectory												
Northwest Appalachian Hills WMUs 9G, 9H, 9M, 9N 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>8.5</td></tr><tr><td>1</td><td>91.1</td></tr><tr><td>2</td><td>0.4</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	8.5	1	91.1	2	0.4	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Maintain
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Northwest Hudson WMUs 4B, 4J, 4S, 4T, 4Y, 5R 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>5.3</td></tr><tr><td>1</td><td>81.9</td></tr><tr><td>2</td><td>12.8</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	5.3	1	81.9	2	12.8	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Maintain
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Southeast Hudson WMUs 3F, 3G, 3N, 4Z 	Not Acceptable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>67.6</td></tr><tr><td>2</td><td>32.4</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	0	1	67.6	2	32.4	3	0	4	0	Yes Monitor local conditions with AVID	Decrease 	Decrease
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Southwest Hudson WMUs 3C, 3J, 3M, 3P, 3R 	Not Acceptable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>0.8</td></tr><tr><td>1</td><td>45.6</td></tr><tr><td>2</td><td>53.4</td></tr><tr><td>3</td><td>0.2</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	0.8	1	45.6	2	53.4	3	0.2	4	0	Yes Monitor local conditions with AVID	Decrease 	Decrease
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WMU Aggregate	Forest Regeneration	Deer Impact	Public Preference for Deer Population Change	Deer Population Trajectory												
St. Lawrence Valley WMUs 6A, 6C, 6H 	Acceptable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>71.9</td></tr><tr><td>1</td><td>14.2</td></tr><tr><td>2</td><td>11.8</td></tr><tr><td>3</td><td>2.1</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	71.9	1	14.2	2	11.8	3	2.1	4	0	NA	Stay the Same 	Maintain
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Suffolk-Westchester WMUs 1C, 3S 	Not Acceptable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>31.7</td></tr><tr><td>2</td><td>64.1</td></tr><tr><td>3</td><td>4.2</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	0	1	31.7	2	64.1	3	4.2	4	0	Yes Monitor local conditions with AVID	Decrease 	Decrease
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Western Appalachian Hills WMUs 9J, 9K, 9R 	Vulnerable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>1.5</td></tr><tr><td>1</td><td>98.5</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	1.5	1	98.5	2	0	3	0	4	0	Yes Monitor local conditions with AVID	Stay the Same 	Maintain
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Western Appalachian Plateau WMUs 8P, 8T, 8W, 9P, 9S, 9T, 9W, 9X 	Acceptable <table><tr><th>Index</th><th>%</th></tr><tr><td>0</td><td>59.0</td></tr><tr><td>1</td><td>40.9</td></tr><tr><td>2</td><td>0.1</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr></table>	Index	%	0	59.0	1	40.9	2	0.1	3	0	4	0	NA	Stay the Same 	Maintain
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WMU Aggregate	Forest Regeneration	Deer Impact	Public Preference for Deer Population Change	Deer Population Trajectory												
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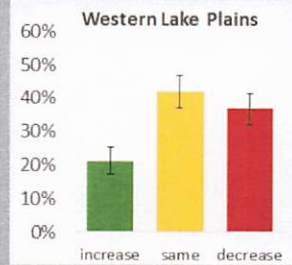
Western Lake Plains WMUs 8A, 8G, 9A, 9F	Vulnerable		Yes Monitor local conditions with AVID	Stay the Same	Maintain
	Index	%			
	0	22.8			
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Photo courtesy of Mary Tashjian

Appendix 3. Recommendation to Prohibit Cervid Biofluids in New York

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Albany, New York

1. Overview: Cervid Biofluids Impose an Avoidable CWD Risk to New York Deer

Chronic wasting disease (CWD) is a fatal disease of cervids (deer, elk, moose, and reindeer) caused by an infectious prion. If established in New York, CWD would pose a serious threat to New York's white-tailed deer and moose population, the deer hunting tradition, and the many other benefits associated with a wild white-tailed deer and moose population.

CWD was identified in New York in 2005 in five captive and two wild white-tailed deer, but following an intensive response and continued heightened surveillance, CWD has not been detected subsequently. However, commercially available products containing cervid biofluids (urine, saliva, feces, and glandular fluids) may contain prions that, through their use by hunters, could inadvertently introduce CWD again to New York.

In August 2017, the New York State Department of Environmental Conservation (DEC) and Department of Agriculture and Markets (DAM) published a draft plan to minimize risk of chronic wasting disease (CWD) to New York deer and moose. The draft recommended numerous actions and regulatory approaches to reduce CWD exposure risk, including a proposal to prohibit *"retail sale, and possession, use, and distribution while afield of the urine, glands, or other excreted substances or products containing the urine or excreted substances from any CWD-susceptible animal for any purpose."*

After review of public comment on the draft plan, DEC and DAM adopted a final [NYS Interagency Risk Minimization Plan](#) in February 2018 that did not recommend prohibition of urine-based products. Rather, the plan calls for DEC to "continue to assess the risk posed by use of products composed of urine and excreted substances from any CWD-susceptible animal as a route for introduction and spread of CWD in New York and propose appropriate steps to address this threat." This document is the product of that continued assessment.

2. Scientific Support: Cervid Biofluids May Spread CWD

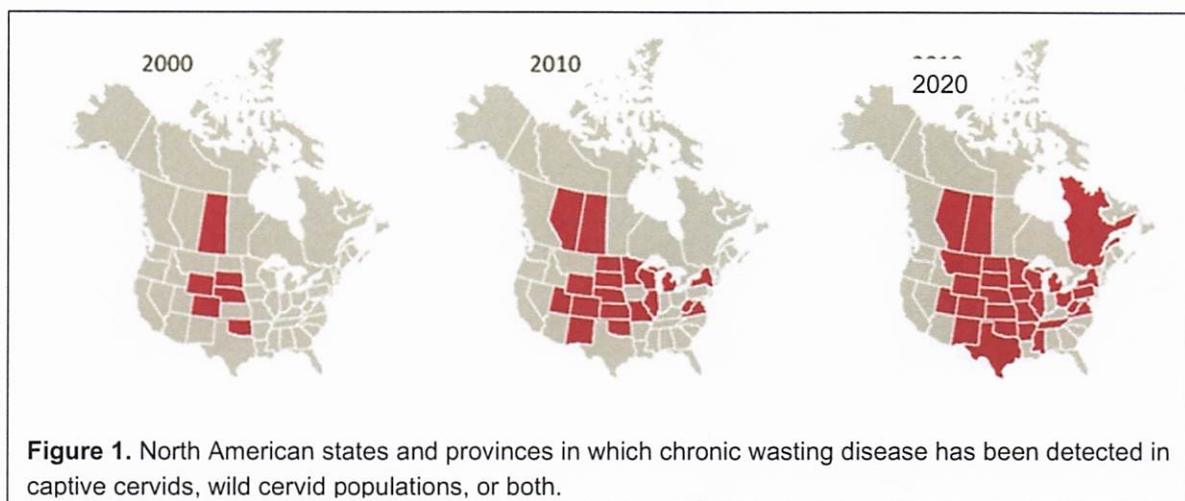
There is no "safe" dose of prion (Fryer and McLean, 2011). CWD prions have been detected in saliva, feces, blood, antler velvet, and urine (Angers et al., 2006; Angers et al., 2009; Haley et al., 2011; Henderson et al., 2015; John et al., 2013; Mathiason et al., 2006; Plummer et al., 2017). Recent work indicates that a prion dose of 100–300 ng of brain tissue is sufficient to cause infection in white-tailed deer (Denkers et al., 2020), indicating infectious doses of saliva and urine are smaller than previously thought. Prions may be excreted in higher concentrations in saliva and feces than in urine (Henderson et al., 2015; Plummer et al., 2017), but prions can exist in urine and are capable of causing infections. Because saliva, feces, urine, and glandular fluids of multiple animals and locations may be mixed together and marketed as an attractant, we will hereafter refer to all excreta as biofluids.

Infected deer can shed CWD prions in their urine for months (or years) prior to developing clinical signs and could shed thousands of infectious doses of prion over the course of the deer's life (Henderson et al., 2015). Consequently, the biofluids of an infected captive cervid may be collected for 6–12 months before the animal begins to look or behave abnormally due to the disease.

Deer urine and other biofluid products are marketed as deer attractants, which increases the likelihood of exposure to wild cervids. These products are put into the environment where prions can readily bind to soil minerals and remain infectious (Johnson et al., 2006). If cervid biofluids containing prions are put on the landscape by deer hunters, in a scrape or other area used by cervids, prions may bind to soil and contaminate that location for years or decades. Models have demonstrated that risk of CWD transmission from the environment increases over time as prions accumulate (Almberg et al., 2011). Repeated applications of infected biofluids at the same place over time could potentially build a reservoir of prions, increasing the likelihood of transmission (Mathiason et al., 2009). Plants are capable of binding prions on leaves and taking up prions into their tissues; those prions remain infectious (Pritzkow et al., 2015). Cervids attracted to a CWD-contaminated location may ingest any prions present in plants or soil or directly from the attractant material and become infected.

All cervid biofluids have not been completely evaluated for CWD by the most sensitive assays, which are available in a limited number of research laboratories. There are additional chemical compounds in these biofluids that may complicate and inhibit detection of prions. Using saliva as an example, Davenport et al. (2017) found that the longer CWD-positive saliva samples remained frozen prior to being tested, the test result became more sensitive. This may have happened because an inhibitory factor broke down during the extended time frozen. There have been few studies on deer urine (Haley et al., 2011; Henderson et al., 2015; Plummer et al., 2017), and it's possible that similar inhibitor compounds may be present, but unaccounted for in urine.

An additional complication may be that the tissue (i.e., saliva, urine, feces, brain) containing prions may be an important factor in transmissibility. Deer originally infected via saliva were 2.77 times more likely (95% CI: 1.55, 5.15) to shed prions in their saliva than deer infected via brain tissue (Davenport et al., 2017). Again, using saliva as an example for all biofluids, prion shedding in saliva happens relatively rapidly following exposure to prions. Following oral inoculation with saliva, experimental deer had a 79% probability of shedding prions at 3-months post-inoculation and 96% probability of shedding prions at 26-months post-inoculation; however, the onset of overt disease signs was not until 19.5-months post-inoculation (Davenport et al., 2017). Previous



studies examining deer urine used brain tissue to infect deer (Haley et al., 2011, Henderson et al., 2015), and thus may not demonstrate how animals would shed prions in a natural system.

Since 2000, CWD has spread into states and provinces east of the Mississippi River (Figure 1). Human-supported movement of live cervids has been a major driver of CWD geographic spread (Oraby et al., 2016); however, introductions to states, such as Virginia, that do not have a captive cervid industry might be facilitated by hunter transport of carcasses, natural dispersal movements of deer from closely neighboring jurisdictions, or hunter use of commercial biofluid products.

3. Regulatory Justification: Inadequate Oversight of Cervid Biofluid Products

There currently is no direct regulatory oversight of cervid biofluid products with respect to prions, and because there is not yet a validated, scalable, and practical test to detect prions in biofluid products, manufacturers cannot guarantee the safety of their products. Many of the larger manufacturers have their collection sites in states like Pennsylvania and Wisconsin where CWD has continued to spread and increase in prevalence in wild deer and among captive facilities.

The Archery Trade Association (ATA) started a voluntary Deer Protection Program for ATA-member scent manufacturers and suppliers to

Jurisdictions that Prohibit the Sale and/or Use of Cervid Urine-based Products

1. Alabama* – effective 2019
2. Alaska – effective 2012
3. Arizona – effective 2013
4. Arkansas – effective 2017
5. Idaho – effective 2018
6. Louisiana* – effective 2018
7. Manitoba – effective 2002
8. Michigan* – effective 2018
9. Minnesota (disease management areas) – 2018
10. Mississippi* – effective 2019
11. Montana* – effective 2018
12. Nevada – effective 2020
13. New Jersey – effective 2021
14. New Mexico – date unknown
15. North Dakota (disease management area) – 2019
16. Nova Scotia – effective 2007
17. Ontario – effective 2010
18. Oregon – effective 2020
19. Pennsylvania (disease management areas) – 2013
20. Rhode Island – effective 2018
21. South Carolina – effective 2019
22. Tennessee* – effective 2019
23. Virginia – effective 2015
24. Vermont – effective 2015
25. Yukon Territory – date unknown

* allow use of products from companies enrolled in the ATA Deer Protection Program and/or which have been RT-QuIC tested.

have more protective restrictions on products and facilities that provide biofluids for those products. Although the ATA suggests that their participants represent 95% of the market, this program does not include local, small-scale producers and retailers. We estimate that New York State has about a dozen producers and only two are members of the ATA program. As of 2021, the ATA will no longer be supporting the Deer Protection Program and its future is currently uncertain.

Additionally, the ATA program is based on the U.S. Department of Agriculture (USDA) CWD Herd Certification Program (HCP), which has only proven effective at detecting CWD but not preventing the spread of CWD. The HCP has significant flaws that must be remedied to prevent additional CWD outbreaks in captive cervid facilities. For example, prior to adoption of the HCP in Federal Fiscal Year (FY) 2012, 51 herds in 11 states had CWD detections. Post-HCP implementation up to FY2020, CWD was detected at 86 captive cervid facilities in 16 different states. Of these herds, 67 were either enrolled in the HCP or certified, meaning they had been in the program for at least 5 years or purchased stock from a herd that was certified and accredited as “low risk” for CWD. The number of positive facilities identified has increased every year: 2 in FY2014, 9 in FY2015, 7 in FY2016, 8 in FY2017, 15 in FY2018, 17 in FY2019, and 21 CWD-positive captive facilities in FY2020 (data: National Wildlife Health Center, U.S. Geological Survey).

One function of the HCP is to allow purportedly low-risk herds to move cervids interstate. However, in 2018, a live CWD-positive white-tailed deer was moved interstate from Pennsylvania to Wisconsin, where it was shot in a high-fence facility and tested positive. The traceback to the origin of that animal identified another CWD-positive white-tailed deer in the same breeding herd. The HCP standards must undergo a significant change from the current model to adequately address disease transmission risks.

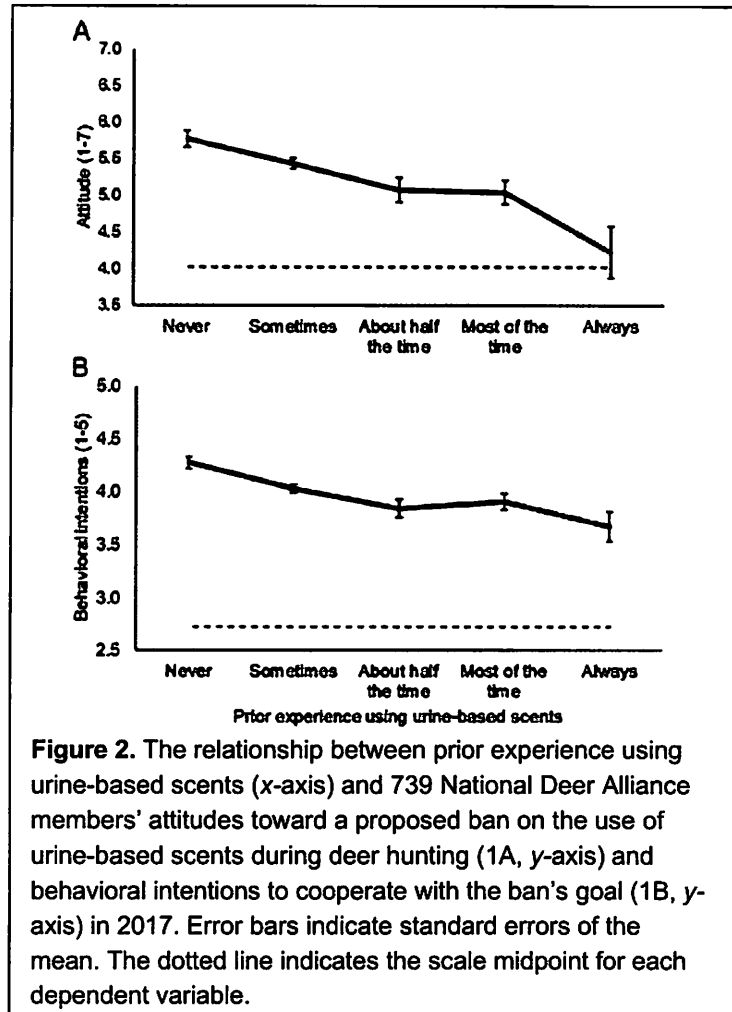
Recently, two of the largest urine product manufacturers began testing their products using a real-time quaking induced conversion (RT-QuIC), mirroring the technique that first identified CWD prions in urine. The RT-QuIC test is currently being evaluated by the USDA, and questions remain about the impacts of potential inhibiting compounds in the biofluids and uncertainty related to false positives in the testing process. Additionally, the company that is conducting the tests for the manufactures has not had its methodology verified by an independent laboratory, and neither the testing process nor any portion of the biofluid collection and scent manufacturing process is subject to governmental oversight. Should the RT-QuIC process be approved by USDA and the testing techniques be independently verified, urine product manufacturers have still not established a process to: (1) alert state and federal agricultural and wildlife agencies if prions are detected in their urine products, (2) prevent infectious products from being distributed to retailers, and (3) recall products that are already at retailers.

Lack of regulatory oversight and independence of commercial testing of cervid biofluid products, and lack of a recall process to prevent distribution of infected deer biofluid products represent a critical vulnerability.

4. Economic Mismatch: Potential Permanent Cost to New Yorkers Outweighs Temporary Profits of Producers

Should CWD prions be introduced to New York via infected biofluid products or other avenues, a CWD outbreak could have substantial impacts (>10% reduction) on hunting-associated income, particularly in rural areas (Bishop, 2004). The wild white-tailed deer herd in New York is valued at \$1.5B from license income, retail sales, jobs, food products, and recreational value.

In contrast, of the estimated 280 licensed captive cervid facilities in New York State, only 12 are known to collect urine (2012 survey). If New York were to initiate a ban on the retail sales, use, and possession afield of biofluid products, the owners of these 12 facilities would retain the ability to sell urine and biofluids wholesale to companies in other states. This action may have economic benefits for urine producers. For example, when New York State Department of Agriculture and Markets banned the live import of captive cervids in 2013, the economic value of New York captive white-tailed deer and elk was reported to have increased because of this extra margin of safety.



Potentially, as an increasing number of jurisdictions acknowledge the CWD risk associated with cervid biofluids and prohibit use of the products, the wholesale and retail markets for cervid biofluids may decline nationally. Nonetheless, synthetic urine products already represent over 20% of the current commercially available deer attractant options, providing a safer alternative for manufacturers and hunters.

5. Hunter Opinions: Using Biofluid Attractants Is Not Worth the CWD Risk

Hunters' attitudes and behavioral intentions to comply with CWD related policies were tested in a hypothetical exercise using members of the National Deer Alliance (NDA, n=739), an online advocacy group of deer hunters (Song et al., 2018). Overall, participants held positive attitudes toward a proposed policy to ban deer-urine products and high intentions (89%) to cooperate. Participants also characterized CWD as an increasing risk that was well known to science, observable, and associated with dread. Notably, even those hunters who used deer-urine

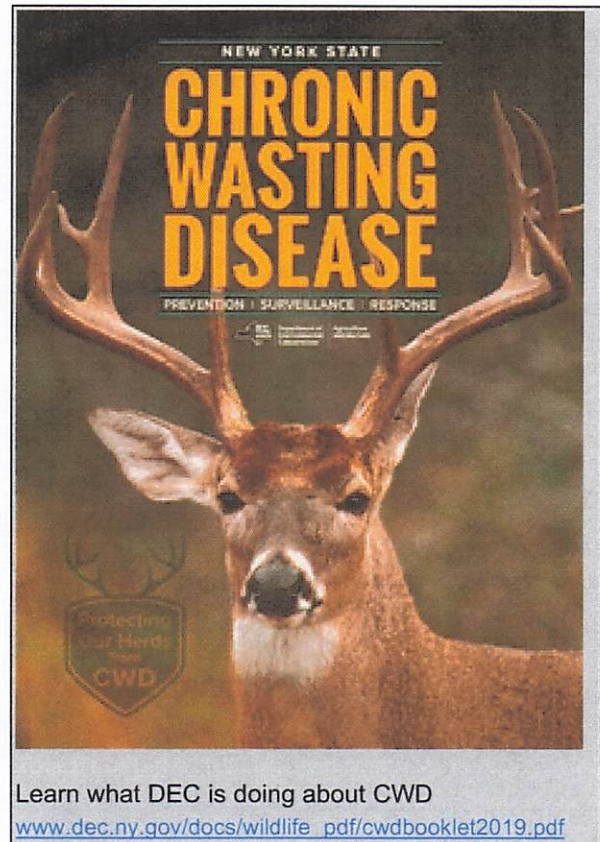
products relatively frequently had positive attitudes towards the ban and behavioral intentions to comply with the ban's goal (Figure 2; Song et al., 2018).

6. Recommendation

Based on available science, we contend that the use and distribution of cervid biofluid products continues to impose an unnecessary and avoidable risk of introduction and spread of CWD prions, which would irreversibly threaten the future of wild and captive cervids in New York. DEC acknowledges that efforts by the cervid biofluid industry to mitigate those risks are ongoing and subject to improvement. Should the uncertainty in testing reliability and deficiencies and lack of regulatory oversight in current cervid biofluid product distribution be resolved to address concerns related to prion detection, agency notification, and product recall, alternative approaches may be considered. In the absence of such improvements, we recommend that DEC consider steps to prohibit the retail sale, and possession, use, and distribution of cervid biofluid products in New York to eliminate this risk of CWD prion introduction.

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Appendix 4. Deer Harvest Calculation in New York

DEC calculates the annual deer harvest using data compiled from two primary sources: hunter reports and the physical examination of harvested deer by DEC staff. Successful hunters are required by law to report their deer harvest within 7 days and may do so via DEC's automated phone report system, online, and mobile application. Additionally, DEC provides postcard report forms for hunters who do not possess a telephone. The harvest report includes information that is critical for the harvest calculation process (i.e., Hunter ID #, carcass tag #, season, and the town, county, and Wildlife Management Unit [WMU] of kill). The harvest report also includes information on the sex of the deer and number of antler points, but these data are used for law enforcement purposes, not harvest calculation.

The second source of deer harvest data is the physical examination (check) of 14,000–17,000 hunter-harvested deer each fall by DEC staff. This deer check occurs predominantly at venison-processing facilities and provides biological data about the harvest (i.e., sex and age of the deer, antler measurements, and other data as needed). Additionally, DEC staff record the deer carcass tag #, which is then compared against the hunter harvest reports to determine reporting rates. Data are also obtained from deer heads that are collected by DEC staff from venison processors and taxidermists for Chronic Wasting Disease (CWD) surveillance. Because we prioritize CWD samples from older age deer, data from these deer are not used to describe the age structure of the harvest as they would bias the outcome.

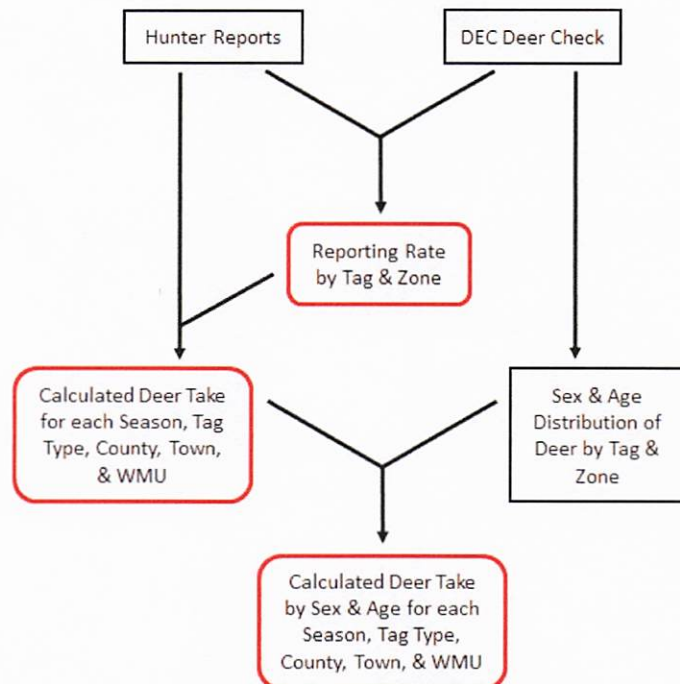


Figure 1. Simplified illustration of the deer harvest calculation process in New York.

After harvest data are compiled, they must be validated to identify erroneous records, such as those that contain incorrect town/county/WMU associations, spelling errors, impossible harvest dates, or tag errors such as an antlered male deer on a DMP tag. For simple data errors with obvious corrections, we fix the record. For others, the records are discarded. We then cross-reference all carcass tag numbers in the harvest report and deer check data files with a master list of tags issued to ensure only valid tags are included in the harvest calculation.

To calculate reporting rates (Figure 1), we compare DEC deer check records against hunter reports to identify the percentage of deer checked that were reported. We determine reporting rates for each tag type, calculating regional values when sample sizes are adequate (Table 1). We then apply the reporting rates to the appropriate records to estimate the total number of deer harvested, starting at the smallest spatial scale (town/county/WMU; e.g., Saranac/Clinton/5C) as this ensures that the calculated values will scale up consistently. After we calculate the harvest at the small scales, we sum the values for each town, county, WMU, zone, and state.

Table 1. Deer harvest reporting rates in New York, 2019.

Tag	Area	Hunter Reports	Checked by DEC	Checked & Reported	Percent Report
Regular Big Game	Northern	8,430	1,041	516	49.6
Regular Big Game	Southeast	10,964	2,491	1,421	57.1
Regular Big Game	Central & Western	22,737	4,471	2,357	52.7
DMP	Northern & Southeast	11,315	1,906	1,058	55.5
DMP	Central & Western	26,989	3,527	1,600	45.4
Bonus DMP	State	1,309	1,309	1,309	100.0
Bow & Muzzleloader	State	30,502	2,138	1,188	55.6
DMAP	State	7,778*			92.6*
Statewide Totals	State	118,715	15,574	8,140	52.3

*DMAP reporting rates were determined from harvest reports submitted by DMAP permittees.

Once the number of deer harvested is estimated, we then use DEC deer check data to determine the sex and age composition of harvested deer (i.e., fawn male, fawn female, adult male, and adult female). Although hunters indicate the sex of deer in their harvest report, we rely on the physical examination of deer by DEC staff as a reliable sampling of harvested deer. By applying the age and sex distribution to the initial calculated totals, we can then describe the final deer harvest by sex and age for each tag type, season, and location (i.e., county, town, WMU) in New York.

Methods

We use a Lincoln-Petersen model (Seber, 2002) to estimate the size of the annual deer harvest. We require three values to estimate the number (N) of harvested individuals: a known number of marked animals (M), a subset of the population that has been captured (C), and the number of marked animals within those captured (m).

$$\hat{N} = \frac{MC}{m}$$

For our use:

C = Total number of harvest report from hunters

M = Number of deer checked by biologists

m = Number of reported deer that were also checked

We can estimate the capture probability (i.e., reporting rate) using m and M.

$$\hat{p} = \frac{m}{M}$$

Once we have the reporting rate, we can apply that to C to estimate the total number of harvested individuals.

$$\hat{N} = \frac{C}{\hat{p}}$$

The appropriate sex and age distribution derived from DEC deer check is then applied to the estimated number for each tag type and geographic area.

An Example

In northern and southeastern New York, DEC staff checked 1,906 deer taken on Deer Management Permits (DMPs; antlerless-only tags) in 2019. Hunters reported that they harvested 11,315 deer on DMPs in the same areas. Of those reported deer, 1,058 were both checked (marked) and reported.

$$\text{Reporting Rate} = \frac{1,058}{1,906} = 0.5551 \text{ or } 55.5\%$$

Of the 11,315 deer reported on DMPs in northern and southeastern NY, hunters reported 1,706 as having been taken in WMU 3M.

$$N = \frac{1,706}{0.5551} = 3,073 \text{ Deer taken on DMPs in WMU 3M}$$

Or

$$\hat{N} = \frac{1,906 \cdot 1,706}{1,058} = 3,073$$

From the DEC deer check, we determine that the sex and age composition of deer harvested on DMPs in southeastern NY was 9.6% fawn male, 10.4% fawn female, 4.6% adult male, and 75.4% adult female. When this age and sex distribution is applied to the calculated DMP harvest of 3,073 deer in WMU 3M, it yields:

$$\text{Male Fawn} = 3,073 * 0.096 = 295$$

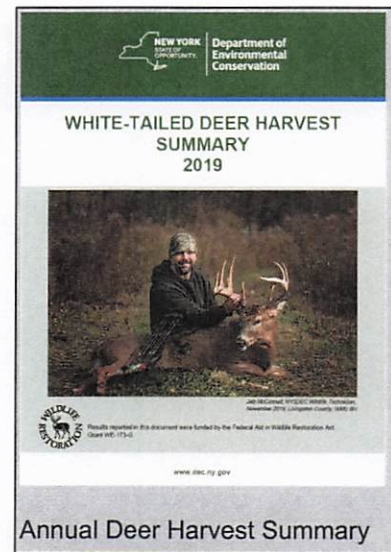
$$\text{Female Fawn} = 3,073 * 0.104 = 320$$

$$\text{Male Adult} = 3,073 * 0.046 = 141$$

$$\text{Female Adult} = 3,073 * 0.754 = 2,317$$

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Appendix 5. Deer Management Permits: Setting Quotas and Allocating Tags

Deer Management Permits (DMPs), often called "doe tags", are a critical part of New York's deer management program. By adjusting the number of DMPs available in individual Wildlife Management Units (WMUs), we can influence the number of does that are taken by hunters and thus manipulate the deer population toward desired levels. Annual removal of appropriate numbers of does is essential for ecologically responsible deer management. It is beneficial for sustaining biodiversity and maintaining healthy habitat and healthy deer.

DMP Quota Setting

The math involved in setting DMP numbers is actually quite simple, though the process of determining the desired adult female (doe) harvest requires biologists to consider a variety of factors that influence population dynamics. Here is the essence of the permit quota-setting process:

Step 1. Assess deer population status relative to the objective. Deer population trajectory objectives (increase, stay the same, decrease) are assigned to each WMU based on public interests and assessments of deer-impacts to forests ([Appendix 2](#)). Biologists use adult buck harvest density (bucks taken per square mile of habitat) as an index of deer abundance within each WMU, and review trends in this index to determine whether the population is changing consistent with the objective. It's not quite as simple, though, as seeing that the buck take went up and assuming that the population must be increasing. Biologists also study previous levels of doe harvest and observe how they influenced recent buck harvests. We monitor indices of herd health and productivity through annual measurements of yearling antler beam diameters and fawn to doe harvest ratios, and we consider likely impact of winter conditions on deer survival based on the number of days with temperatures below zero and snow deeper than 15 inches. All of these factors weigh into the biologists' interpretation of whether or not the deer population is on track to meet the objective.

Step 2. Determine desired doe harvest. Based upon the deer population status assessment, DEC biologists decide whether additional, fewer, or roughly the same number of does need to be harvested during the next hunting season to modify population growth according to the WMU's objective. Biologists review recent trends in doe harvest and determine the desired total doe harvest.

Step 3. Calculate the target doe harvest on DMPs. Because does can also be harvested during bow and muzzleloader season and on DMAP tags, we review harvest records for each WMU to determine the desired doe harvest on DMPs.

$$(\text{Desired Total Doe Harvest}) - (\text{\# Adult Does Taken by Muzzleloader Hunters and Archers and on DMAP tags}) = \text{Target Doe Harvest on DMPs}$$

Step 4. Add in the expected fawn take. All antlerless deer, including fawns and adult does, can be taken on DMPs, and the proportion of fawns in the harvest varies by WMU. Therefore, biologists review harvest records and adjust the desired DMP take to include fawns.

$$(\text{Target Doe Harvest on DMPs}) \div (\text{\% Adult Doe in DMP Harvest}) = \text{Total Desired DMP Harvest}$$

Step 5. Account for hunter success. Not all of the DMPs issued result in a harvested deer, and that success rate varies by WMU. Biologists use past DMP harvest success to adjust the target DMP issuance level to ensure the desired number of antlerless deer and the desired number of does are harvested.

$$(\text{Total Desired DMP Harvest}) \div (\text{DMP Success Rate}) = \text{Total \# of DMPs to Issue}$$

Example. To illustrate the DMP quota setting process, consider the following:

Step 1: Population Trajectory Objective: *Stay the Same*
Current Population Status: *Increasing, need additional adult female harvest*

Step 2: Recent Total Doe Harvest: 1,000 does; 2.0 per mi²
Desired Total Doe Harvest: 1,250 does; 2.5 per mi²

Step 3: Recent Doe Harvest by Bow, Muzzleloader, and DMAP: 150
Target DMP Doe Harvest = 1,250 – 150 = 1,100

Step 4: Percent Does of DMP Harvest (accounts for fawns): 70%
Total Desired DMP Harvest = 1,100 ÷ 0.70 = 1,571

Step 5: Recent DMP Success Rate: 20%
Total # of DMPs to Issue = 1,571 ÷ 0.20 = 7,855 rounded to **7,900**

DMP Allocation

Quota setting is only the first part of the DMP process. The next step is to get the permits in the hands of our hunters. DMPs are issued by an instant selection process when hunters buy their license, allowing applicants who are selected for DMPs to receive their permits immediately. The system is designed to provide equal opportunity for a hunter regardless of whether they apply on the first or last day of the application period. The chances for DMP selection are determined by the DMP quota and the number of applications expected for each WMU. An applicant's chances of selection are also affected by their residency, qualification as a landowner of 50 or more acres, status as a veteran with disabilities, or the number of preference points accumulated through previous DMP applications. The order of priority for DMP selection is:

1. Landowners and Veterans with Disabilities
2. NYS Residents and Non-residents with 3 or more preference points
3. Residents with 2 preference points
4. Residents with 1 preference points
5. Residents with 0 preference points
6. Non-residents with 2 preference points
7. Non-residents with 1 preference points
8. Non-residents with 0 preference points

Example. To illustrate DMP issuance, consider the following simplified process. In reality, this process incorporates each category of residency and preference noted above.

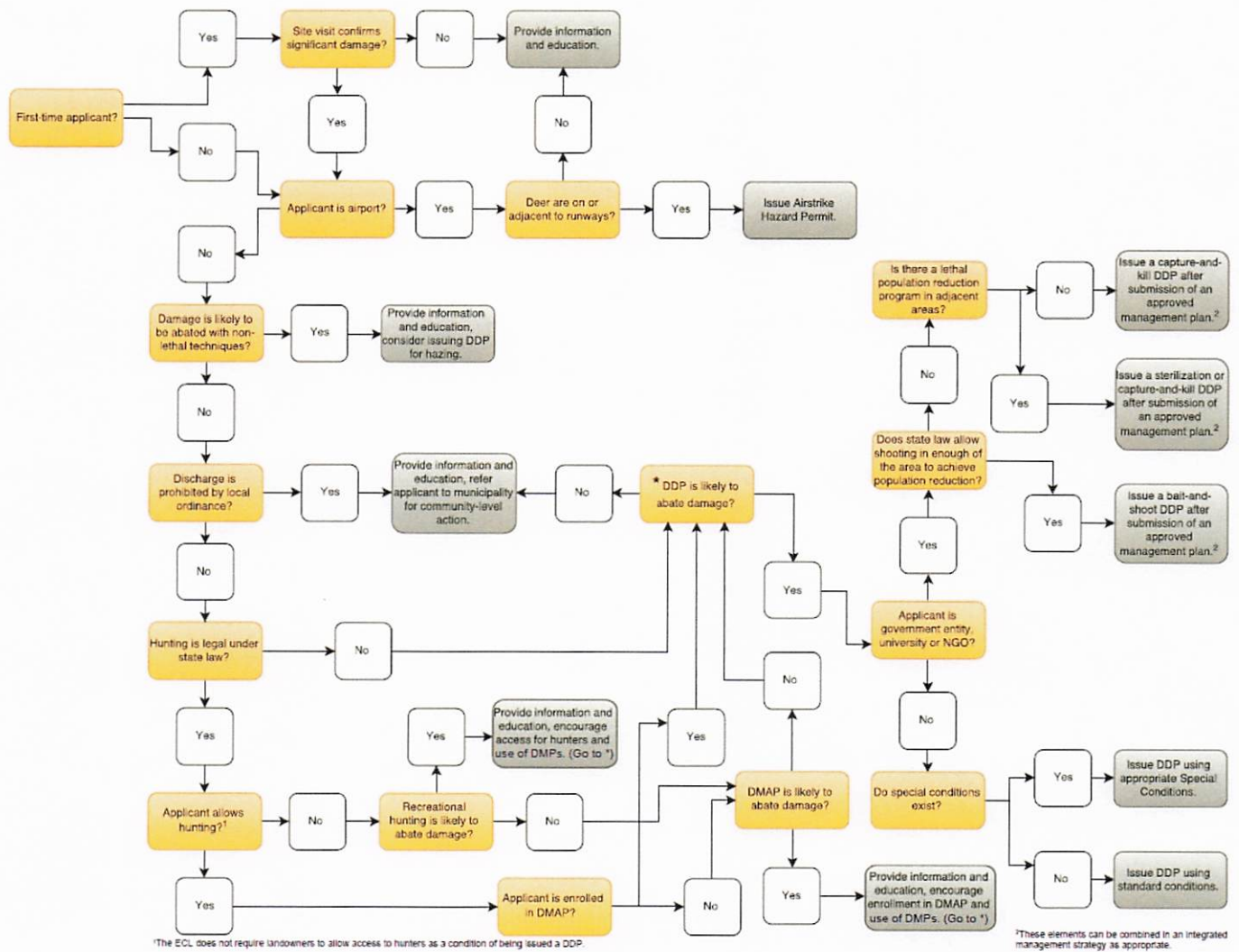
DMP Target = 7,900

Landowners and Veterans with Disabilities			
Expected # Applicants	Odds of Selection	Expected # DMPs to Issue	Expected # DMPs to Remain
100	100%	100	7,800
Residents with Preference Points			
Expected # Applicants	Odds of Selection	Expected # DMPs to Issue	Expected # DMPs to Remain
2,800	100%	2,800	5,000
Residents without Preference Points			
Expected # Applicants	Odds of Selection	Expected # DMPs to Issue	Expected # DMPs to Remain
8,000	62.5%	5,000	0

Actual DMP issuance is impacted by the overall number of people that apply for DMPs in a given WMU and their preference status, but we examine past application trends to predict application rates in each category for each WMU. If a WMU is substantially under-subscribed at the close of the initial application period (October 1 each year), DEC runs another random selection process for any hunters that were denied in that WMU during the initial period and mails tags to selected hunters. If necessary, the unit is opened for a first-come, first-served application period for leftover DMPs in November.

Hunters play an essential role in maintaining appropriate deer numbers in New York and our DMP system is the cornerstone of that process.

Appendix 6. Deer Damage Complaint Evaluation Process



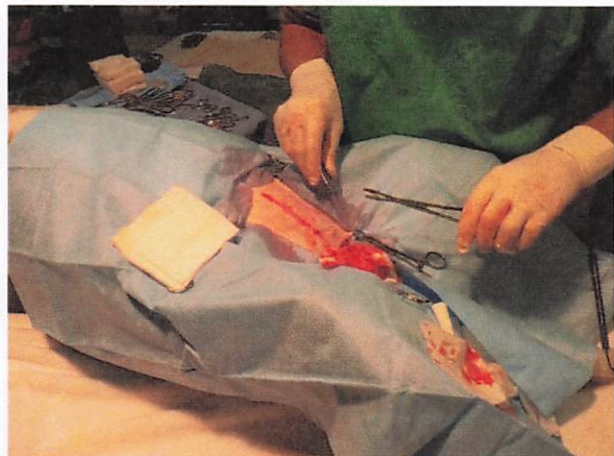
Appendix 7. Fertility Control of Deer

Fertility control is often suggested or advocated by individuals and organizations as a humane way to control deer populations and reduce damages or conflicts associated with deer, especially in urban/suburban areas. However, despite decades of research on various fertility control methods, this approach has still not produced the solution people have been hoping for. Fertility control programs have resulted in deer population reduction only in fenced or island locations (Rutberg et al., 2013b). Because of the barriers to movement, there is little immigration of deer into such locations. In typical urban and suburban situations, however, deer move freely across municipal boundaries, so a fertility control program in such a situation would not be able to produce the desired population reduction. Every year, there would be untreated animals moving into the fertility control treatment area. Because of the high reproductive rate of deer, reproduction by a small number of untreated does can more than compensate for the low levels of mortality in these environments, resulting in continued population growth (Merrill et al., 2006).

However, fertility control may be useful in conjunction with other methods of population control (Raiho et al., 2015). A fertility control program may lead to population stability or reduction in a limited area if immigration from surrounding areas could be minimized. Substantially lowering the populations in those surrounding areas through hunting or culling programs would be a way to do that. Additionally, after a population has been lowered to an appropriate level through hunting or culling, it may be possible to maintain it at that level with fertility control. Even in these limited circumstances, though, the logistical and financial burdens entailed in current fertility control methods would present a significant obstacle to implementation of meaningful fertility control programs in most communities.

There are two basic methods of fertility control for deer: surgical sterilization and immunocontraception. Sterilization of does can be accomplished through either ovariectomy or tubal ligation. The former is preferable, because tubal ligation doesn't prevent ovulation, so does sterilized by that method will still go into estrus and mate. Because they won't get pregnant, however, they will go through several estrous cycles each year, creating an extended rutting season. This could have a number of negative consequences, including more deer-vehicle collisions, increased stress and lower overwinter survival, and an increase in the local population due to bucks being attracted from neighboring areas (Boulanger and Curtis, 2016). An ovariectomy program is not likely to have these consequences.

Unlike sterilization, immunocontraception does not provide permanent infertility. Booster doses at regular intervals are necessary to maintain effective contraception, although those intervals have been getting longer as the technology is improved. Does must be captured for initial treatment and marking, and subsequent doses require either recapturing the deer, or if regulations allow and the deer can be approached closely enough, darting with darts containing the contraceptive. Maintaining infertility becomes more difficult over time as the deer become more wary through experience.



The first deer contraceptive to be approved at a federal level by the Environmental Protection Agency (EPA) was GonaCon™. The EPA approval only allows it to be used by USDA APHIS Wildlife Services, state wildlife agencies, or people working under their authority. Administering GonaCon™ by dart is not allowed by the EPA because of the possibility that a dart might miss its target. GonaCon™ prevents ovulation and estrus, and a single injection has the potential to keep does infertile for multiple years. However, field tests have demonstrated relatively low efficacy rates, with 67–88% percent of treated deer not reproducing in the first year and 43–47% the second year (Gionfriddo et al., 2009; 2011). Additional information on GonaCon™ is available at

https://www.aphis.usda.gov/wildlife_damage/nwrc/downloads/faq_gonacon_07.pdf and https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-116800_01-Sep-09.pdf.

In 2017, the EPA approved another contraceptive for deer, ZonaStat-D. It contains porcine zona pellucida (PZP), which prevents fertilization, not ovulation, so it has the same potential for negative consequences as tubal ligation. The EPA approval only allows ZonaStat-D to be used by certain federal and state government agencies, Native American tribes, and the Humane Society of the United States. More information is available at

https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:8:3786503592210::NO::P8_PUID,P8_RINUM:498850,86833-1. PZP formulations that may provide multiple years of infertility have been developed, and their efficacy on free-ranging deer is currently being tested in a field study in New York. Previous tests suggest that efficacy rates are higher than those of GonaCon™ (Rutberg et al., 2013a).

Neither of these products has been registered for use in New York State, so deer can only be treated with them as part of a scientific study. DEC will only consider proposals to use immunocontraceptives on deer if they represent research designed to answer new and worthwhile scientific questions. The research project must be thoroughly described in a full scientific proposal. If such a project is approved, a License to Collect and Possess will be issued that allows treatment of the deer. Application forms and more information are available at <http://www.dec.ny.gov/permits/28633.html>.

Fertility control efforts typically focus on female deer. Because one buck can fertilize many does, to achieve a given change in population reproductive rate, a program focusing on bucks would have to treat a much higher proportion of the total number than a program focusing on does would. Nevertheless, there is currently a research project in New York investigating whether buck sterilization (by vasectomy) can reduce population size in an island setting.

Sterilization of does may be included as one component of a community deer management program under a Deer Damage Permit, provided that methods that effectively reduce deer populations are also included. For example, sterilization could be used in a village center where buildings are very close together, while hunting is employed in surrounding parts of the community that have a lower density of development. Hunting would be necessary to lower deer abundance, but sterilization could provide a valuable contribution to the overall program by preventing reproduction in a segment of the population that is very difficult for hunters to access. For more information on community deer management, see <http://www.dec.ny.gov/animals/104961.html>.

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Appendix 8. Legal Matters

Deer management and deer hunting activities in New York occur within the legal framework of the New York State Environmental Conservation Law (ECL). The ECL grants DEC authority to establish regulations for some, but not all, aspects of deer hunting and deer management. The distinction between law and regulation is often a source of confusion for the public, many of whom mistakenly believe that DEC controls all things related to deer and deer hunting, including relevant laws. Rather, the State Legislature, as the lawmaking body, enacted the ECL, which provides DEC with the authority to adopt regulations for many aspects of deer management, such as the length and timing of hunting seasons, bag limits, Wildlife Management Unit boundaries, the Deer Management Assistance Program, disease response, and feeding prohibitions. However, many other aspects of deer management and hunting are established in law, including the use of crossbows, counties where rifles may be used, age limits for hunting, methods for culling deer, license fees, and penalties for violations. DEC may only promulgate regulations consistent with the underlying statute.

While DEC can create and modify regulations, new laws or changes to existing laws require initiation and approval first by the New York State Legislature and then by the Governor. As an executive agency, DEC has opportunity to work directly with the Governor's office to recommend legislation, through the Departmental process, or as part of the Governor's Executive Budget if appropriate. DEC is available to assist members of the Legislature and their constituents with questions and concerns; however, DEC can neither direct the Legislature to act nor comment on pending legislation.

The following section outlines several issues for which modification of the ECL may improve deer management efficacy and remain consistent with the public's interest for deer management and hunting.

1. Improve capacity to address overabundant deer in urban and suburban areas.

Efforts to address the problem of overabundant deer in urban and suburban areas require flexibility and the availability of non-traditional management techniques. Many current statutes in the ECL were established during periods of deer scarcity, without anticipation of current issues associated with deer abundance. As such, numerous prohibitions in the ECL, implemented to protect a limited resource, now substantially hamper DEC's capacity to manage overabundant deer, and thereby perpetuate and exacerbate the negative deer-related impacts that communities and landowners experience.

To effectively assist communities in addressing situations of deer overabundance, DEC essentially needs an expanded toolbox. Having additional legal authorities (tools) would enable the development of strategic programs tailored to individual communities' needs and would increase the efficiency and effectiveness of their programs.

With respect to deer hunting, statutes should be modified to grant DEC full regulatory authority to:

- set deer hunting seasons and regulate methods of take and bag limits in all parts of the state, not just a subset of the state. This would include:
 - allowing use of firearms to take deer during the regular season and eliminating acreage minimums and special season constraints in Suffolk and Westchester Counties (ECL § 11-0907),
 - full authority to regulate crossbow use (ECL § 11-0505),

- allowing deer hunting in currently closed areas (e.g., Nassau County and parts of Albany, Erie and Monroe Counties; ECL § 11-0907),
- allowing use of firearms to take deer in areas that are currently restricted to bow only;
- allow hunters in urban deer control areas to use some techniques that are prohibited under general hunting laws (e.g., bait, lights; ECL § 11-0901); and
- set conditions under which hunters can receive some form of compensation for killing deer and can sell venison (ECL § 11-0917).

State law also sets the parameters on what DEC can authorize for removal of deer under a damage permit, or culling. Numerous constraining laws prevent the authorization of deer-removal techniques that can be very safe and effective under controlled circumstance. These laws were originally established to increase public safety associated with general firearms use and hunting practices by the public. However, by hindering the removal of deer that are creating public safety hazards in developed areas and at airports, the laws actually increase risk to the public. Statutes should be modified to give DEC the flexibility to issue permits that allow qualified professionals, under controlled circumstances, to:

- use bait within 300' of a road (ECL § 11-0505),
- shoot from a vehicle (ECL § 11-0931),
- discharge firearms within 500' of a dwelling or structure (ECL § 11-0931),
- use firearms equipped with sound suppression (ECL § 11-0931), and
- use rifles in Suffolk and Westchester counties (ECL § 11-0931).

These techniques would greatly increase the efficiency and even the safety of culling programs. Rifles are more precise firearms than shotguns, and sound suppression can improve professionals' ability to take multiple deer from a group. When working from an elevated platform in the back of a truck, professionals are able to discharge their firearms in a safe, downward trajectory and move efficiently between shooting locations without altering deer behavior. Use of bait within 300' of a road allows professionals to establish shooting sites in the safest locations and remove deer from a higher portion of open spaces.

Additional details on the statute changes that could improve management of overabundant deer in developed areas of the state are available in DEC's report to the New York State Legislature, *Deer Management in Urban and Suburban New York* (www.dec.ny.gov/docs/wildlife_pdf/decdeerreport18.pdf).

2. Set uniform minimum hunting age of 12 years, with supervision of a licensed, experienced adult.

New York hunters have long advocated the creation of additional opportunities for youth to hunt big game. Allowing interested youths to hunt big game with a firearm can foster lifelong participation, help increase recruitment of hunters, and perpetuate the effectiveness of hunters in managing deer populations throughout the state.

In 2008, establishment of the Mentored Youth Hunting Program reduced the minimum age for youth firearms hunting from 16 to 14 and set the framework for appropriate supervision by experienced hunters to develop a strong safety ethic in young hunters. Currently, all other states allow youths 12 years old or younger to hunt big game with a firearm, and most states have no set minimum age for youths when hunting with an adult mentor. Moreover, in New York, 12-year-olds have been allowed to hunt small game with a firearm while accompanied by an adult since 1991. DEC strongly recommends that the minimum age for youth to hunt with a firearm or crossbow be set to a uniform age of 12 years for all game species, including big game, with associated adult supervision.

Additionally, DEC considers the current requirement for junior hunters and their mentors to remain on the ground while hunting with a firearm to be unnecessary. Twelve- and 13-year-old junior bowhunters are currently allowed to hunt from an elevated position, and discharge of a firearm from an elevated platform increases safety with downward bullet trajectory. Most tree stand-related accidents are associated with movement into and out of the stand, not with the implement used for hunting. Tree stands designed for two hunters are widely available.

3. Crossbow hunting

DEC supports the use of crossbows for deer hunting during the same time frames, in the same manner, and with the same eligibility requirements as with vertical bows.

The crossbow hunting law enacted in 2012 does not address deer management needs and is inconsistent with hunter preferences. Specifically, overabundant deer populations in portions of the state where hunting access or firearm use is restricted, such as Suffolk and Westchester counties and WMUs 4J and 8C in Albany and Monroe counties respectively, may cause serious impacts on forest regeneration, biodiversity protection, and public health. However, current law expressly prohibits crossbow use in these areas. Moreover, limited time for crossbow use and the arbitrary difference in the legal setback distances for discharge of vertical bows (150 feet from certain structures) and crossbows (250 feet) unnecessarily constrain effective use of crossbows for deer management throughout the state.

Support for increased crossbow use appears to be growing among New York hunters. A 2010 survey of hunters found that a majority of deer hunters supported crossbow use for all hunters during seasons when other bowhunting equipment is allowed (51%) and more so for seniors (68%) and hunters with disabilities (78%; Enck et al., 2011). In a 2018 survey, DEC found that 61% of respondents who do not own a crossbow would acquire and use a crossbow for hunting if crossbows were allowed during the entire bow season. Further, a majority (61%) preferred that crossbow use be tied to bowhunting privileges, and a similar majority (60%) of hunters indicated that crossbows should be allowed in Suffolk and Westchester counties and in WMUs 4J and 8C.

DEC recommends that crossbows be allowed during all hunting periods when other bowhunting equipment is allowed and that eligibility to hunt with a crossbow be the same as eligibility to hunt with a vertical bow. DEC further recommends that the restrictions on crossbow size (e.g., minimum limb width) and maximum draw weight be removed from law so that the agency can set more appropriate standards which are effective and humane for deer hunting and consistent with crossbow technology.

4. Remove constraints for deer hunters on Long Island.

Deer management on Long Island has long been a challenge. Intense development decreased the amount of land available for legal deer hunting, and public misconceptions about the safety of hunting resulted in a complex and onerous system of laws and regulations governing deer hunting. Reducing the constraints on hunters is essential to improve management effectiveness and ability to meet the public's desires for deer on Long Island.

Allow bowhunting in Nassau County: ECL § 11-0907(5)

Deer hunting is not currently authorized in Nassau County (ECL § 11-0907[5][c]), reflecting a time period when deer did not exist in the county. However, deer are now present in the northern half of the county and even in portions of eastern Queens. Landowners are reporting damage, and deer-vehicle collisions are occurring. With the large amount of green space in northern Nassau County and no direct management through hunting, the deer population and associated damage will continue to increase. Allowing bowhunters to pursue deer in Nassau County during the same period as is authorized in Suffolk County would be a safe and proactive measure to control deer numbers.

Special January firearms season in Suffolk County: ECL § 11-0903(7)

- **Eliminate the town hunting permit and landowner endorsement requirements and 10-acre-minimum property size restriction:** Current law requires hunters to obtain a special hunting permit issued by town clerks for their respective towns. This requirement was established in the 1960s when the January firearms season originated and was designed to limit the number of participating hunters in each town. Applicant rates have been well below permit quotas and concerns for high hunter densities have not been realized. The current law allows towns to opt out of the town permit requirement, but landowner endorsements and 10-acre-minimum property restrictions still apply. These requirements are cumbersome for hunters, municipalities, and DEC, and are inconsistent with hunting requirements elsewhere in New York. Elimination of these requirements will reduce the regulatory burden on hunters while still allowing effective deer and hunter management.
- **Allow firearms hunting for more than the January firearms season:** Suffolk County has some of the most severe and widespread deer-related problems in the state and has very limited firearms hunting opportunity. Bowhunting is not effective enough to achieve the needed deer population reduction. Expanding the firearms season to match or exceed firearms seasons in the rest of the state would enable hunters to provide more relief to Suffolk County residents suffering problems caused by overabundant deer.

Special opportunity for junior hunters:

The special youth weekend that allows 14- and 15-year-olds to hunt deer with firearms in most of the state has been popular and successful but providing a similar opportunity for junior hunters on Long Island is not allowed by current law. A youth hunt opportunity could and should be created on a weekend prior to the firearms season to provide teenagers in the downstate area access to the same outdoor opportunities as their upstate counterparts.

5. Prohibit wanton waste of harvested game.

While thankfully not common practice, it is currently legal in New York to shoot game animals and abandon the carcasses without using any part of them, or to take the antlers or head of a deer and leave the meat to rot. Such waste is contrary to the tenets of the North American Model of Wildlife Conservation and generally accepted hunting ethics. It also tarnishes the image of hunters and

hunting in the eyes of the non-hunting public. Many states have laws prohibiting such waste and establishing penalties for violating the prohibition. In keeping with our mandate to manage the natural resources of the state for the benefit of current and future generations, DEC believes that New York should require game animals that have been shot to be retrieved by the hunter if at all possible and thoroughly utilized.

6. Remove the prohibition on big game hunting in certain parts of Albany, Erie, Herkimer, and Hamilton counties: ECL § 11-0907.

For reasons no longer known or relevant, the ECL prohibits deer and bear hunting along the southern, western, and northern edge of Big Moose Lake in Herkimer County and the immediate lands surrounding the Fulton Chain Lakes between Old Forge and Inlet in Herkimer and Hamilton counties. Though these areas include a relative high density of camps and homes, they reflect the landscape of many Adirondack lakes and hamlets and also include large areas of forested land. Deer and bear readily use the space, and conflicts with deer and bear are routine, particularly in the Old Forge-Inlet corridor. Removing the prohibition of big game hunting in these areas would allow hunters to help control these problems in a safe manner as occurs within and around communities across New York State.

Similarly, the ECL prohibits deer and bear hunting on the watershed property surrounding the Alcove Reservoir in Albany County. Consequently, excessive deer numbers have over-browsed the forest, compromising the watershed protection the forest is intended to provide. The Albany Water Board and Albany Water Department has sought to reduce deer numbers on the watershed lands by using volunteer cooperators to take deer under the authority of a DEC-issued Deer Damage Permit (DDP). However, DDPs are not a long-term solution, and the Albany Water Board and DEC recommend that the statutory prohibition of deer and bear hunting on these lands be rescinded.

Finally, the ECL also prohibits deer and bear hunting in a portion of Erie County known as WMU 9C. As a result, deer numbers have become excessive, threatening public safety from deer-vehicle collisions, causing costly damage to landscape and agricultural plantings, and compromising the ecological health of local parks and preserves. In addition, with the recent surge in tick-borne disease awareness, many communities wish to lower deer numbers with the hopes of reducing and minimizing the spread of Lyme disease. Because statute prohibits otherwise lawful regulated deer hunting in this area, several municipalities have implemented deer-cull programs to reduce deer-related impacts, under authority of DEC-issued DDPs and at the expense of local taxpayers. However, these cull programs are not conducted uniformly across the area, and thus have a limited effect at managing overall deer abundance. Allowing for regulated hunting, as occurs in other urban and suburban areas throughout the state, will reduce the effort and expense needed for the cull programs. Additionally, deer harvest by hunters in areas not included in a deer cull program will reduce negative impacts and potentially prevent a cull program from being needed. Hunters must abide by minimum setback distances from structures for discharge of hunting equipment, and this, together with required education on hunting safety, has proven that regulated hunting can very safely be conducted in greenspaces of developed environments. For these reasons, DEC recommends that the statutory prohibition of deer and bear hunting within portions of Erie County be rescinded to enable the DEC to safely and effectively manage deer within all of the county, including WMU 9C.

DEC recommends removing subdivisions 5(b-e) and 6 of ECL § 11-0907.

7. Allow DEC to regulate buck harvest standards: rescind ECL § 11-0914.

The ECL grants DEC authority to set regulations for most deer hunting seasons and the way hunters may take deer, and DEC has established hunting frameworks that are appropriate for management and responsive to the public's interests. Responding to sociopolitical interests, DEC also used this authority to create a mandatory antler restriction program to reduce harvest of small-antlered bucks in 11 WMUs in southeastern New York. However, in 2011, the New York State Legislature adopted a law (ECL § 11-0914) that codified a mandatory antler point restriction in a portion of WMU 3A. ECL § 11-0914 was and is unnecessary, as WMU 3A is part of DEC's existing antler restriction program. This law imposes a management measure that is best addressed through DEC regulation. As deer management objectives and hunter values change, DEC can adapt program changes through regulatory amendments more nimbly than statutory amendments. In addition, having unique deer hunting rules in statute for a single WMU, or as in this case, a portion of a WMU, unnecessarily complicates hunting rules, compromises DEC's deer management capacity, and reduces DEC's ability to be responsive to public interests.

8. Allow Deer Management Permits throughout the Northern Zone.

Current law (ECL § 11-0913) authorizes DEC to issue Deer Management Permits (DMPs) throughout the Southern Zone and in specific portions of the Northern Zone. However, in large portions of northern New York, DEC is not authorized to issue DMPs, and antlerless harvest can only occur in those areas during bowhunting and muzzleloader seasons. Adjusting antlerless harvest to meet management objectives requires regulation changes to the muzzleloader or bowhunting seasons. This process is cumbersome, less responsive to changing management conditions, and less equitable for hunters. DEC should have authority to manage antlerless harvest with DMPs throughout the entire Northern Zone.

9. Create incentives for landowners to allow public hunting.

The amount of private land with open public hunting access has decreased in recent decades. In addition to making hunting more difficult and potentially less enjoyable, this can compromise efforts to manage deer populations at sustainable levels, as unhunted or underhunted land prevents uniform harvest of deer across the landscape. As stated earlier in the plan, unhunted properties provide refuge for deer, thus not exposing those deer to an important source of mortality necessary for population management. One idea to change this situation would be to create a program in law that reduces property taxes or provides a state tax credit for landowners who allow access to their properties for hunters and other recreationists.

March 15,

2024

To the Mayor and Board of Trustees of Irvington,

It should be said, first and foremost, that we have concern for all living things, and not one of the committee members came to our proposed solution for how to save the Irvington Woods Park (IWP) lightly. We hold deer in the same regard as all other living creatures, not above. Due to a lack of predators, the deer population has grown to a number that has become harmful to the overall ecosystem of the IWP. Birds, reptiles, small mammals and amphibians that depend on insects and plants for food no longer have a food source, much less habitat, because of the extreme deer browse. The deer, too, are suffering from overpopulation and reduced habitat. It is a human-created problem and, regrettably, requires human intervention.

Deer overpopulation and the impact of their over-browsing is a long-known problem facing the northeast. Over the last few years, the Irvington Woods Committee has spent countless hours educating ourselves and reviewing possible solutions. We considered research from the NYS Department of Environmental Conservation, Westchester County Parks, National Park Service, US Forest Service, US Department of Agriculture, US Department of the Interior, Saw Mill River Audubon and Greenwich Audubon, as well as Cornell University, University of Pennsylvania, Texas Tech University, and State University of New York. We are confident in the soundness of these sources, and all support the conclusion that it is possible to restore native forest ecosystems through a reduction of the deer population and that it is necessary. The Nature Conservancy several years ago argued that deer might be “a bigger threat to Eastern forests than climate change.”

However, our concern is not just about the living creatures of the IWP because the trees and plants play a pivotal role in our community's fight against climate change. If our woods die or become even less healthy, we will see increased noise and air pollution, temperatures, storm runoff and erosion. Without a forest able to naturally regenerate we estimate there will be 50% fewer trees by 2050 and carbon sequestration by IWP will decrease by over 40%.

The solution to rehabilitate the IWP aims to reduce the number of deer to a sustainable population, not remove them entirely. Based on the research, reducing the deer numbers would enable the forest ecosystem to regenerate naturally and all living creatures to flourish, but we recognize for some it is a problematic solution.

Utilizing a single highly skilled professional archer is safe, humane and fiscally responsible. Hunting is a part of nature conservation, and the proposal is NOT to create a recreational sport hunting program but a carefully managed, precise and surgically orchestrated operation. This professional's experienced and data based approach of studying IWP's deer patterns and behavior, public use of the property, and weather patterns will ensure utmost safety and a high

rate of success with minimal time in the park. As catalogued in the NYS DEC Hunting Safety Statistics of the last three years, longbow hunting is the safest hunting method:

2021:https://extapps.dec.ny.gov/docs/wildlife_pdf/hrsismmary2021.pdf

2022: https://extapps.dec.ny.gov/docs/wildlife_pdf/hrsismmary.pdf

2023:<https://dec.ny.gov/sites/default/files/2024-02/dechrsismmary23.pdf>

Parks and preserves in Westchester have been practicing bow hunting safely for the past two decades. Audubon properties, Rockefeller State Park, Teatown Lake Preservation, the Town of Pound Ridge and ten other parks have determined that archery deer management is the most effective, safest and most humane strategy for ecosystem stewardship. In 2008, a Westchester Citizen's Task Force on White-Tailed Deer and Forest Regeneration recommended reducing the deer population via hunting. In 2009, the Town of Greenburgh did an extensive review and analysis of the white-tailed deer population and concluded the only solution was to reduce their numbers through hunting. In 2022, Westchester Pollinators came forward with a recommendation for deer management using hunting.

The IWP has no peer in southern Westchester. At 259 acres it is the largest native wooded parcel south of I-287, and its highlights include a natural swamp, and potentially the tallest tree in the state – and with the discovery of multiple 300+ year-old trees, the IWP was recently added to the Old Growth Forest Network, one of only two in Westchester. Neighboring villages have not declared deer management an immoral problem. Hastings-on-Hudson is the only neighboring community to have brought the conversation to a public vote in recent history. Hastings' woods are 20% the size of the IWP at 48 acres and dominated by invasive trees, shrubs and vines. Dobbs Ferry and Tarrytown conservation committees recognize the deer population issue but have yet to conduct research of their forest inventory and deer numbers. Nearly all of the parkland and preserves in Westchester that are of similar size or larger than the IWP have been safely practicing deer management with bow hunting for the last 10 or 15 years.

When considering solutions, the subcommittee carefully considered our village location and population density. Fencing successfully protects that which it encircles but is only recommended for small parcels. It does not get at the root of the problem. Moreover, it is the most expensive solution (estimated cost for IWP is upwards of \$2,000,000) and to be effective requires constant monitoring and maintenance, at an added cost. In addition, fencing the IWP would impact surrounding neighbors by displacing 50+ deer resulting in increased deer pressure on adjoining land and roads, and also creating a visual and physical barrier that hinders migration patterns of small animals.

Below is the list of solutions that were considered and rejected:

Contraception: not commercially available in NY State; extremely difficult to implement in roaming population.

Repellent & frightening devices: effectiveness is short lived as animals adapt.

Habitat alteration: removal of vegetation goes against efforts to revitalize Irvington Woods Park.

Capture and relocation: difficult and expensive. Capture and transport causes stress with 25% deer mortality rate. Tranquilizers used pose a health risk to humans if exposed.

Predator introduction, poison, parasite or disease introduction, capture & kill, bait & shoot: unsafe or severe.

No intervention: accept consequences of increased damage to entire ecosystem, increase of car collisions and rates of tick-borne diseases.

We have carefully considered the best possible solutions to preserve our rare and wonderful park. Any solution to rehabilitate the ecosystem will take years to see results, and we find ourselves at a critical crossroads. Irvington is known as a leader in sustainability and, we believe deer management by professional archer to be a sustainable solution for the good of our IWP and community.

Thank you for your consideration.

Respectfully,

Zoë Hamilton-vom Baur, Chair
Irvington Woods Committee and members

Value of the Irvington Woods Park



"When we try to pick out anything by itself, we find it hitched to everything else in the Universe"

-John Muir

Value: Ecological

- 259 acres
- Largest forest preserve in Westchester south of I-287
- Rare upland swamp which is largest wetland in southern Westchester
- Supports a diverse range of flora and fauna
- Buffer for the Village of Irvington to Saw Mill Parkway and I-87



Value: Ecological

- **Less than 1% of Northeast Forest is Old Growth**
- 50+ acres of old growth forests are important in forest regeneration as they contain native seed banks
- Secondary forests often have seed banks of invasive species

Exciting news! The Students and CJ uncovered a 329+-year-old White Oak (*Quercus alba*) dating back to 1694! Standing at an impressive 93.3' tall, with a DBH of 85.5 cm, this White Oak is in very healthy condition!



Value: Community Preservation Success Story

- **40-Year Dedication:**

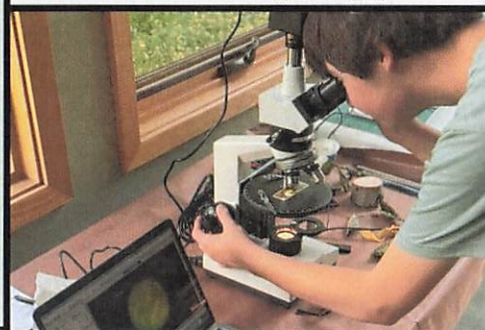
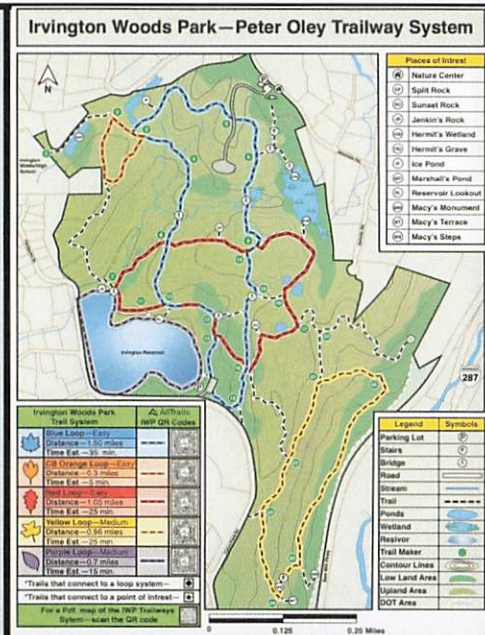
Acquired and protected 19 parcels, preserving Irvington Woods Park's natural beauty and ecological significance.

- **Diverse Programs:** 12+

community programs
dedicated to nurturing
Irvington Woods Park
stewardship.

- **Inclusive Preservation:**

Engaging all ages in active
community responsibility for
our local environment.



Problem: Deer Overpopulation



Problem: Community Survey on Deer Impacts

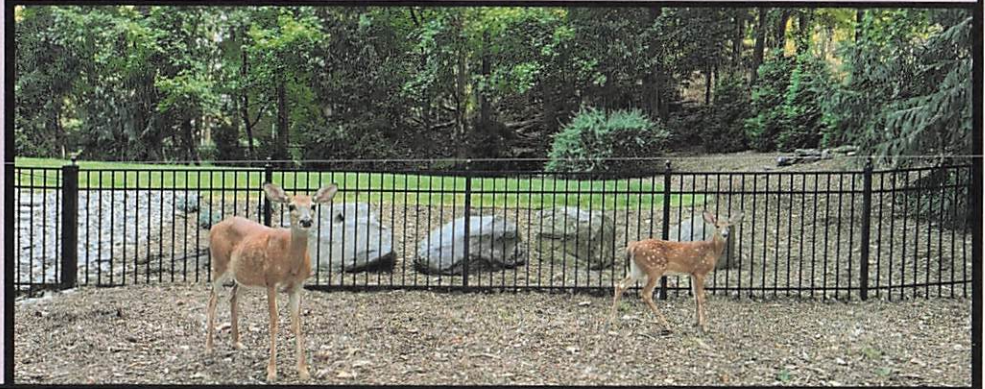
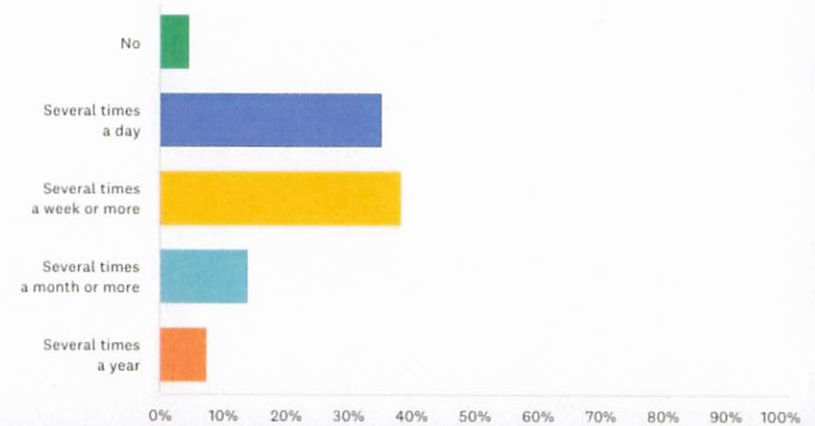
A community deer survey was conducted in 2022.

- 631 Irvington residents responded
- > 75% see deer multiple times per week
- 516 “negatively impacted garden” including planting anything native
- 43 had Lyme or tick-borne diseases in family
- \$ hundreds of thousands spent on deer fencing sprays and destroyed landscaping
- Permit requests for deer fences on the rise
- Fences block additional natural animal movements and is not recommend by DEC

We are becoming a gated community.

Do you see deer on or around your property? If so, how often?

Answered: 632 Skipped: 0



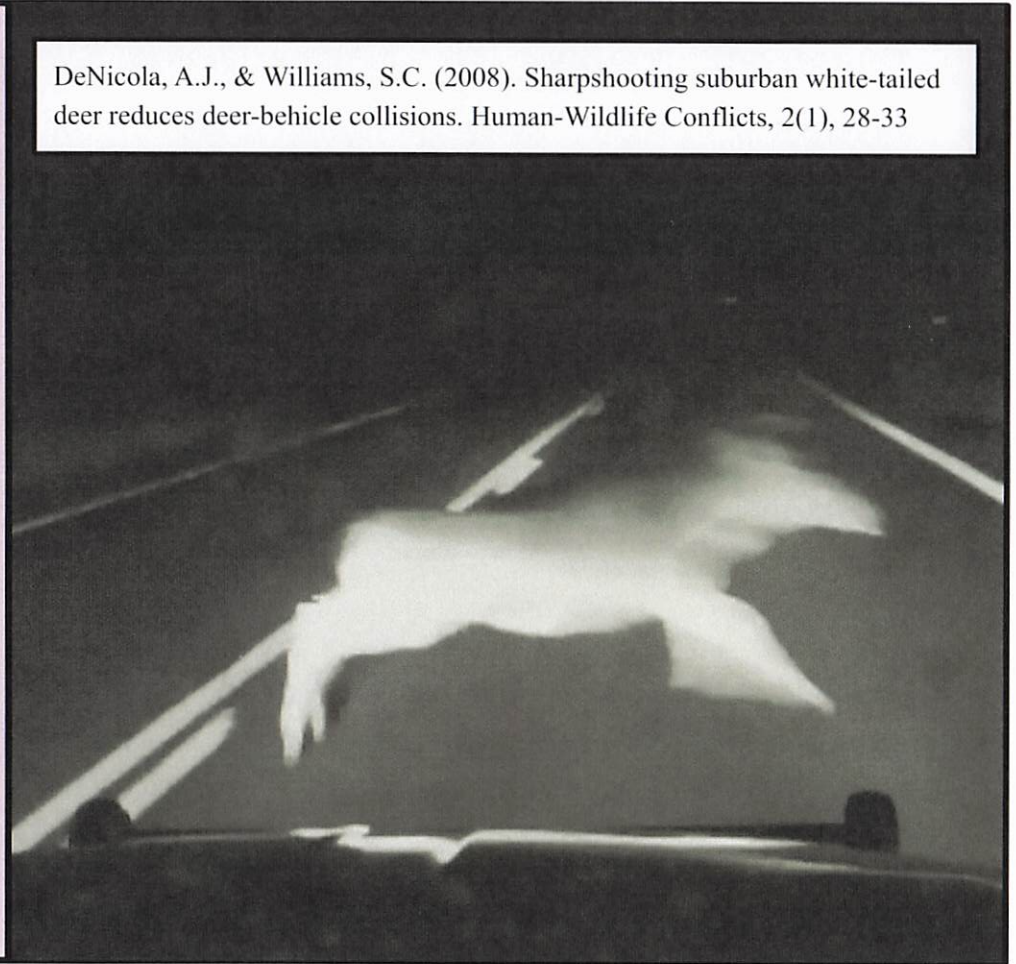
Problem: Collisions

From 01/01/2021 to 12/20/23:

- 94 deer calls to the Irvington Police.
- 18 calls related to car collisions.

A study in 3 suburban towns showed that reductions in the deer population by 54%, 72% and 76% resulted in reduction of collisions by 49%, 75% and 78% respectively.

DeNicola, A.J., & Williams, S.C. (2008). Sharpshooting suburban white-tailed deer reduces deer-behicle collisions. *Human-Wildlife Conflicts*, 2(1), 28-33



Problem: Forest Health

2022 Forest Health assessed for Community Forestry Management Plan:

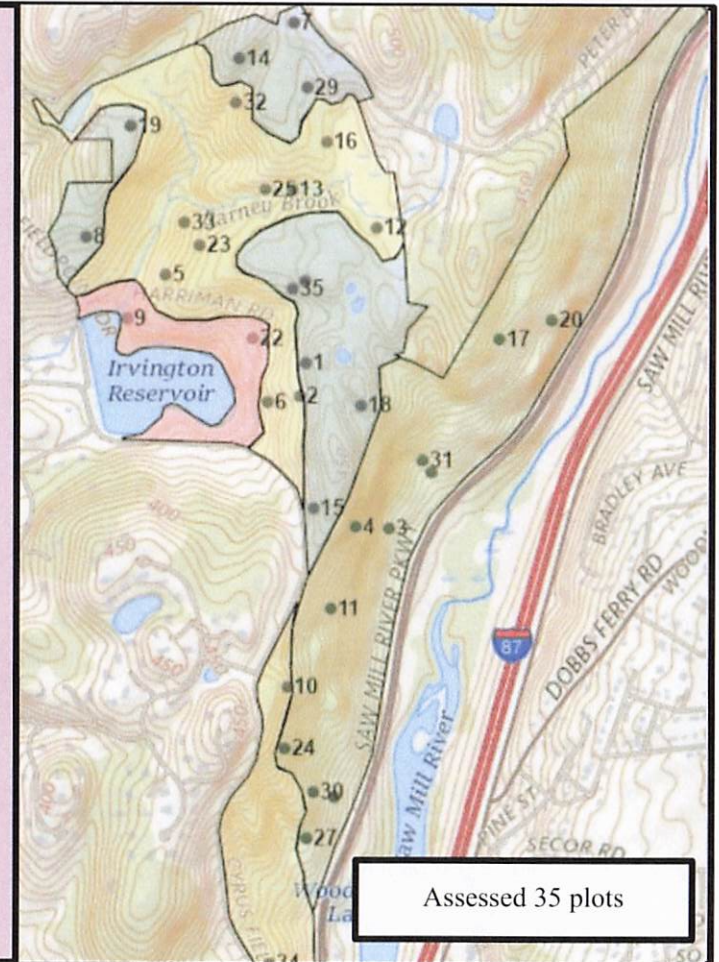
- 1- Irvington Woods Inventory & Management plan under DEC
- 2- Cornell Soil Data Survey

Concluded:

- Lack of understory
- Dwindling seed bank
- Soil health is not the problem
- Deer overpopulation is a major problem

Recommendation:

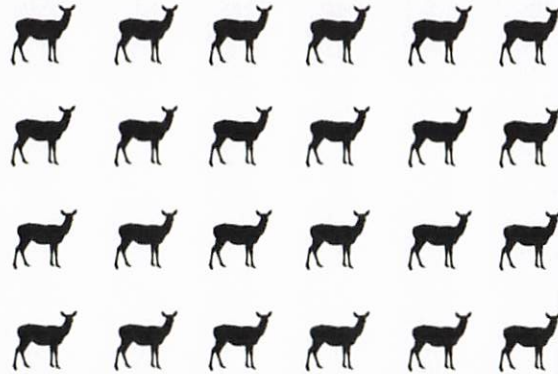
Begin a Community Based Deer Management Program



Problem: Deer Density 5x Healthy Balance

Deer cameras set up summer of 2023

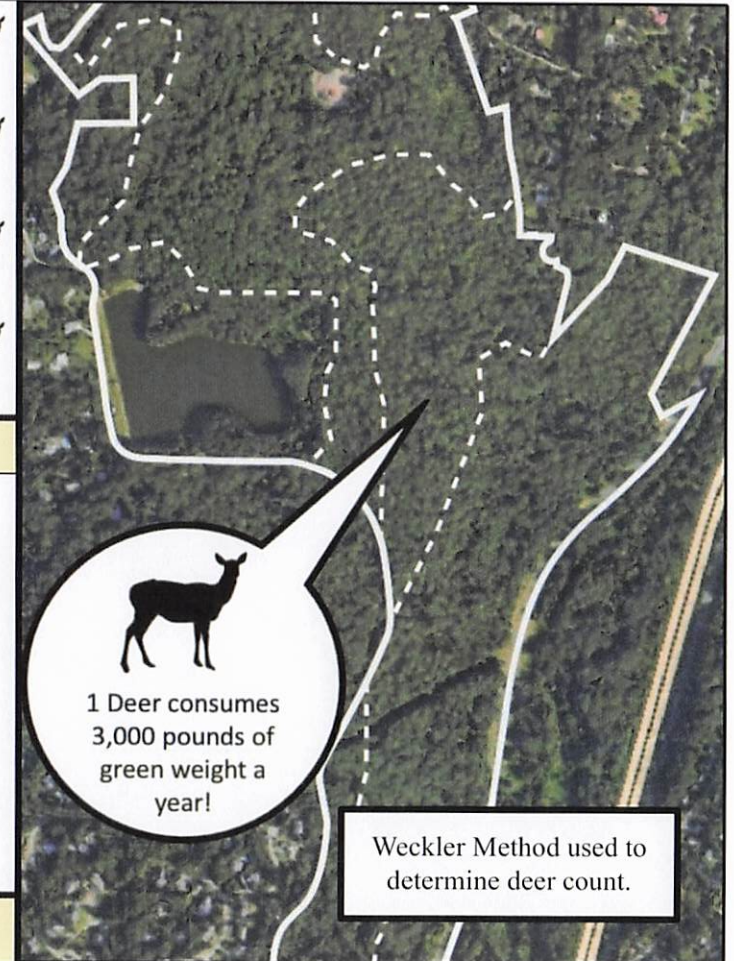
- Healthy = 11 deer total in the Woods
 - 30 per square mile
- Irvington Woods has 57 in the woods
 - 141 per square mile
- Deer eat 8-10 lbs of vegetation per day
 - 3,000 lbs per year
- Deer live 10 years on average
- Doe typically gives birth to twins annually
- DEC says population growth, on average, is 40% per year



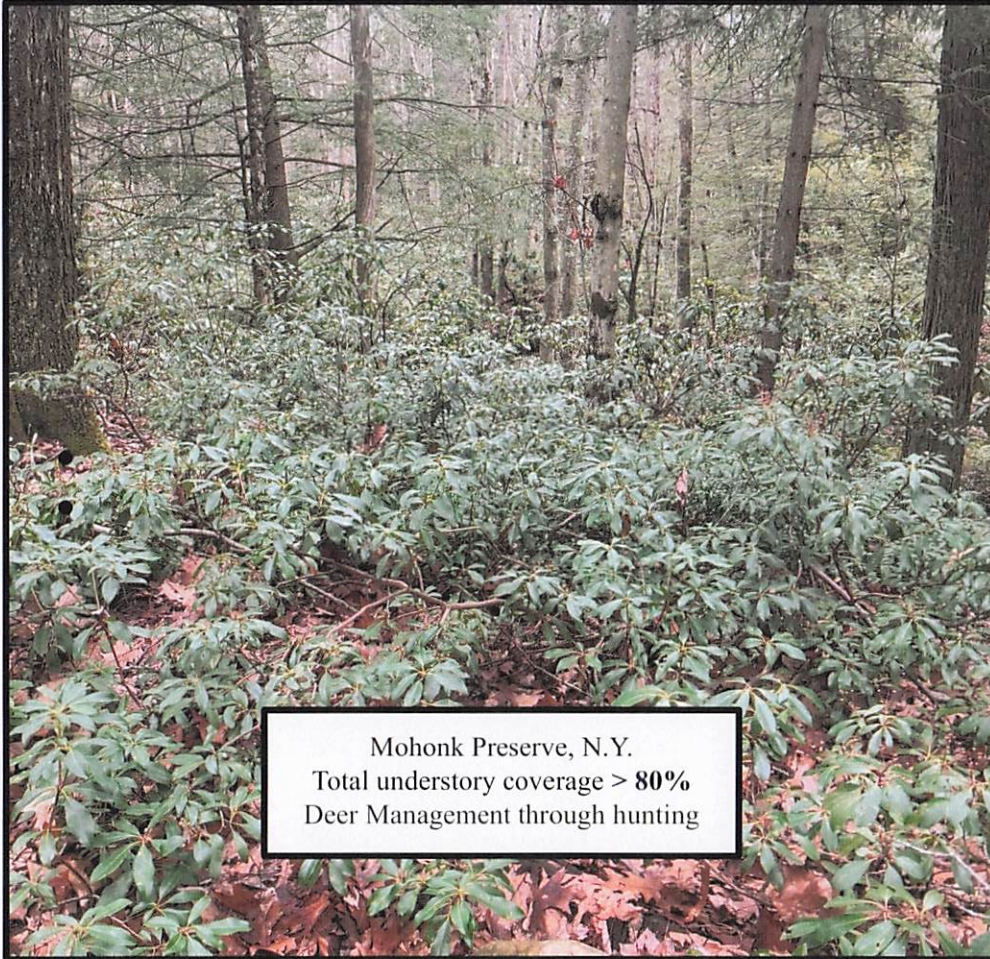
57.2 deer on property



141.5 deer per square mile



Problem: Deer Browse on Understory



Mohonk Preserve, N.Y.
Total understory coverage > 80%
Deer Management through hunting



Irvington Woods Park, N.Y.
Total understory coverage < 10%
No current form of deer management

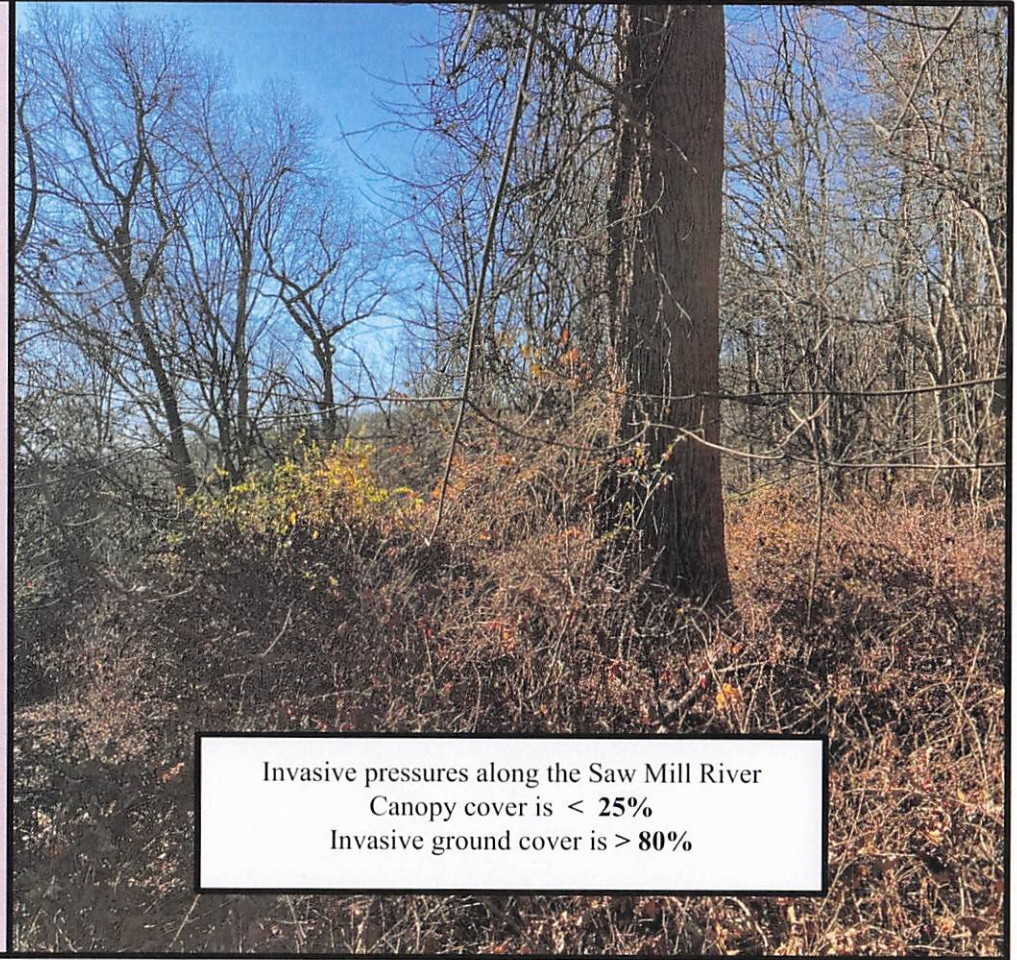
Problem: Invasive Plants

Invasive species:

- no naturally occurring predators, not palatable to deer
- aggressively push out native species that are crucial to ecosystem & biodiversity

Invasives thrive when trees fall, opening the canopy and increasing sunlight.

Native trees are not regenerating because deer mow them down. When they die, the invasives take over.



Invasive pressures along the Saw Mill River
Canopy cover is < **25%**
Invasive ground cover is > **80%**

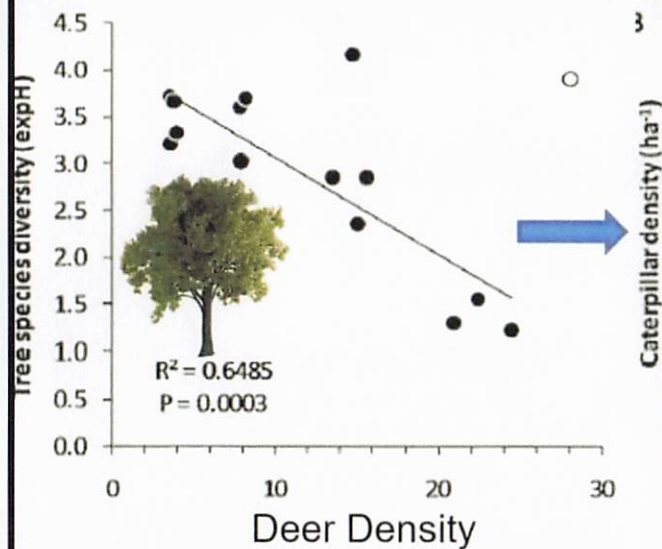
Problem: Ecosystem Food Web Impacts

Allegheny National Forest:

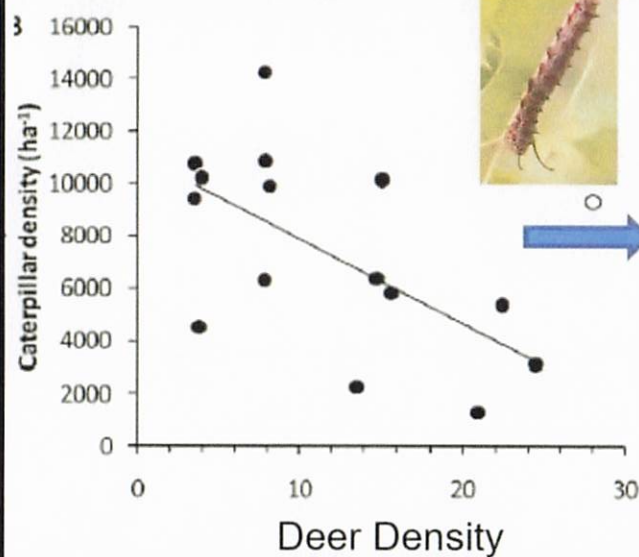
Plant Diversity: 50 -70% Declines (Chips et al. 2015)

Insects Abundance & Diversity: 40-50% Declines

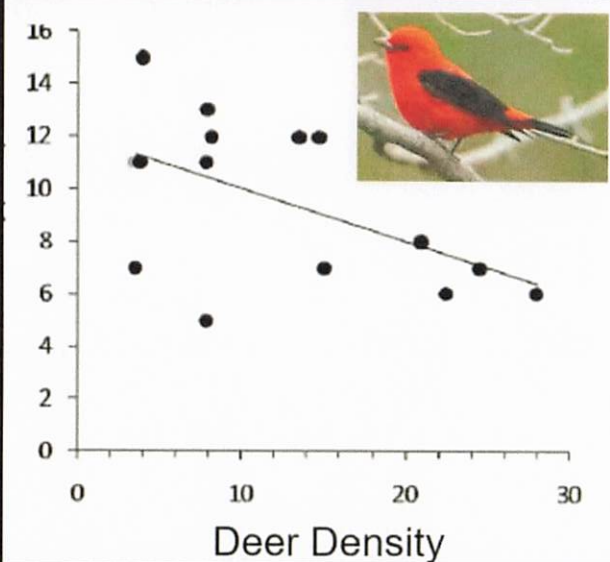
Tree Diversity -60%



Caterpillar Density -80%



Bird Density -40%



Problem: Ecosystem Cascade Effects on Habitat

Loss of vegetation results in loss of habitat:

- 100% of ground and shrub nesting birds are in decline.
- Majority of mid-canopy birds are also in decline.
- Turtles, small mammals, and amphibians are affected too.

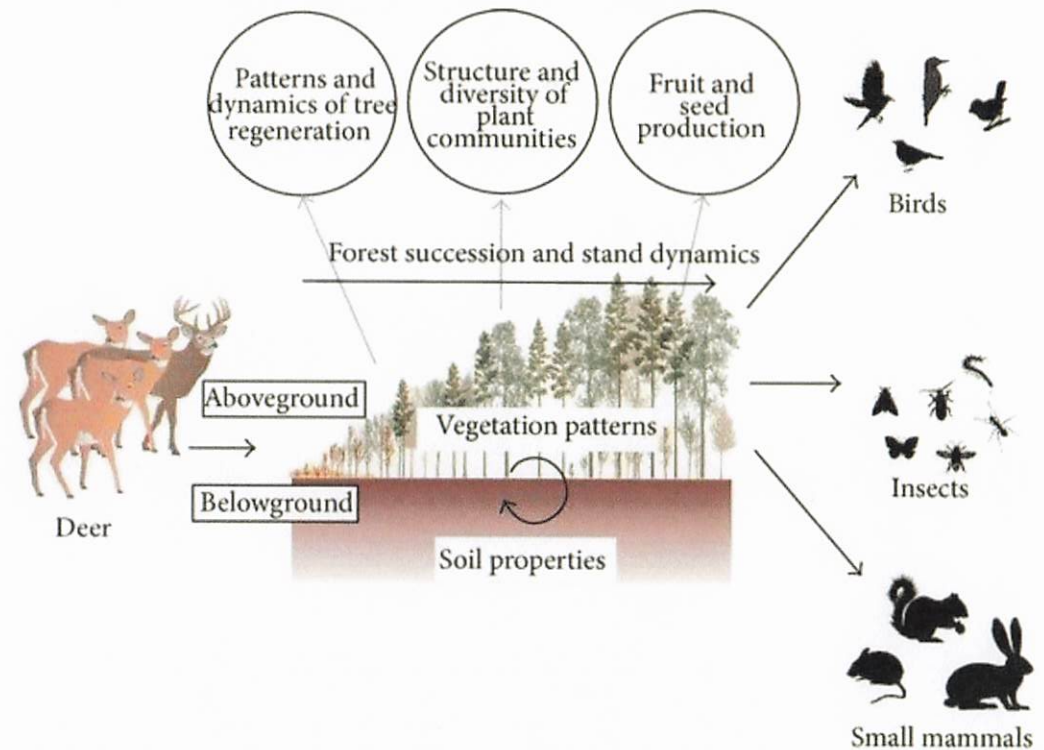


Image: Direct and indirect effects of deer overabundance on forest succession and other species in the ecosystem. Source: *Advances in Ecology*, 2014, 1-10.

Problem: Deer Impact Analyses

Conservationists have been studying deer impacts for decades. It is widely known and understood problem.

- **Greenburgh** Deer Committee Comprehensive Review of Deer Overpopulation Problems and Control
- **Westchester** Citizens' Task Force White Tailed Deer and Forest Regeneration
- **Teatown** Assessment of a 15-year white-tailed deer management program and woody recovery in a suburban forest preserve
- **HOH** White-tailed Deer Contraception & Impact Study
- **Scenic Hudson**: Protecting Forests by Managing the Exploding Deer Population
- **Pound Ridge** Deer Management
- **Mianus Gorge**: Weckel, M., & Rockwell, R. F. (2013). Can controlled bow hunts reduce overabundant white-tailed deer populations in suburban ecosystems?
- **Connecticut**: The Relationship Between Deer Density, Tick Abundance, and Human Cases of Lyme Disease in a Residential Community
- **DEC** Community Deer Management
- 1999 DEC Report: A Citizen's Guide to the Management of White-Tailed Deer in Urban and Suburban New York
- **NY** Deer Management Program

Irvington Woods Assessments:

- BLBS Ecological and DEC: Berrios, M. (2021) Irvington Woods Inventory & Management Plan
- Bonhotal, J. F. & Reilly III, C. & (2020 - 2021) Pollinator and Soil Survey Project (2020 – 2021) A collaboration between the O'Hara Nature Center, Cornell Waste Management Institute, and NYS Department of Transportation
- Bonhotal, J. F. & Reilly III, C (2022) Irvington Woods Park Soil Study

Problem: Ecosystem Collapse

“If deer continue to ravage our forests for a generation of canopy trees, the forest itself will cease to exist. The browse that deer depend on will be gone, **resulting in mass starvation of any remaining animals.**”

– Douglas Tallamy, Conservationist

“We are ubiquitous on most of the landscape and we are already manipulating it for good or ill, whether we know it or not. And I think we have a responsibility, as a keystone species, to manage the ecosystems around us for the good of all of their inhabitants – the plants, the animals and even the people.”

– Jim Sterba, Conservationist

It is up to us to save our precious forest and the many creatures that depend upon it.

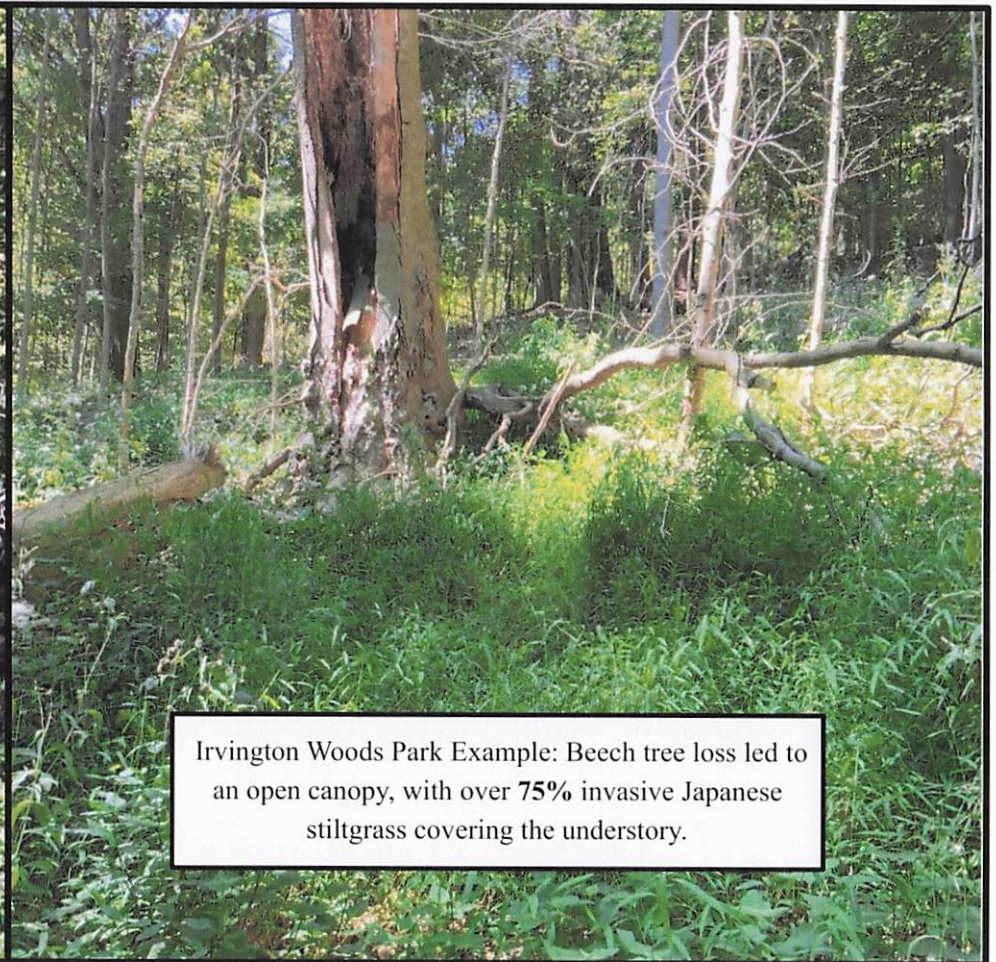


Impacted Blue Warbler

Future losses—American beech trees



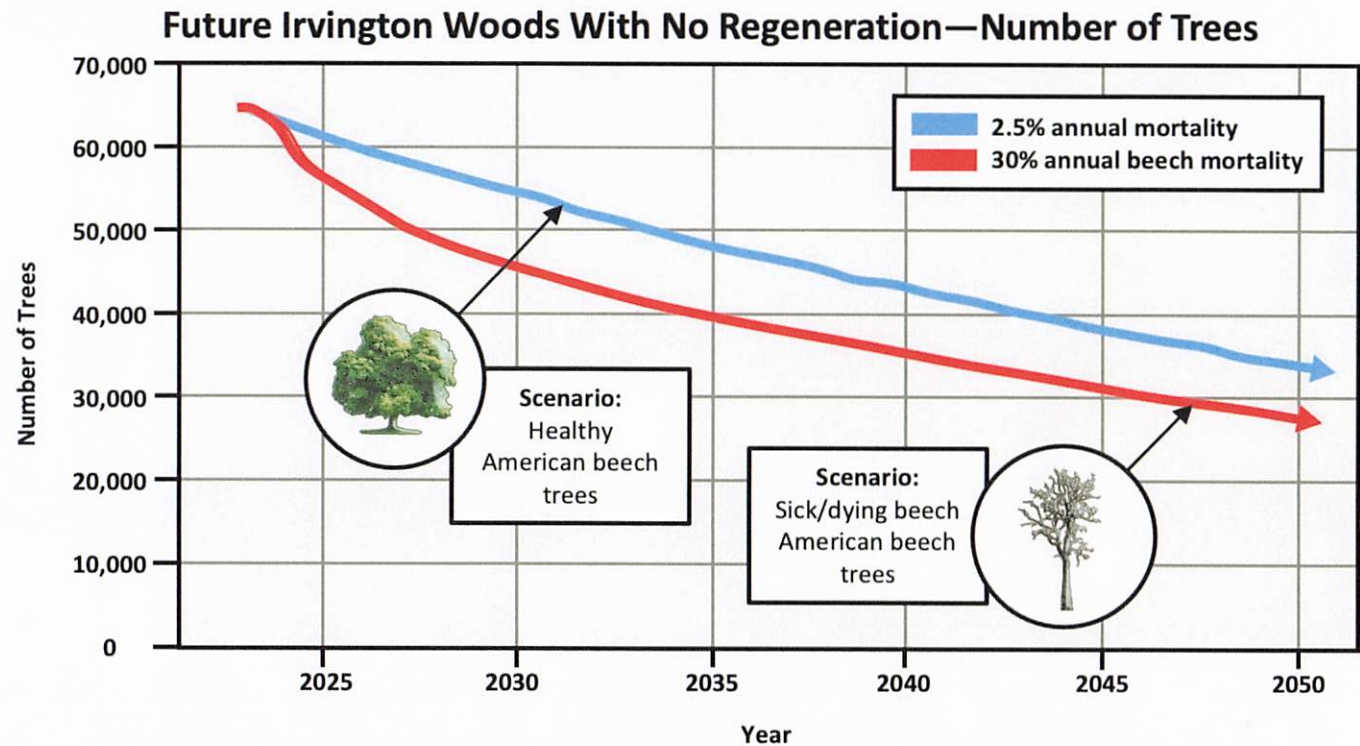
Irvington Woods Park—American beech tree crown dieback average: **10-40%**



Irvington Woods Park Example: Beech tree loss led to an open canopy, with over **75%** invasive Japanese stiltgrass covering the understory.

Future Projection: Number of Trees

- With no regeneration of trees we expect number of trees in IWP in 2050 to be only 53% of what it is now.
- With the additional loss of the beech trees due to Beech Leaf Disease it will be 44%.

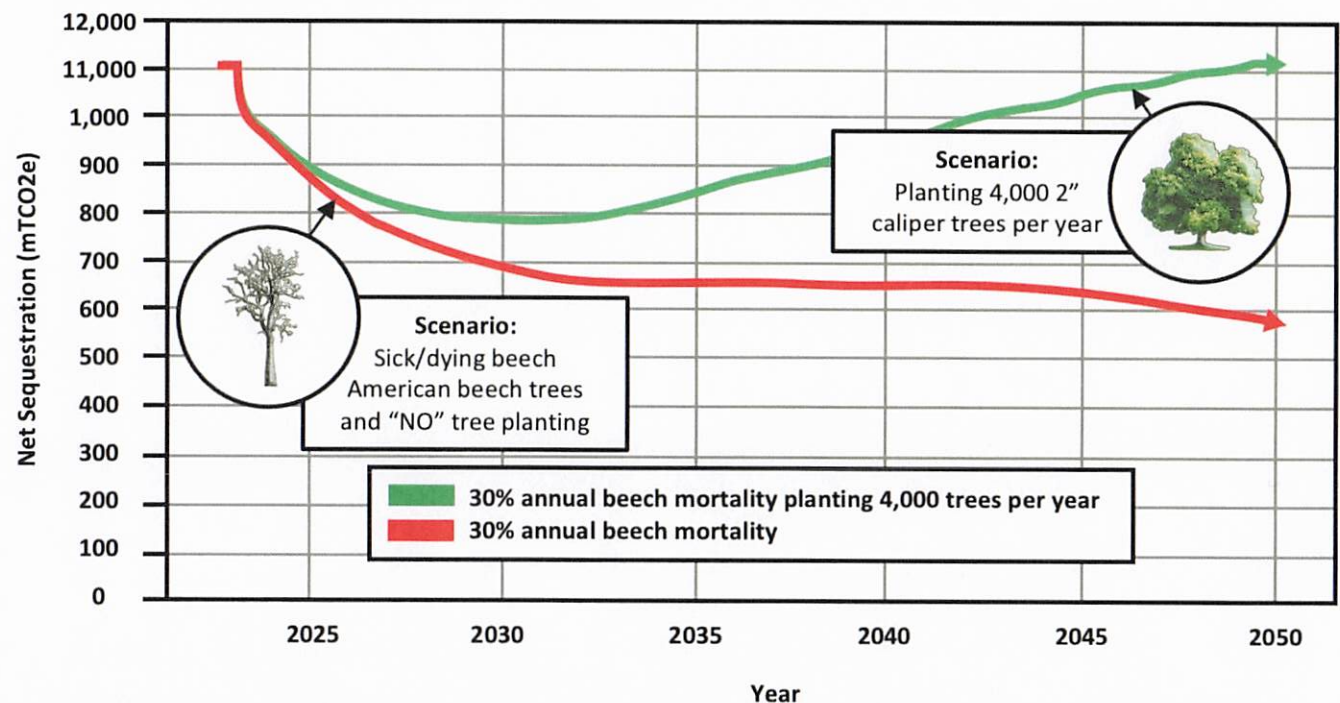


The graph, created with i-Tree Eco and Miguel Berrios' 2021 Irvington Woods Park Tree Inventory data, projects losses and gains in the woods over 27 years. It focuses on the impact of Beech Leaf disease, predicting mortality and a lack of regeneration among American beech trees.

Future Projection: Carbon Sequestration

- Even planting 4,000 2" caliper trees every year until 2050 (at a current cost of \$400,000 per year) will only return sequestration to current levels in 2050.
- The woods are increasingly in a state of decline with the loss Beech Leaf Disease.

Future Irvington Woods With No Regeneration—Net Carbon Sequestration



The graph, created with i-Tree Eco and Miguel Berrios' 2021 Irvington Woods Park Tree Inventory data, projects losses and gains in the woods over 27 years. It focuses on the impact of Beech Leaf disease, predicting mortality and a lack of regeneration among American beech trees.

Future Projection: Projected Losses in Ecosystem Services

Ecosystem losses:

Food and habitat

Carbon sequestration

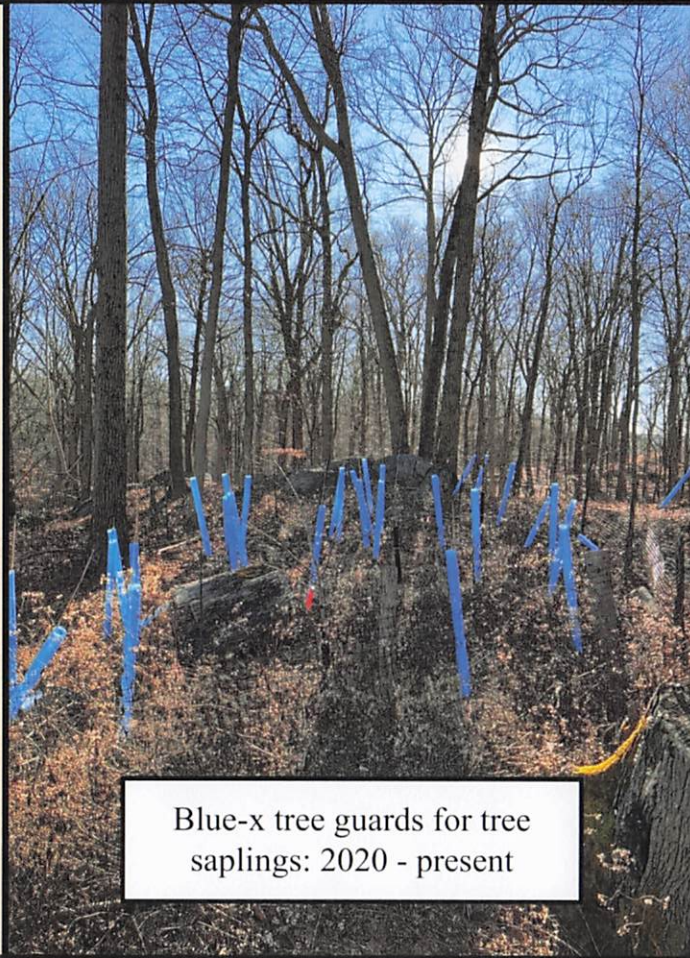
Air quality

Stormwater absorption

Climate change mitigation

Diversity

**We can't plant our way
out of this!**

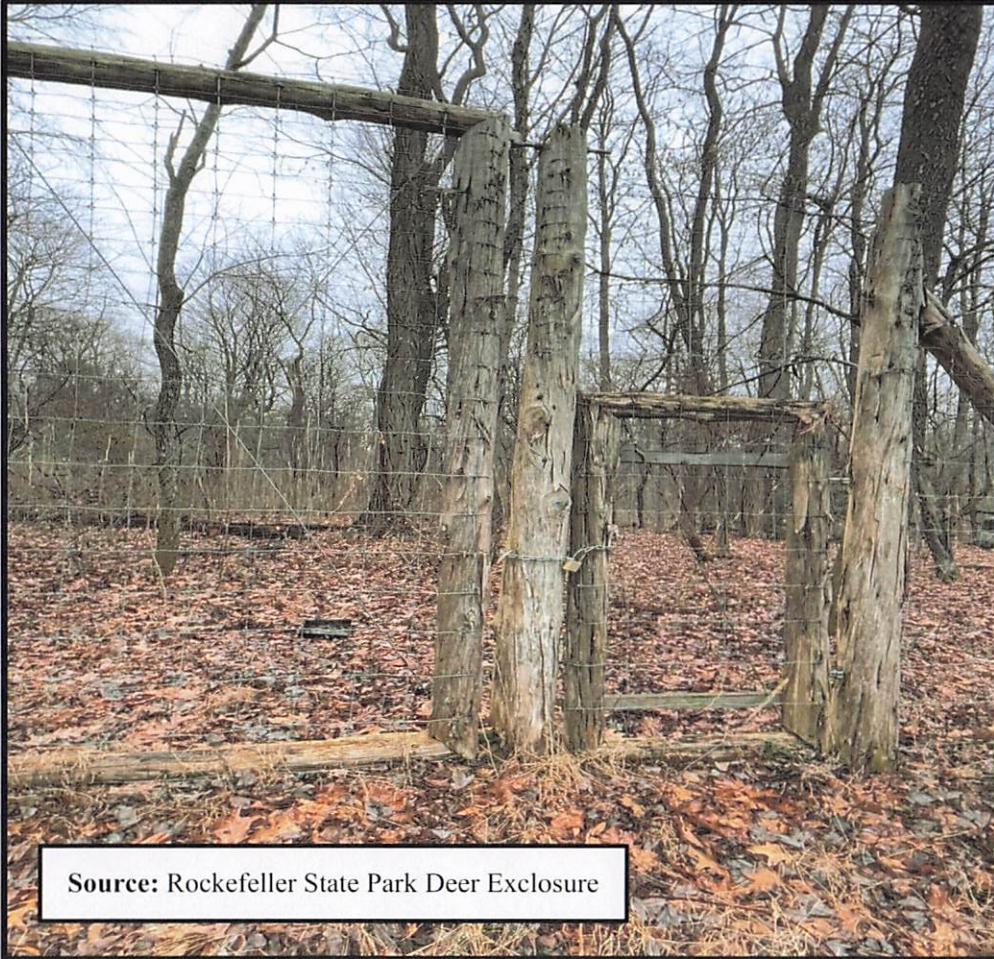


Blue-x tree guards for tree
saplings: 2020 - present

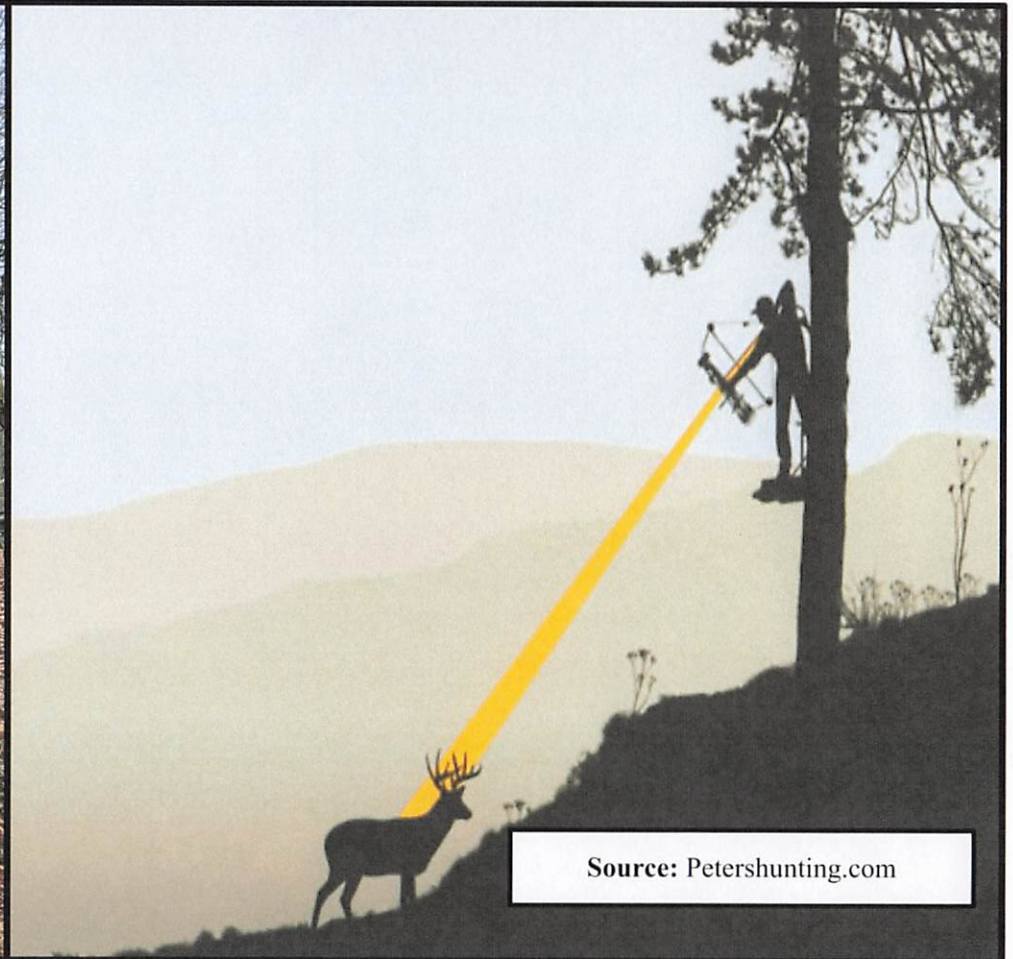


Community members helping
plant 74 2" caliper trees this
past Fall.

Solutions for Deer Management



Source: Rockefeller State Park Deer Exclosure

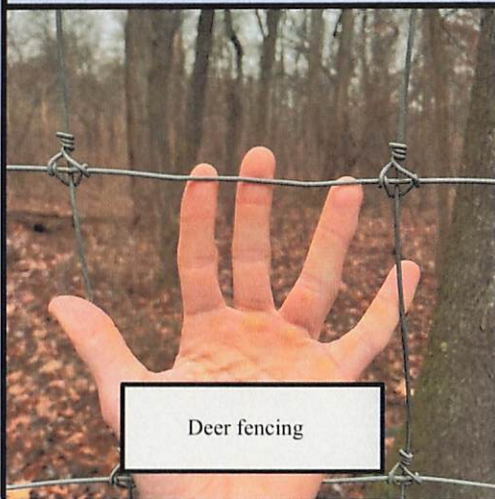


Source: Petershunting.com

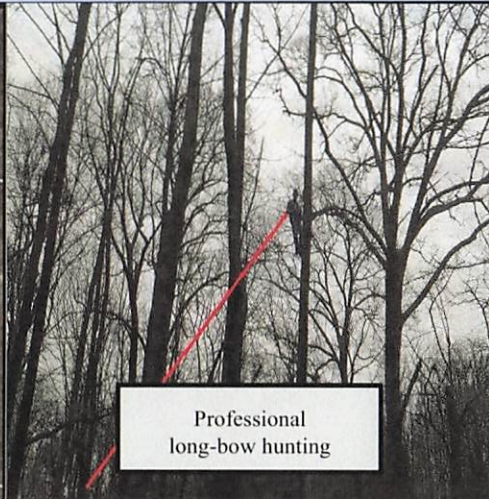
Solutions: Deer Management Options

Potential Solutions for Irvington:

- Deer fencing
- Professional long-bow hunting



Deer fencing



Professional
long-bow hunting

Non-Viable Solutions for Irvington:

- Contraception
- Repellent & frightening devices
- Habitat alteration
- Capture and relocation
- Predator introduction, poison, parasite or disease introduction, capture & kill, bait & shoot
- No intervention

* In Westchester County it is illegal to use any firearm or crossbow for hunting, or to carry one afield

Solutions: Deer Fencing

Irvington Woods Park Trail Map and Fence Cost Estimates:

- Outlined in dark red.
- 25,000 linear feet enclosing all 259 acres of IWP:
 - Fixed-knot: \$1,250,000
 - Chain-link: \$2,500,000



Solution: Bow Hunting

11 Active Deer Management through Bow Hunting Programs in Westchester:

Hilltop Hanover Farm

Lasdon Park and Arboretum

John E. Hand Bald Mountain Park

Mianus River Gorge

Mountain Lakes Park

Muscot Farms

Town of Pound Ridge

Pound Ridge Land Conservancy

Rockefeller State Park

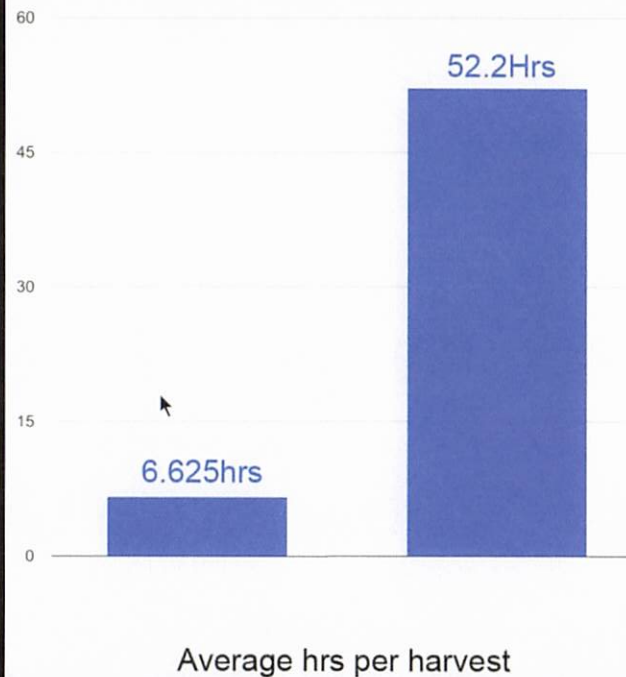
Somers Land Trust Angle Fly Preserve

Teatown Lake Reservation



Solution: Professional Deer Management Specialist Pete Kelley

- Top hunter, recommended by Westchester County Parks head biologist
- Scientific, data driven approach
- Safe and effective
- Achieved Teatown Lake Reservation target of 30 deer per square mile.



Average deer harvest time for Pete Kelley (left) in comparison to other hunters (right) participating in the volunteer hunter program with Westchester County Parks and Conservation.

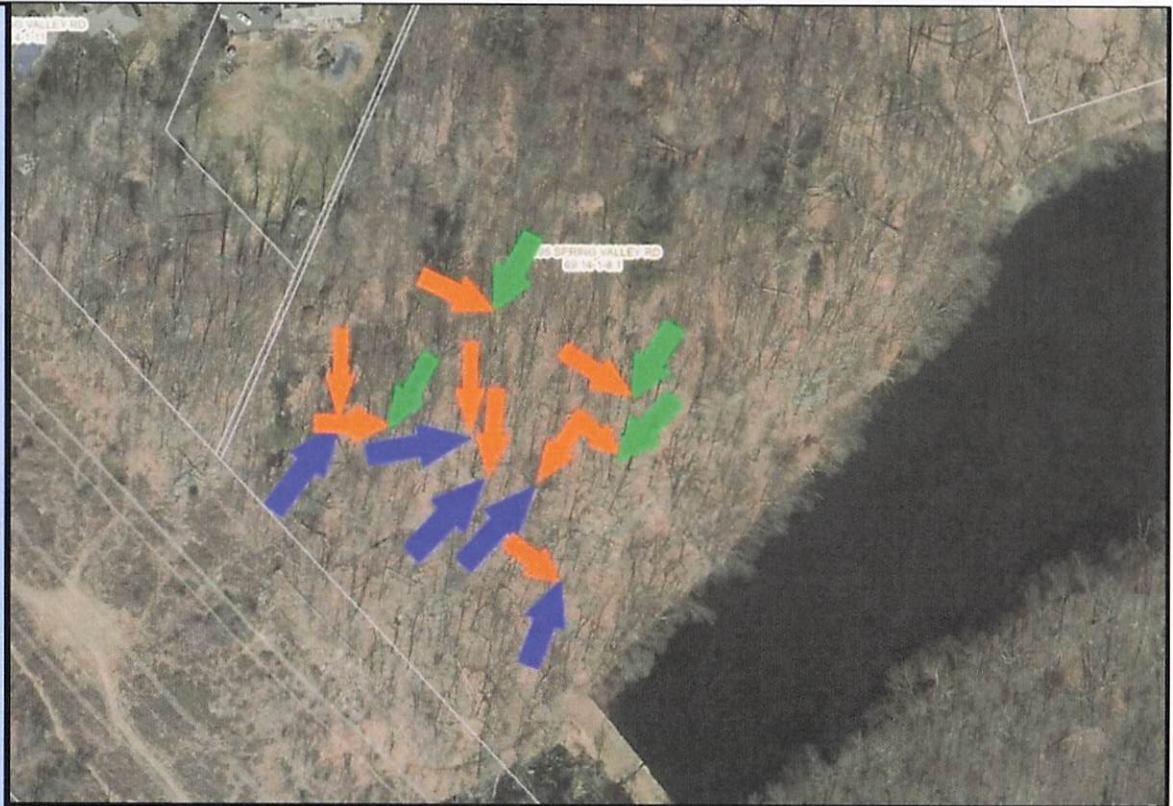
AM Daylight														
Cam	SAT			SUN							SAT			
	29	30	31	1	2	3	4	5	6	7	8	9	10	11
A1		2					4				1			
B2														
C3		2							2					
D4		3	2	8				3		4		3	2	3
E5				1						2		2		5
F6		3		2				3	1	2				
1B	3													
C		3												
D		1		3	3		1		1		2	4		1
F		2					2							
G	1	2	1	1					1			4	1	1
H														
I							6				2	8	1	6
J	2		1								4	5		
K					1									3
L		2												
Wind	NE	N	W	N	N	E	W	N	NW	W	W	NW	NNW	NW
Temp	45	32	38	36	35	39	42	54	41	32	24	26	24	22

Spreadsheet of deer numbers seen at each camera per day with corresponding wind direction and temperature.

Solution: Professional Deer Management Bow Hunting Plan

- Regular Program: twice weekly on weekdays, 4:30 a.m. until 9:30 a.m., Oct. 1st through Dec. 31st
- Safety oriented, working in places and times in the Woods when people are not present
- Strategic, continuous optimization through use of camera data and wind direction
- Highly experienced and discreet

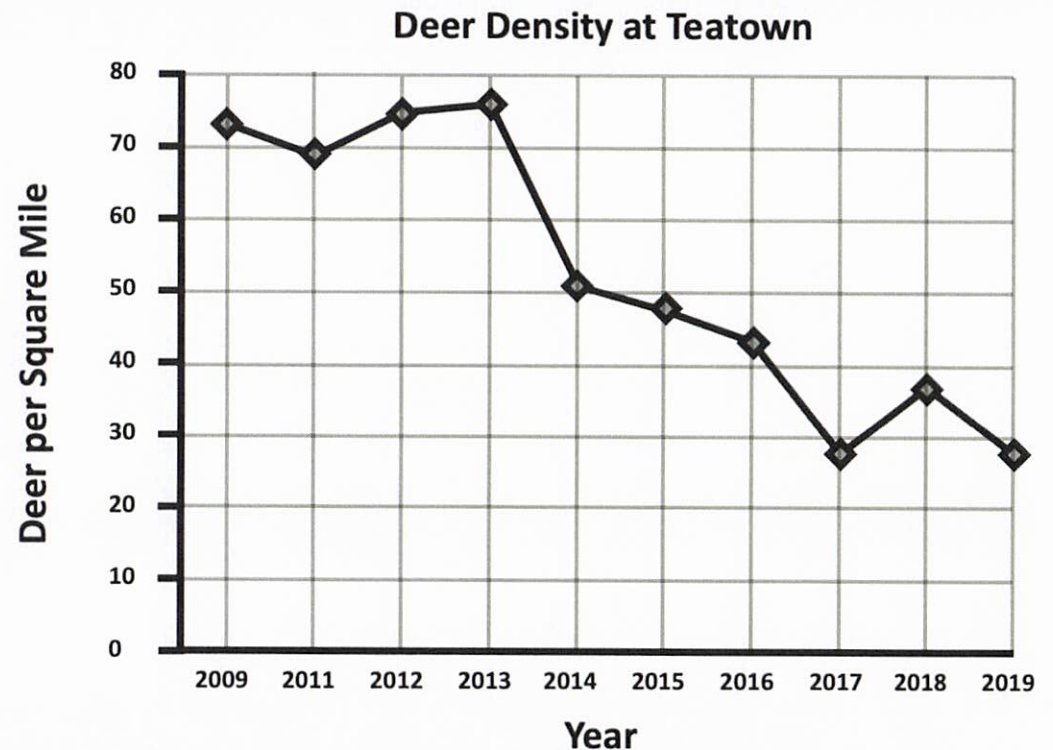
Total cost: \$31,000



Green arrows represent am deer spotting on camera, blue represents evening deer spotting. Orange arrows represent wind direction at time of each deer spotting.

Solution Goal: Five Year Deer Density Reduction

- Reduce deer in Irvington Woods from 57 to around 11 (141 to 30 per square mile)
- In first year harvest 12-18 deer



Teatown Lake Reservation deer management density graph. Deer management was implemented in 2013. Regeneration was seen once reduced population down to 30 per square mile.

Solution Goal: Five Year Regeneration

Goal is to achieve hardwood tree and herbaceous plant regeneration.

We will annually monitor the regeneration progress in established research plots and track this in relation to deer numbers.

If herbaceous plant regeneration proves insufficient, because lack of a native seed bank, we will undertake a replanting program.



Communication & Education

- Public educational meetings, including a variety of guest speakers to be held at:
 - Irvington Library
 - O'Hara / walk in the woods
 - Zoom webinar
- Web page on Irvington Green
- Suggested email updates from the Mayor
- Video
- Social media
- Potential mailer

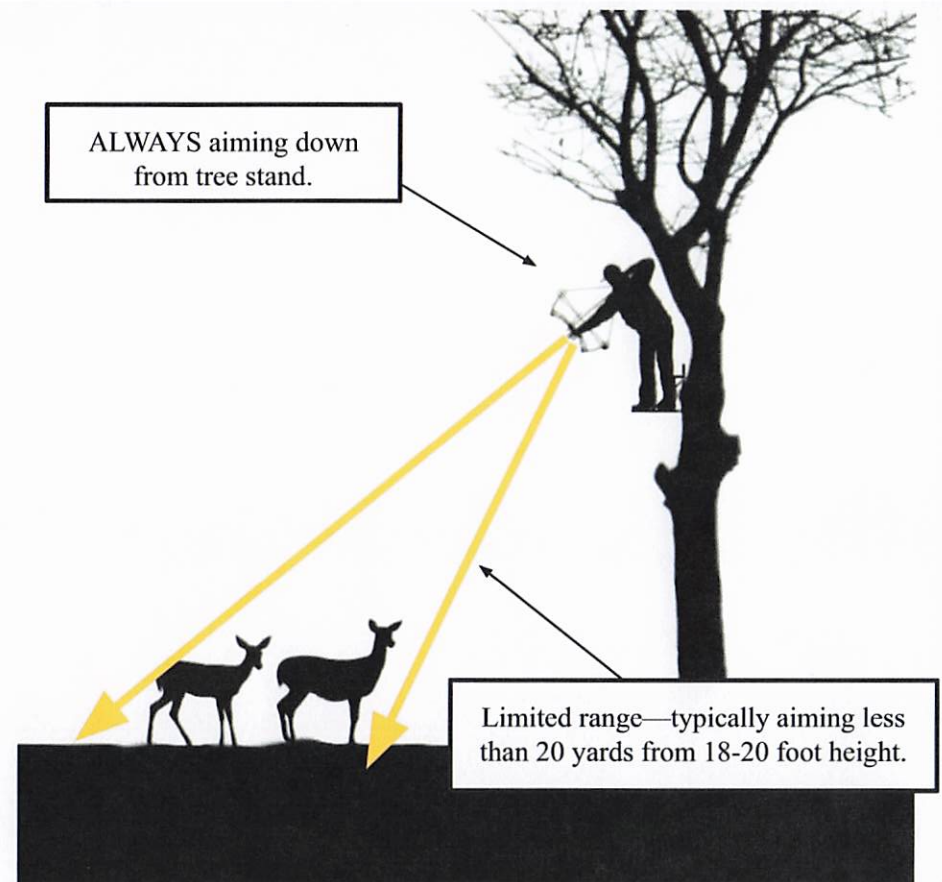


Humans are the only species left capable of managing the deer population in balance with its habitat. We are ultimately responsible for the problem and the only ones who can make it right.



Irvington Woods Park Deer Management Plan:

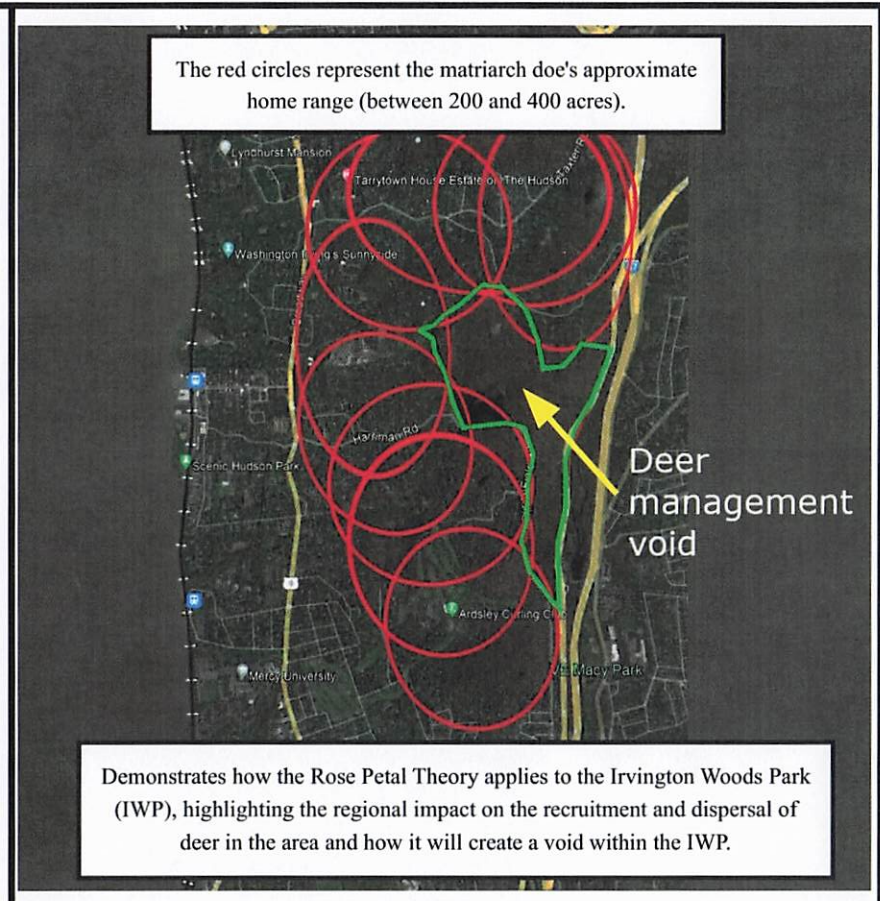
- **Effective forest regeneration:** Proven strategy for fostering forest regrowth.
- **Archery precision management:** Utilizes archery for precise and low-impact deer removal.
- **Timed within regular archery season:** Management activities coincide with New York's archery season.
- **Low-pressure, high harvest:** Targeted approach yields high harvest rates with minimal disturbance.
- **Adaptive, data-driven approach:** Informed by scientific data and adaptable to changing conditions.
- **Minimal disturbance:** Conducted during weekday very early hours, away from hiker traffic.
- **Reduces deer population around IWP:** Yields added benefit of lowering surrounding deer populations.
- **Leverages slow dispersal of does:** Targets specific areas to control deer populations effectively.
- **Proactive monitoring of deer movement:** Identifies and addresses potential dispersal routes.



Rose Petal Theory: Implications for Deer Management

In contrast to conventional deer management approaches, this strategy is based on the social behavior of white-tailed deer and results in maximum effectiveness with minimal influx of deer from other areas.

- **Matrilineal social groups:** Does form matrilineal groups led by the oldest female, establishing home ranges where offspring often remain for life.
- **Philopatry and slow dispersal:** Does tend to stay where they grew up due to familiarity with safe areas and stable food sources, resulting in slow dispersal and high philopatry (defined as animals that have a tendency to return to or remain near a particular site or area). This challenges traditional beliefs of rapid diffusion into new areas.
- **Localized management:** Highly targeted reduction of social groups offers an alternative to widespread hunting, maximizing impact area while minimizing management area and number of animals removed.
- **Continuous removal:** Ongoing removal from a localized area can eventually eliminate all does from one or more social groups.
- **Long-term effects of removal:** The removal of all deer in one rose-petal cluster may produce a long-term effect at a low rate of recruitment and dispersal.

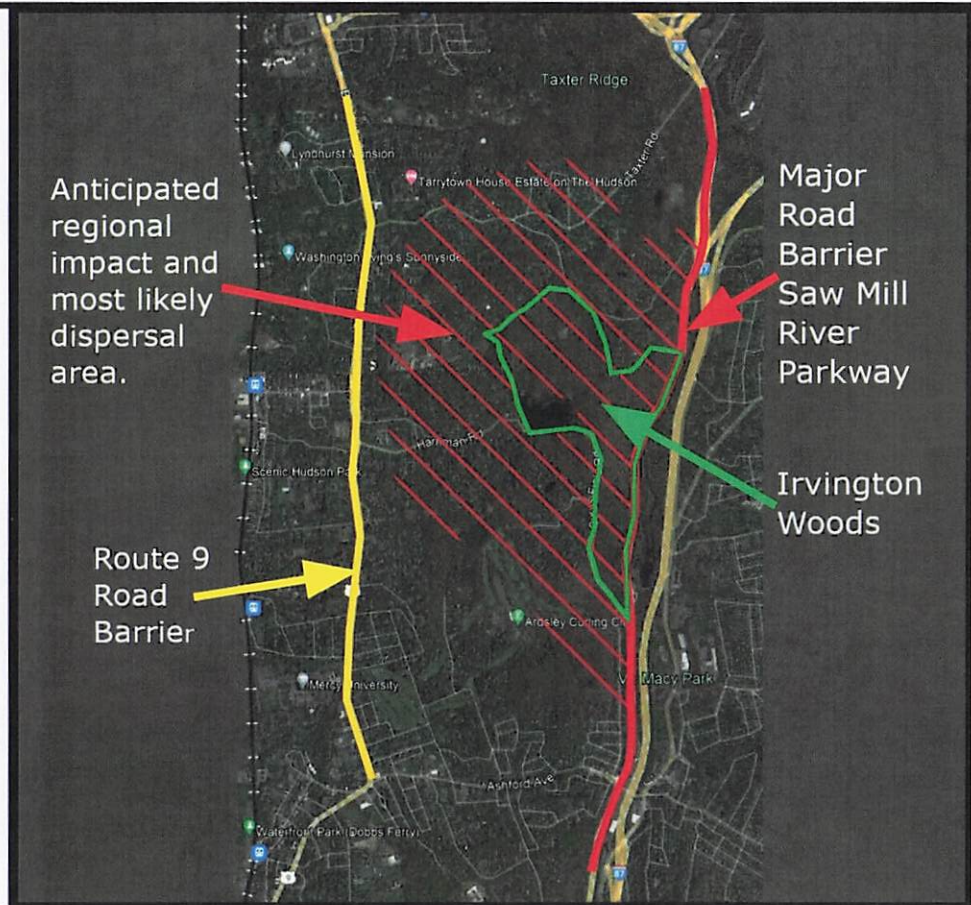


Source: [U.S. Department of the Interior, Fish and Wildlife Service. \(1992\). The Rose Petal Theory: Implications for Localized Deer Management \(Information Bulletin No. 59\)](#)

Applying the Rose Petal Theory to Irvington Woods Park Deer Management Plan: Incorporating Pete Kelley's Additional Insights

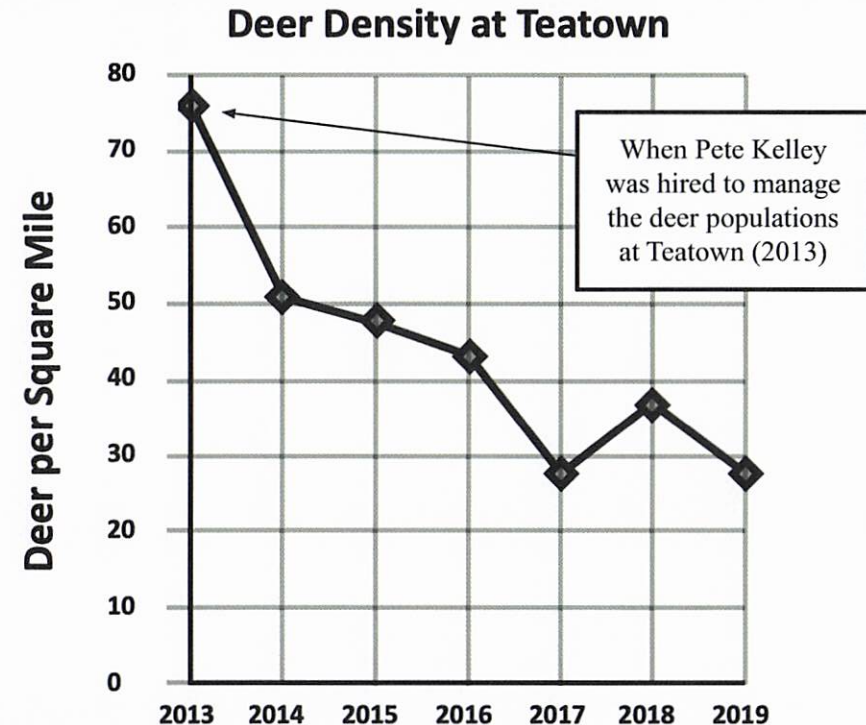
In addition to the Rose Petal Theory, the proposed management strategy will benefit from geographical barriers limiting movement of deer from nearby regions.

- Physical barriers:
 - East: Saw Mill River Parkway and I-87
 - North: I-287
 - West: Hudson River
 - South: Reservoir
- Matriarch doe home range: Estimated at 200-400 acres, varies by season.
- Adaptive, data-based program: Utilizes 24-hour camera monitoring for swift response to deer migration.



The Synergy of Bow-Hunting and the Rose Petal Theory: Supporting Deer Management Goals

- **Objective of deer management plan:** Reduce current deer population in Irvington Woods Park from 57 to 11, or an approximate density of 30 deer per sq. mi., over the course of 5 years.
- **Initial year target:** Harvest an estimated 12-18 deer in the first year of the program.
- **Program maintenance:** Once deer density goals achieved, ongoing observation and maintenance necessary.
- **Alignment with Teatown's observation:** Teatown's observation of forest regeneration when deer density reached approximately 30 deer per sq. mi. supports the objective of maintaining a similar deer density in IWP. This aligns with the principles of the Rose Petal Theory, which suggests that highly targeted reduction of deer populations can effectively reduce deer pressure, allowing for ecological regeneration.



Above Illustration: Graph of Teatown Lake Reservation deer density once deer management was implemented using Pete Kelley in 2013.

Save our Woodlands, Old Growth Forest and the Creatures that Depend upon Them

Deer Management Plan Proposal, Irvington Woods Committee, January 12, 2024

Over the past 30 years, the Irvington Woods park, containing 260 acres of native woodlands, a rare swamp, large wetlands and 50 acres of precious old-growth forest, has lost approximately 70% of its understory, including tree regeneration, due to overpopulation of white-tailed deer. To protect the long-term health of the Park, the Irvington Woods Committee is recommending the establishment of a deer management program. In consultation with experts, agency partners, and Westchester parks that have undertaken similar efforts, we propose hiring a highly qualified professional bowhunter. The goal of the program would be to maintain deer numbers at 20 per square mile to allow for a balanced ecosystem in which regeneration of our native plants and trees is possible for the good of all of the creatures that depend on them.



Irvington Woods & community: Residents fought for 40 years to preserve the Woods. Now it's a community hub.

Assessment of the Woods: Drastic lack of regeneration, dwindling seed bank, loss of food and habitat below the upper canopy for many species. Soil is healthy. Deer browse is the biggest problem.

Deer population is 5x what the ecosystem can support: 57 deer vs 11. Population growth = 40% per year.

Forest supports food webs and habitat: 100% of ground & shrub nesting birds are in decline. The majority of mid-canopy birds, turtles, small mammals and amphibians are affected too.

Invasive species exacerbate the problem: As trees come down, light encourages growth and the invasive species that are unpalatable to deer take over. With Beech Leaf Disease killing our 2nd most populous tree over the next five years, the remaining native forest will collapse.

Future Projections: With no regeneration, 64% less trees by 2050. Declines in carbon sequestration, stormwater absorption, air quality, sound barrier, as well biodiversity and habitat.

"If deer continue to ravage our forests for a generation of canopy trees, the forest itself will cease to exist. The browse that deer depend on will be gone, resulting in mass starvation of any remaining animals."

— Douglas Tallamy, Conservationist

Solutions: *Fencing* is expensive, blocks other animal movements, pushes the deer onto neighbors and roads, and requires heavy maintenance. Fencing does not address the root of the problem and residential deer fence permit requests are on the rise. We do not want to become a gated community. *Professional bow hunting* is safe, efficient and humane. 12 parks and preserves are successfully practicing bowhunting in Westchester, including the County. Case studies, like Teatown, demonstrate regeneration.

"We are ubiquitous on most of the landscape and we are already manipulating it for good or ill, whether we know it or not. And I think we have a responsibility, as a keystone species, to manage the ecosystems around us for the good of all of their inhabitants — the plants, the animals and even the people."

— Jim Sterba, Conservationist

Irvington Woods Park

Woodland sustainability for all species of animals and plants

DESCRIPTION OF THE WOODS

- * 259 acres of native woodlands
- * Largest forest preserve south of I-287
- * A rare upland swamp - the largest wetland south of I-287
- * Over 50 acres of documented "Old Growth Forest"
- * 300+ year-old trees, possibly New York State's tallest documented tree

THE PROBLEM

Over the last 25 years the woods have lost:

- * 95%+ loss of natural tree regeneration.
- * 95%+ loss of its native understory including shrubs, young tree saplings, and small flowering plants growing underneath the canopy of the large trees.
- * 65%+ loss of the ground and shrub nesting songbird population.
- * Amphibians, reptiles, small mammals and insects who depend on a healthy understory are disappearing at a similar rate.
- * The IWP has no peer in southern Westchester and is not comparable to the deer management problems of the significantly smaller woodlots of the villages surrounding Irvington.
- * The understory of 25 years ago had a full carpet of native perennials including Mountain Laurel, Mayapples, Trillium and Maidenhair ferns. They are 99% gone.

THE CAUSE

- * Over-browsing by white-tailed deer because of a spike in deer population over the last 25 years caused by lack of predators.
- * An extensive profession survey of the IWP indicates a deer population 7+ times greater than a sustainable woodlands deer population
- * The Irvington Woods have a documented deer density of 141 deer per square mile.
- * Density above 20 per square mile is considered the tipping point of irreversible woodland destruction.
- * The Audubon Society and the NYS DEC state a healthy deer density is 10-15 per square mile. The Audubon society cites "overabundance of white-tailed deer is the major disruption threatening the integrity of the natural ecosystem".

POSSIBLE SOLUTIONS

- * **Contraception and sterilization:** not available in Westchester because of DEC regulations; extremely difficult to implement in a roaming population in a large woodland.
- * **Repellent & frightening devices:** effectiveness is short lived as animals adapt.
- * **Habitat alteration:** removal of vegetation goes against efforts to revitalize Irvington Woods Park. Inhumane for deer and other wildlife species.
- * **Capture and relocation:** difficult and expensive. Capture and transport causes stress with 75% deer mortality rate within in one year. Tranquilizers that are used pose a health risk to humans if exposed. Not available in Westchester for deer management. Considered inhumane.
- * **Poison,** parasite or disease introduction: unsafe for other species and severely inhumane.
- * **Predator Introduction.** Coyotes now occupy habitat in parts of Westchester. Packs can kill deer but this is inhumane for deer and dangerous for humans and pets.
- * **Capture and Kill.** Deer could be captured by use of deer drives, nets, tranquilizer darts etc. Once caught they could be shot. Highly stressful for deer and inhumane.

- * **Bait and Shoot.** This is the technique used by the Town of Greenwich. Deer were baited to strategically located feeding stations and shot. Unsafe and inhumane.
- * **Traditional Controlled Hunting.** Using less than proven highly expert marksmen is dangerous and can result in inhumane deaths.
- * **Fencing.** Successfully protects that which it encircles but is only recommended for small parcels a tenth the size of the Irvington Woods. It is the most expensive solution estimated to cost upwards of \$2,500,000 and will require expensive annual maintenance. It does not solve the root of the problem. Fencing the IWP would double the population of deer for the surrounding properties, displacing IWP deer overpopulation into those properties and roads. This would essentially double those neighboring properties' burden and safety risks. It is not humane for a large group of deer to live in a suburban back yard with limited food sources. It is unsafe for children and pets.
- * **No intervention:** accept consequences of increased damage to entire ecosystem, increase of car collisions and rates of tick-borne diseases. Inhumane to the deer and other species and will result in the entire loss of the woods ecosystem.

The Irvington Woods committee rejects any of the above solutions as inappropriate and inhumane.

THE SOLUTION SUGGESTION OF THE IRVINGTON WOODS COMMITTEE

- * To rehabilitate the IWP ecosystem it is necessary to as humanely as possible reduce the number of deer to a level below the tipping point of 20 per square mile, not remove them entirely.
- * Based on the research and the documented actual results from other Westchester properties comparable in size to the IWP, reducing the deer population would enable the forest ecosystem to regenerate naturally and all species to flourish and reproduce in harmony with each other.
- * The Woods committee recommends a scientifically based, carefully managed, precise and surgically orchestrated program using a professional expert archer with significant experience working in a suburban woodland and a proven 100% safety record.
- * Utilizing a single, highly skilled professional archer is safe, humane and fiscally responsible.
- * The professional will study IWP's deer behavior and frequented locations.
- * Studying the public use of the trails and weather patterns will ensure utmost safety.
- * All management activities would occur during first light at sunrise when the park is not open to the public and done in park areas that are distant from park trails.
- * Before and during the event IWP would monitor all park entrances.
- * As catalogued in the NYS DEC Hunting Safety Statistics of the last three years, longbow hunting is the safest hunting method. There is no record of any accident causing a human death by bowhunting in all of NY State
- * One skilled professional archer, in one tree, aiming with a bow downward, well away from all park trails with a proven 98% accuracy ensures the most humane solution to avoid the certain inhumane impacts of the other possible solutions
- * Discreet covered removal and donation of deer to food banks.
- * A multi-year program occurring one or twice a week, for a few hours at daybreak, over ten winter weeks will reduce the population by about 10 to 12 deer per year. Our Westchester neighbors with similar size properties have documented significant regeneration of the native understory and return of songbirds in the 2nd and 3rd years of this type of program.



Statement on Deer Management

Saw Mill River Audubon has been conducting deer management on its Brinton Brook Sanctuary in the Town of Cortlandt since 2013 and on Pruyn and Choate Sanctuaries in the Town of New Castle since 2018. We have been following the same bowhunting protocols as Westchester County's own deer management program in effect since 2009 on various county park properties.

We have observed anecdotal evidence of shrub and wildflower regrowth at Brinton Brook and Pruyn Sanctuaries. We have observed the ongoing presence of Wood Thrush, Ovenbird and Northern Waterthrush, species that require understory and ground cover for nesting.

There have been no concerns with safety. There have been five inquiries by sanctuary visitors and neighbors over the past 11 years, all of which were satisfied after discussions with Saw Mill River Audubon about our safety protocols and our reason for this activity.

Our goal for our sanctuary deer management is to lessen the pressure of deer overbrowsing to allow some regrowth of the understory to the benefit of ground and shrub nesting birds and other wildlife.

- We recognize that documented deer densities of 60+ deer per square mile in our area are much greater than the healthy level of 10-15 deer per square mile necessary for forest regeneration. Research has also shown that deer densities in excess 22 deer per square mile can result in irreversible loss of native forest shrubs and wildflowers.
- Even if there were a sudden (and undesirable) absence of all white-tailed deer in our region, long-term studies have shown it would still take twenty years for our forest to recover healthy understory.
- We do not expect to reduce the sanctuary deer population to the desired level with our deer management program.
- We recognize that a more effective approach to the excessive deer densities in our region would take place on a larger landscape level.
- However, with recognition of the localized movement of area deer herds, our goal is a small reduction of deer in our sanctuary to the benefit of local forest health and the birds that depend upon our forest habitat.

SMRA Deer Management Statement / Page 2 of 2

Background

Saw Mill River Audubon recognizes that forests in our area are severely stressed from many factors. Among those factors is the absence of healthy forest understory, which is clearly attributable to deer overbrowsing. This is well-documented by peer-reviewed scientific study and easily observable with the lack of understory growth up to the “browse line” (the distance reached by white-tailed deer, depending on snow cover.)

- The understory of a forest includes both shrubs and young trees growing underneath the forest canopy.
- A healthy forest understory is critical nesting habitat for many bird species such as Wood Thrush.
- Many of these same bird species are neotropical migrants already under pressure because of habitat loss in their wintering grounds in Central and South America and in migratory stopover habitats in between.
- These same species are, in turn, critical for our local forest health because they consume plant-eating insects in our forests during their nesting season.
- Further, with no young saplings in the understory, we will also lack the next generation of trees in our forest to replace mature trees being lost to aging, disease, or increasing intense storm damage.

References

2008 Westchester County Citizen’s Task Force on White-tailed Deer & Forest Regeneration

[\[PDF link\]](#)

2015 Westchester County Adaptive Deer Management Program Report [\[PDF link\]](#)

2017 Achieving and maintaining sustainable white-tailed deer density with adaptive management [\[PDF link\]](#)

2020 Study: Long-term variation in white-tailed deer abundance shapes landscape-scale population dynamics of forest-breeding birds [\[HTML link\]](#)

2020 Article: Could Deer Hunting Improve Habitat for Forest Birds? [\[HTML link\]](#)

Contact

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