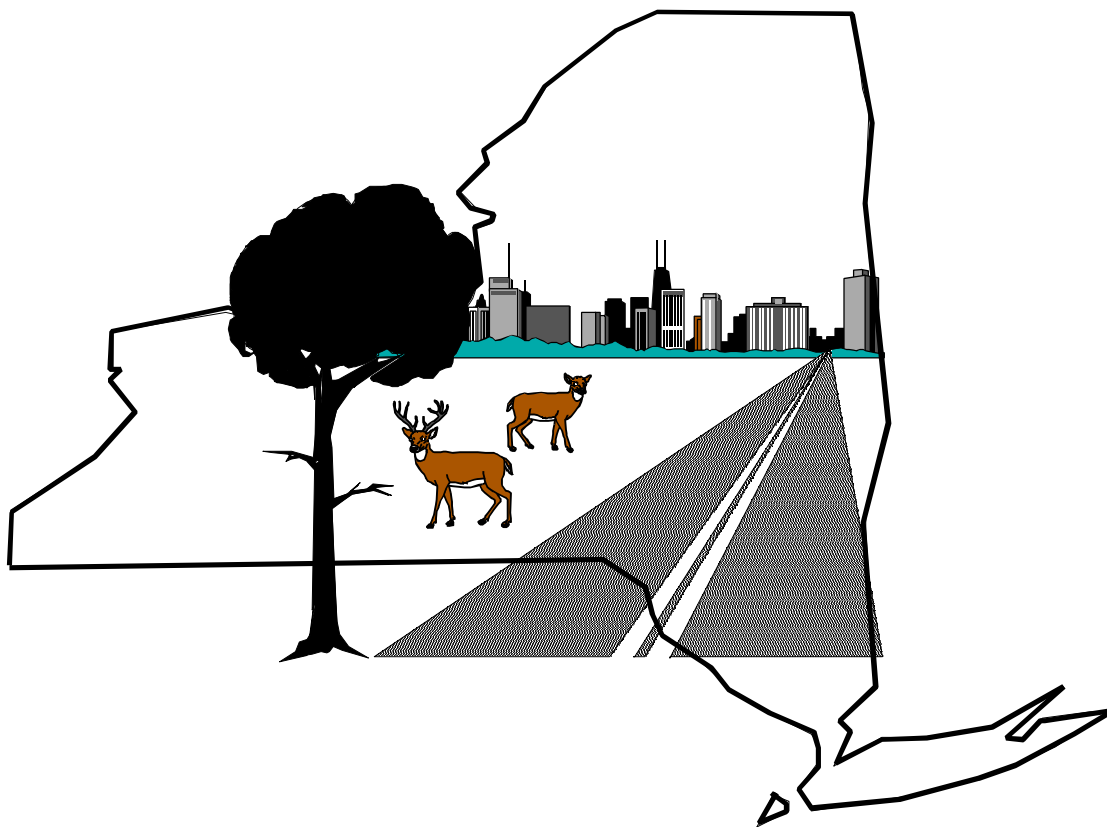




New York State
Department of Environmental Conservation

A Citizen's Guide to the Management of White-tailed Deer in Urban and Suburban New York



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Revised 1999: Bureau of Wildlife - Deer Team

George E. Pataki, Governor

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Deer population management consists of taking actions that will regulate deer numbers to reach or stay at desired levels. Because so many people are affected by and have an interest in deer, homeowners, motorists, farmers, hunters and others all have a stake in deer management decisions.

To establish deer management programs in urban and suburban areas, the views of local interest groups are important. The New York State Department of Environmental Conservation (DEC) is asking the public to help find the answers to a number of questions, including: How many deer should there be? Should their numbers be controlled? If so, how?

This publication is designed to help inform the public about deer management options.

Values of Deer

People place many values, both positive and negative, on deer. Whether deer are desirable or not is a matter of personal opinion. The opinions are often influenced by recent experiences.

Benefits

Deer are popular wildlife. Many people appreciate just knowing deer are around. Others enjoy watching, photographing, hunting, learning about and studying deer. People, such as motel, restaurant and sporting goods store owners, derive income from the deer related activities of others.

Problems

Deer feeding often causes damage to trees, shrubs, gardens and agricultural crops. Property damage and personal injuries occur due to deer/car collisions. Personal health concerns also arise due to some diseases.



Deer also feed or browse on buds and twigs of trees and shrubs. When many deer feed in an area the plants may be eaten faster than they can grow back. Deer browsing influences the plants present. When there are too many deer, their browsing can remove most of the vegetation within reach or completely eliminate some food plants. This affects the quantity and quality of wildlife food and cover present. A study in Pennsylvania found that when deer density exceeded 20 deer per square mile, the number of plant and animal species present declined.

The loss of low growing vegetation also reduces food supplies for deer. In overbrowsed areas, the condition of deer declines. Deer then become more susceptible to diseases, predation and winter losses due to malnutrition.

Some people consider the impacts deer can have on natural vegetation and other wildlife species an acceptable cost of having the deer. Likewise, the decline in the condition of deer is also sometimes considered acceptable.

Why Are There Conflicts?

Both human and deer populations have grown. Expanding deer herds have moved into suburban settings and humans have developed former rural areas. This has increased interactions between humans and deer.

Development practices have also increased the likelihood of deer/human interactions. Low density housing, green spaces and parks all provide cover and high quality food like fertilized lawns and shrubs. Deer prosper in these settings.

In many areas deer have reached high densities. Often, the major remaining predator, human hunters, has been legally or otherwise restricted. Low death rates in combination with the deer's high birth rate often result in high deer numbers.

The absence of hunting and the fact that some people feed deer adds to the problems. Fed deer become much more tolerant of humans and are more likely to go where people are, increasing the chances for conflicts.

In summary, ample food and cover, and protection from hunting have increased deer numbers and their boldness in some areas. Not surprisingly, this has increased interactions and conflicts between people and deer.

Deer Management Options

Despite the high regard most people hold for deer, high deer populations in many urban and suburban areas have caused people to weigh the pros and cons of having deer around. Solutions to deer/human conflicts are often sought.

The most basic deer management decision is whether or not to control deer numbers. If deer numbers are not controlled, people must either accept problems or try to reduce them by other means. If a decision is made to control deer numbers, an acceptable method must be chosen.

Some deer damage control techniques offer remedies to site-specific problems. Unfortunately, protecting a site often places new or additional pressure on surrounding areas not afforded the protection. A neighbor's property, a different stretch of road, or natural vegetation may suffer greater problems.

OPTIONS AT A GLANCE

No Population Control

- Hands-off
- Damage Control
 - Fencing
 - Repellents
- Feeding

Population Control

- Nonlethal Methods
 - Habitat Alteration
 - Capture and Relocation
 - ...to the wild
 - ...to farms
 - Fertility Control
- Lethal Methods
 - Predator Introduction
 - Parasite of Disease Introduction
 - Poison
 - Capture and Kill
 - Bait and Shoot
 - Traditional Hunting

Opinions and philosophies vary widely about deer management. Some feel that deer populations should be left to fluctuate “naturally” with no human intervention. They believe people should learn to deal with and tolerate the effects of deer. They also believe the impact of high deer densities on plant and animal diversity should be seen as natural and therefore acceptable.

Others believe humans should take steps to protect human interests. Some believe that in today’s altered habitats humans must fill the role of missing natural elements, be it as a predator or protector. They prefer that deer be managed considering the interests of humans and the needs of plants, deer, and other wildlife.

Neither position, management or no management, is right or wrong. They are based on local interests and personal values, not absolute biological needs. Your choice depends on how you think things “ought to be.”

Lacking a clear, nonsubjective means by which to make decisions on deer management, how should decisions regarding deer management be made? DEC believes that decisions should be made through consensus of persons representing people with a local interest or stake in the decision (stakeholders).

In this section we describe, and present the pros and cons of, various approaches to deer management and deer damage control. The purpose of this is to provide the basis for informed decision-making by interested parties.

No Population Control

Hands-off

Hands-off means that no effort is made to control deer numbers. This is currently the case in many urban, suburban and park areas.



This approach pleases those who feel that wildlife should not be managed or those who do not perceive deer to be a problem. This method is inexpensive to implement in terms of management costs and increases people's chances to see and enjoy deer since the deer are more abundant and often less wary.

Choosing this option entails accepting the consequences and costs associated with high deer numbers. Considerable costs will result from damage to planted vegetation and car-deer collisions. Deer will also influence natural vegetation and wildlife communities.

Unmanaged deer populations often become susceptible to losses due to disease or malnutrition. Such losses, however, rarely cause deer numbers to decline to the extent that all problems are alleviated.

Damage Control

Damage control techniques offer some relief when population control is rejected. These techniques are also commonly used in conjunction with population control efforts. Or, damage might be reduced by substituting ornamental plants rarely bothered by deer for more preferred varieties.

Deer fencing and repellents may alleviate some deer damage problems. They are, however, unlikely to provide effective long-term solutions to damage problems when there are too many deer. At best, they provide localized protection. Any evaluation of their usefulness must include an analysis of their costs, the value of the property being protected and the consequences on unprotected areas.

Fencing or repellents are impractical for dealing with problems over large areas, such as overbrowsing of natural vegetation or deer-car collisions. Residents may find fencing and repellents acceptable for protecting gardens or shrubs. However, they often become frustrated by their declining effectiveness and recurring costs.

Fencing

Electric or woven wire fences of proper design can offer protection from deer. Deer can jump fences up to at least 10 feet in height. Installation costs can range from about \$180 to \$600 per acre depending on fence type and site conditions. Regular maintenance is essential, adding to costs. Some soil types and terrains make fencing difficult. Aesthetic considerations cause some suburban and urban landowners and communities to reject fencing as an alternative.

A new fencing application, called invisible fencing, has been used to contain dogs. The dogs then chase deer from the "fenced" area. This technology has been used with some success.

Repellents and Frightening Devices

Repellents include both chemical repellents and frightening devices. The effectiveness of both types decreases with increasing deer density. Deer often ignore repellents as food becomes scarce and competition for food increases.

A variety of taste and odor repellents is available from home remedies, such as human hair and soap bars, to chemical mixtures. Cost estimates for one chemical repellent treatment of orchards and nursery stock range from \$10 to \$400 per acre, not counting equipment or labor costs. Repellents must be reapplied frequently. Chemical repellents may cause plant damage and leave noxious or offensive residues.

Frightening devices, such as noise makers, lights, scarecrows and balloons, may be effective for short periods. However, deer generally overcome their initial fear of these devices. (Don't overlook the use of trained dogs.)

Feeding

Supplemental feeding is often proposed as a means to improve the condition of deer or to take pressure off other food resources.

Feeding programs, if properly conducted, can help some deer. They are, however, usually self-defeating. If feeding programs allow a deer population to remain high or grow, problems likewise are likely to remain high.

Further, if feeding improves deer survival, deer numbers and browsing will increase. Deer would need to be fed ever-increasing quantities of food to compensate for the growing shortage of the natural foods.

Some suggest that feeding deer during critical periods will reduce personal property and habitat damage. Unfortunately, even when given unlimited supplies of food, deer continue to feed on vegetation. Damage near feeding sites usually increases. Plants preferred by deer may be eliminated, altering habitat for many wildlife species.

Another important consideration is that fed deer become increasingly tame and more likely to tolerate human activity. This increases the likelihood of deer/human interactions and conflicts such as personal injury, damage to personal property and motor vehicle collisions.

Feeding does not prevent deer damage problems. Feeding is also expensive. Concentrating deer at feeding stations increases disease transmission problems and predation by dogs. Deer can become increasingly dependent on supplemental food and in many ways may no longer be considered wild. Community satisfaction, though potentially high at the onset, may decline over time.

Population Control

Population control methods seek to maintain deer numbers at a level compatible with local conditions and stakeholders interests. Unless deer were completely eliminated, any deer control method would have to be repeated at regular intervals. Most methods involve the removal of deer, others seek to reduce deer numbers by decreasing habitat or reproductive capacity. Removal methods are the only effective way to reduce deer numbers and associated problems quickly. Limiting births can only bring numbers down slowly.

Regardless of how deer numbers are to be controlled, stakeholders must decide what size deer population or level of conflict is acceptable. Stakeholders must also select a time frame for achieving the desired population.

Nonlethal Methods

Habitat Alteration

Theoretically, deer numbers or the frequency with which they use an area could be reduced by removing the plants which provide deer food and shelter.

To be effective over large areas, however, this approach might require the alteration or removal of most of the vegetation. This would be very costly and have important environmental impacts. These would include threatening the local existence of some plants and animals.

Extensive habitat alteration would probably be opposed by many individuals, groups and regulatory agencies. Agreement and coordination of such action would likely be difficult since many landowners could be involved.

Deer movement caused by habitat alterations could simply shift problems elsewhere. Community acceptance of this approach would likely be difficult to obtain.

Capture and Relocation

Deer numbers could be reduced by capturing¹ deer and taking them elsewhere. Drive nets, tranquilizer darts, rocket nets, corrals and other capture methods could be used to capture deer. Capturing and relocating deer is difficult and expensive. Costs range from \$110 to \$800 per deer captured, depending on the method used. Efforts become less efficient as deer numbers decline and deer become more wary.

Capture and transport also cause stress. Injury and loss of some deer during capture and relocation efforts are common and can be significant. Up to one-quarter of captured deer have been found to die soon after release, apparently due to the stress of capture and handling.

Personnel handling deer are also exposed to risks. Many of the tranquilizers used on deer pose a substantial health risk to humans accidentally exposed to them.

Many people in the community from which the deer are removed are likely to support relocation. However, others may oppose the costs, and the stress and potential losses associated with handling and moving deer. Some may object to the loss of the opportunity to enjoy or use the animals.

Release sites commonly proposed include the following:

...to the wild

Few, if any, areas within the range of the white-tailed deer could benefit from deer releases. Many areas are already overpopulated and residents of the receiving area may oppose a release. In addition, moving deer can spread disease and parasites.

The survival of released deer has also proved to be poor. Three-quarters or more of relocated deer commonly die within one year. Causes of death include malnutrition, vehicle collisions and predation. Relocated deer are vulnerable since they are unfamiliar with their new range. Deer coming from overpopulated areas are often at a disadvantage due to their poor physical condition.

A DEC permit is required to capture and relocate deer. Permits are not issued to relocate deer to the wild because acceptable release sites are not available and because the poor chances for deer survival do not warrant the risks.

...to deer farms

There are several deer farms in New York. These farms raise and slaughter deer for the venison market. Though some interest has been expressed in receiving wild deer captured at problem sites, it is uncertain if this interest will continue.

Concerns about the potential to introduce diseases from wild deer into domestic stock may limit interest in this practice. Testing requirements for diseases, such as tuberculosis, would complicate and add costs to any such program.

The costs and problems associated with catching and moving deer would be the same as for relocation to the wild. Deer farms, however, might be willing to “shoulder” some of the costs.

Demand for deer by farmers may be limited and possibly short-lived. Though many in a community may support this approach, some will object to how farm deer are used. Concerns over the costs and stress involved in trapping and handling deer may also cause some opposition to this approach.

¹ *The discussion of trapping techniques (corrals, clover traps, box traps) is for informational purposes only. At the present time it is illegal in New York State to trap deer using these types of traps, Environmental Conservation Law § 11-0505 (3).*

Fertility Control

Experiments with birth control methods have been tried as a means of inhibiting reproduction in deer. These methods include using chemical techniques such as synthetic chemical steroids and immunocontraceptives. Steroids work like human birth control pills. Immunocontraceptives cause a deer's immune system to interfere with some phase of reproduction, such as fertilization. In addition, other birth control methods, such as vasectomy and tubal ligation, have also been explored as a means of inhibiting reproduction.

While these methods have been used successfully in captive deer, none have yet proved effective in controlling populations of wild, free-ranging deer. What works in the laboratory or within a fenced area cannot necessarily be applied in the field.

A major problem for all birth control techniques lies in treating enough deer in a free-ranging population. A very high percentage of the females in a deer population must become unproductive to control population growth.

Methods requiring capturing and handling deer (surgery or implants) offer the least hope for practical field applications. They are expensive and create the problems noted above for capture efforts. Also, it would be difficult to capture enough deer to control a population.

Chemical techniques, such as synthetic steroids, raise concerns about non target effects. The similarity of hormones within all mammals, including humans, presents problems if non target species consume the steroid directly or consume the flesh of a treated animal. For example, deer treated with immunocontraceptives may not be suitable for consumption by hunters and their families.

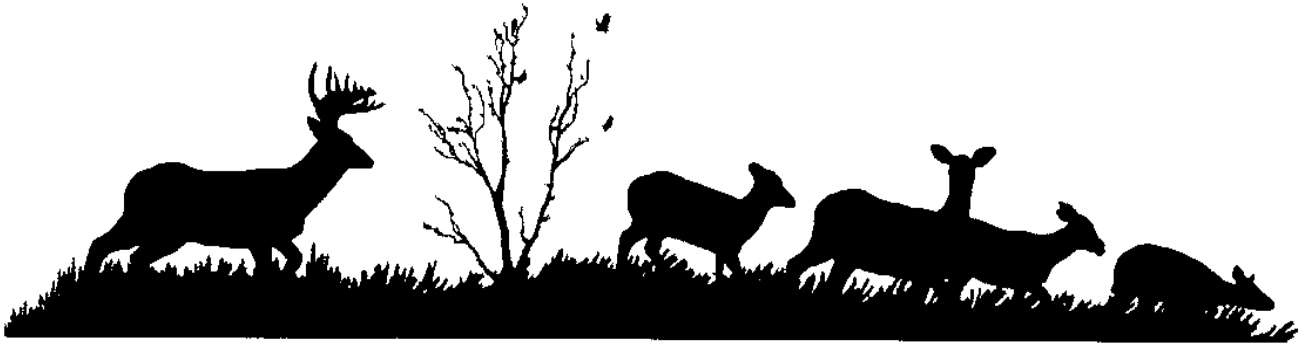
Techniques which do not require handling deer offer the most hope for practical field applications. Oral baits or injection by dart are two possible methods. Because of the previously mentioned concerns about steroids, immunocontraceptives hold the most promise as a potential technique.

Captive deer have been successfully sterilized using a dart gun to inject immunocontraceptives. Experiments are under way to use this technique on small populations of wild deer. Work is also being done to develop a plastic bullet impregnated with an immunocontraceptive. Oral delivery is also being explored.

Costs of fertility control programs will vary depending on the number of treatments required per year of infertility. Reducing the treatment frequency will reduce costs. Currently immunocontraceptive treatments last up to one year. This may be extended to 2 or more years if ongoing research bears fruit. Multiple year effectiveness, and plastic bullet or oral delivery, will improve the prospects of this becoming a practical technique.

An important consideration with any fertility control technique is that it is not a viable approach when a quick reduction in deer numbers is sought. If effective, fertility control will reduce deer numbers slowly. This is because birth control does not remove any existing deer, but rather prevents additions to the population. Deer numbers would remain high for several years (6-10) after beginning birth control efforts. Meanwhile, whatever conflicts were occurring would continue. The behavioral and genetic effects of birth control on deer are unknown. Until these questions and others are resolved, fertility control will remain experimental. Based on current knowledge, many wildlife professionals believe fertility control will be practical only for small, isolated populations.

Experimental efforts within NYS and in other areas of the country are still in a very early research stage. To date, this research has shown only very limited success. It is expensive and is ineffective when used on a free-ranging deer population.



Lethal Methods

Predator Introduction

Predators, with few exceptions, rarely control the numbers of the animals on which they prey. In fact, the opposite is true, it is the prey base that determines the size and health of the predator population.

Coyotes now occupy suitable habitat in and around many suburban areas. They kill deer, but are obviously not controlling deer populations in these areas.

Large mammalian predators, such as black bears, wolves or cougars, have large home ranges. Most locally overabundant deer herds are located in suburban areas or small parks which would be unsuitable for these large predators due to high human densities, extensive road networks and inadequate habitat.

DEC would not support introducing large predators into areas where they would not be expected to survive.

Parasite or Disease Introduction

The risks and uncertainties associated with parasite or disease introduction make it impractical. Several parasites and diseases kill deer, but none, capable of killing significant numbers, is specific to deer. Other wildlife or livestock could be adversely affected if this method were used to reduce deer numbers. That fact alone makes this technique unacceptable.

Confining the pathogen and sanitizing the affected area afterward would also pose significant problems. Also, some people would consider the pain or stress associated with disease inhumane.

Public opposition is likely for a variety of reasons. Regulatory agencies, both federal and state, would not likely permit such activity.

Poisons

Currently, there are no toxicants, poisons or lethal baits registered for deer control. Quick-acting lethal chemicals are available, but there are no safe methods for delivering lethal dosages to free-ranging deer. The use of toxicants carries many hidden risks that may be socially unacceptable. These include potential human health risks, particularly if poisoned free-roaming deer occur in areas open to legal deer as well as the unintentional killing of non-target animals, including pets, eating baits or scavenging carcasses of poisoned deer.

The public would most likely oppose poisoning as a control method. Regulatory agencies, both federal and state, would not likely permit such activity.

Capture and Kill

Deer could be captured¹ and killed. Capture could include the use of traps, drive nets, tranquilizer darts, rocket nets or any other method of capture. Capture related problems (discussed above under relocation) would apply.

Once caught, deer could be killed in a variety of ways including injection of lethal drugs or shooting. The costs would vary with the method used.

The use of the meat, by charitable organizations or others, would enhance such programs for some people. The use of drugs to capture or kill the deer however would preclude using the venison.

If the meat is not to be consumed, disposal of carcasses may be a problem.

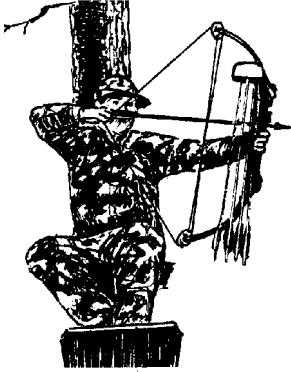
Bait and Shoot

This technique would involve baiting deer to strategically located feeding stations. Deer would then be shot and killed. This technique was used in a small area in New York in 1993 and 1994. The cost was \$300 per deer killed in 1994.

Some believe that professional shooters are safer, more accurate and kill deer more quickly and humanely than hunters. These assumptions have not been tested. A ready source of professional shooters does not exist.

Bait and shoot operations cost more than recreational hunting. They are likely to be less costly than relocation, or capture and kill efforts.

Traditional Hunting



Traditional hunting is defined here as hunting by licensed sportsmen and women using legal firearms or longbows. Hunting seasons are set by NYS Environmental Conservation Law or NYSDEC Regulations. Hunters are entitled to keep and use the deer killed. New York hunters must pass sportsmen education courses before buying licenses. No further qualification is necessary after licensing.

Traditional hunting has been used successfully to control deer populations over much of the species' range. It is more cost-effective than other control methods because hunters provide much of the labor at no cost.

A possible benefit of hunting is that hunted deer are generally more wary of humans. Wary deer are less likely to frequent areas inhabited by humans and are more likely to respond to repellents such as blood meal and human hair. Another benefit of hunting is that many small businesses derive income due to the activities of hunters.

Some oppose hunting, and local laws sometimes prohibit hunting in urban, suburban or park areas. Some of this is due to philosophical issues, but much is based on fears for personal safety. The presence and use of firearms evokes concerns in many people, despite the extremely low risks associated with hunting. When warranted, special conditions can allay fears and further ensure public safety (see below).

Controlled Hunting

The effectiveness and public acceptance of hunting as a deer management program can be increased through controlled hunts. Controlled hunts can be tailored to meet a variety of local conditions. Marksmanship requirements and restrictions on who may hunt, hunting methods, hunting times and locations, and the sex, age and number of deer to be taken are often employed. In some circumstances, DEC may be able to offer assistance to landowners implementing such hunts.

DEC Perspective

As a state agency the DEC is obligated to consider factors that an individual or community may not. Some of these are required by law and others by broad resource, social or economic concerns. DEC wildlife staff have reviewed the issues and options discussed above and have made recommendations on preferred options. Following are some of the factors the DEC considered and their management recommendations:

Management Criteria

The following factors were considered for each option prior to making the recommendations:

Species Perpetuation - ensure that deer and other species' populations are not adversely affected.

Safety - reduce risk to public and participants.

Humane Treatment - reduce stress and trauma to deer.

Cost - consider cost effectiveness of control operations.

Public Use and Access - provide the fullest array of resource benefits now and in the future.

Nuisance Concentration or Relocation - avoid concentrating or relocating problems.

Disease Transmission - reduce potential for disease transmission.

Recommendations

Fencing and repellents can be effective site-specific solutions but are impractical for most large-scale applications. Feeding, large-scale habitat alteration, relocation to the wild, poisoning, and introduction of predators or diseases are not recommended solutions to overabundant deer populations for ecological, social or practical reasons.

While fertility control offers the potential to control deer numbers, at present this method is experimental. DEC will permit *bona fide* field testing of this technique. It is likely, however, that its applicability will be limited to small, isolated populations.

The remaining candidate techniques are all forms of removal. In terms of population control, it makes no difference how deer are removed from an area. If enough deer are removed, population control can be achieved. Removal techniques, however, vary widely in their consistency with the above management criteria. In order of decreasing suitability, DEC's recommendations for dealing with overabundant deer in urban and suburban areas are:

1. controlled recreational hunting;
2. nonrecreational shooting with use of meat and hides;
3. nonrecreational shooting without use of meat and hides;
4. capture¹ and relocation to deer farms;
5. capture and slaughter with use of meat and hides;
6. capture and destroy without use of meat and hides.

Local interests and concerns will dictate the deer control option of choice in any given setting. When the consensus of local stakeholders is to implement an approach requiring a permit (all management actions, other than hunting during legal seasons, require appropriate permits), the DEC will work with local entities to see that effective deer management programs can be carried out.

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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.*