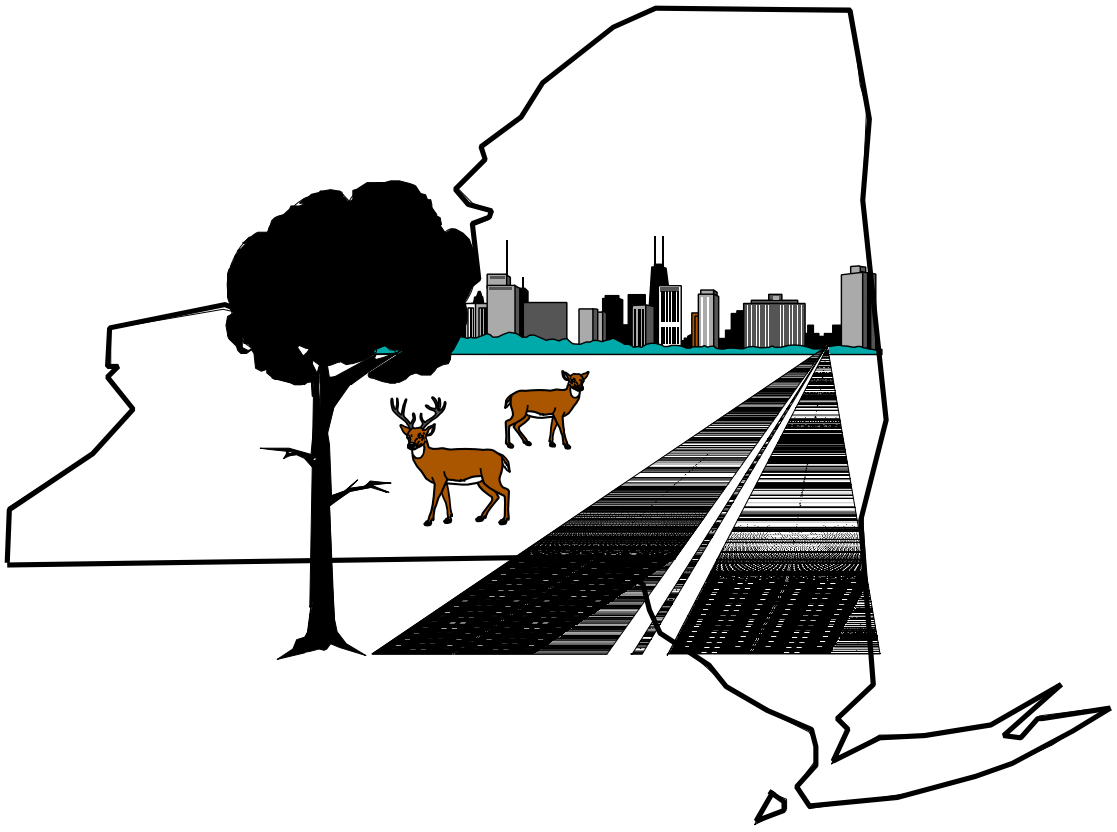
New York State
Department of Environmental Conservation

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



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Deer management consists of decisions and actions that influence deer numbers. 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) recommends communities involve local residents to find answers to questions such as: Are there deer impacts that need to be controlled? Should deer numbers be controlled? If so, how?

This publication is designed to provide guidance on how communities should approach decision making regarding deer and to help inform the public about deer management options.

Values of Deer

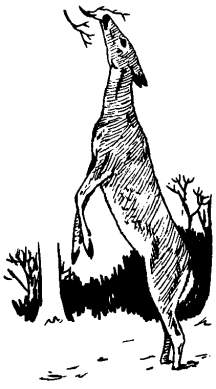
People place many values, both positive and negative, on deer. Whether deer are desirable or not is a matter of personal opinion. The opinions are often influenced by recent experiences.

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 often feed on and cause damage to landscape plantings, 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 browsing also influences vegetation in fields and forests.. When deer densities are high, browsing can remove most of the vegetation within reach of deer and completely eliminate some plant species. 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 mile^2, 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, and deer then become more susceptible to diseases, predation and winter losses due to malnutrition.

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.

Developed areas also tend to be relatively secure sites for deer. Typically the last remaining significant predator, human hunters, has been legally or otherwise restricted. Often deer-vehicle collisions become the greatest source of mortality for deer. Low death rates in combination with the deer's reproductive capacity and relatively long life often result in high deer numbers.

Conflicts sometimes arise or are aggravated by people feeding deer intentionally or unintentionally (bird feeders). Fed deer become much more tolerant of humans and are more likely to go where people are, increasing the chances for conflicts. Regulations adopted by DEC in 2002, prohibit the feeding of wild deer.

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.

When is Deer Management Needed?

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.

Opinions and philosophies vary widely about deer management. Some people 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.

Other people believe that in today's fragmented and otherwise altered landscapes there is little "natural" in the growth in deer numbers seen in urban and suburban settings. They believe it is appropriate for humans to fill the role of missing natural elements, be it as a predator or protector. They prefer that deer be managed with consideration of human interests and the needs of plants, deer, and other wildlife.

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.

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 larger groups with a local interest or stake in the decision (stakeholders).

Deer Management Options

In this section we describe, and present the costs and benefits 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. By default, this is often 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.

In many settings this approach is likely to result in deer numbers remaining high, if not growing. 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.

OPTIONS AT A GLANCE

No Population Control
- Hands-off
- Damage Control
  - Fencing
  - Repellents and Frightening Devices
- Alternative or Diversion Plantings
- Feeding

Population Control
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Damage Control

Damage control techniques can provide relief for site-specific problems and have a place in any deer management program whether or not population control measure are employed. The effectiveness of most techniques generally declines as deer numbers rise, except for complete exclusion by fencing. Use of damage control techniques provides localized protection only and can subject unprotected sites to new or additional pressure. A neighboring property, a different stretch of road, or natural vegetation may suffer greater problems.

Damage control techniques may provide adequate relief at low deer densities, but are unlikely to provide effective long-term solutions when deer numbers are high. Some problems, such as overbrowsing of natural vegetation and deer-car collisions, are impractical for individuals to address through damage control efforts. Any evaluation of the usefulness of damage control techniques should include an analysis of their costs, the value of the property being protected and the consequences on unprotected areas.

Fencing

Exclusion by fencing offers the only foolproof means to protect a site. Complete exclusion however, requires high (10') fencing which is expensive. Designs involving double rows of fence, outward slanted fences or electrified fences have provided adequate protection in some cases. Less elaborate and less expensive fencing can suffice at low deer densities or to protect individual plants and small areas. 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. Aesthetic considerations, soils, terrain and sometimes local ordinances all influence what is practical or legal at a site.

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 and scare techniques as food becomes scarce and competition for food increases.

A variety of taste and odor repellents is available including chemical mixtures and home remedies, such as human hair and soap bars. Cost estimates for one chemical repellent treatment of orchards and nursery stock range from $10 to $400 per acre, excluding 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.

Dogs can also provide protection. This can range from the family pet running loose in a fenced yard, to a dog on a lead, to the fairly new use of dogs within "invisible" fenced areas. Recent accounts suggest that in some cases deer can become so bold in some residential areas that even dogs become ineffective.

Alternative or Diversion Plantings

Selecting ornamental plant species less attractive to deer can resolve some problems. Some common ornamental plants, such as yews, are highly preferred by deer and rarely escape being damaged by deer. Other species are considerably less attractive to deer and might only be eaten at high deer densities. (Can we link to a site with this info.)

It is sometimes suggested that food plots could be used to attract deer away from sites where they create a conflict. While this has not been extensively explored, evidence does not suggest this has much merit. Deer by their nature move throughout the course of the day and prospects are that any sites with attractive food sources will be visited. Ultimately, even if effective to some degree initially, diversion plantings may be self-defeating as described in the feeding section below.

Feeding

Supplemental feeding is often proposed as a means to improve the condition of deer or to take pressure off other food resources. Regulations established in 2002 due to concerns about Chronic Wasting Disease completely prohibit the feeding of wild deer in New York. The following information is presented simply to describe the potential effects of feeding.

Feeding programs, if properly conducted, could 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 people suggest that feeding deer during critical periods will reduce personal property and habitat damage. Unfortunately, even when provided with unlimited supplies of food, deer continue to feed on natural 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 deer can be expensive and does not prevent deer damage problems. Concentrating deer at feeding stations increases the prospects for disease transmission and can make deer more vulnerable to predation by dogs or coyotes. Deer may become increasingly dependent on supplemental food and loose

the wild character that is part of their allure to many people. Community satisfaction, though potentially high at the onset of a feeding program, 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 are completely eliminated from a site, all deer control methods must be repeated at regular intervals. Most methods involve the removal of deer, others seek to reduce deer numbers over time by decreasing habitat or reproductive capacity. Removal methods are the only effective way to reduce deer numbers and associated problems quickly. Limiting births results in a slow decline in deer numbers.

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

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 costly and have important environmental impacts that could threaten 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 at a location could be reduced by capturing deer and taking them elsewhere. At the present time, the Environmental Conservation Law §11-0505 (3) prohibits the trapping of deer except under special permit issued by the DEC for scientific purposes. The following discussion of trapping techniques is for informational purposes only.

Methods to capture deer include the use of drive nets, drop nets, rocket nets, corral traps, clover traps, box traps, and remote chemical immobilization using dart syringes. 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 relocation is also stressful to the animal. Injury and loss of some deer during capture and relocation efforts are common and can be significant, and the long term survival of relocated deer is often low. Personnel handling deer are exposed to potential physical injury from the deer and to

accidental exposure to the immobilization drugs.

Another serious constraint on capture and relocation programs is the availability of release sites to receive the captured deer. Release sites commonly proposed include:

(1) Release to the wild: Few, if any, areas within the range of the white-tailed deer could benefit from deer releases. Many areas are already occupied by deer, and residents of the receiving area may oppose a release. In addition, moving deer can spread disease and parasites to the local wild deer population.

Relocated deer are vulnerable since they are unfamiliar with their new range, and deer coming from overpopulated areas are often at a disadvantage due to their poor physical condition. Survival of relocated deer has proven to be poor, with up to three-quarters of relocated deer commonly succumbing to malnutrition, vehicle collisions, or predation within one year.

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.

(2) Release to captive facilities: There are many facilities licensed to possess deer in New York. Typically these facilities possess deer for display, to raise stock for sale to other deer facilities, for venison production or for game on a shooting preserve. Current laws dictate that all deer on these facilities come from domestic sources. While the legal constraint to move wild deer onto a captive facility might be addressed, other practical constraints would remain.

The largest constraint is the threat of disease introduction from wild deer into domestic stock. The New York State Department of Agriculture and Markets herd certification requirements for Chronic Wasting Disease and Tuberculosis are such that few facilities are likely to welcome deer from wild sources as it would jeopardize their disease certification status. The costs and problems associated with catching and moving deer would be as discussed above, though a facility might be willing to "shoulder" some of the costs. Interest for deer by captive facilities is likely to be very limited. Though many in a community may support this approach, some people may object to the ultimate fate of deer. Concerns over the costs and stress involved in trapping and handling deer may also cause some opposition to this approach.

A DEC permit is required to capture and relocate deer. Current laws and concerns about disease preclude such permits being issued.

Fertility Control

Research continues in search of a practical technique to control reproduction in wild free ranging deer. Though there are effective techniques and chemical agents that inhibit reproduction in deer in controlled environments, finding a practical system to treat wild deer in sufficient numbers to effect population change remains a challenge.

Fertility control methods include the use of synthetic chemical steroids and immunocontraceptives or surgical treatments, such as vasectomy and tubal ligation. Steroid treatments work like human birth control pills, while immunocontraceptives cause a deer's immune system to interfere with some phase of reproduction, such as fertilization.

While these methods have been used successfully in captive deer, none have yet proven effective in controlling populations of wild, free-ranging deer. A major difficulty with any birth control technique lies in treating enough deer. A high percentage of the females in a deer population, generally agreed to be well over 75%, must become unproductive to control population growth. If males were the focus of treatment an even higher percentage would need to be successfully treated. Methods requiring capture and handling of deer (surgery or implants) offer the least hope for practical field applications. Such efforts would be very costly and would be stressful on the animals.

Fertility control techniques that do not require handling deer offer the most hope for practical field application. Remote delivery of chemical agents through treated baits or injection by dart are two possible methods, and the use of plastic bullets impregnated with an immunocontraceptive is being explored. Contraceptive treatment of wild deer is often complicated by the need for multiple applications each year of desired infertility. Ongoing studies are working to develop a single-shot contraceptive agent that is effective for multiple years and is practical for application to free-ranging deer.

No contraceptive agents have been approved by the US Federal Drug Administration for non-research based use on wildlife populations. All chemical techniques, and steroids in particular, raise concerns about potential impacts on non-target species. The similarity of hormones within all mammals, including humans, presents a problem if non-target species consume the chemical directly or consume the flesh of a treated animal. For example, deer treated with contraceptives may not be suitable for consumption by hunters and their families.

Questions remain regarding potential behavioral and genetic impacts from fertility control. Until these questions and others are resolved, fertility control will remain experimental.

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 after beginning birth control efforts. Meanwhile, whatever conflicts triggered the desire to implement management will continue.

Costs of fertility control programs vary depending on the number of treatments required per year of infertility. Reducing the treatment frequency will reduce costs. Yet fertility programs are the most expensive option for deer population control due to the costs of manpower and materials and the level of effort needed to treat an adequate number of deer. Based on current knowledge, many wildlife professionals believe fertility control will only be practical for small, isolated populations.

Lethal Methods

Predator Introduction

Predators, with few exceptions, rarely control the numbers of the animals on which they prey. In fact, typically the opposite is true with the prey base determining 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. Coyotes also generate considerable concern by some residents. Larger predators would likely cause even greater anxiety.

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 stay or survive.

Parasite or Disease Introduction

The risks and uncertainties associated with parasite or disease introduction make it an impractical option for deer population control. Several parasites and diseases kill deer, but none, capable of significantly reducing the population, 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, retrieval and disposal of carcasses, and sanitizing the affected area afterward would also pose significant problems and expense. To purposely expose deer to the effects of a disease or parasite would be inhumane.

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

Poison

Currently there are no toxins, poisons or lethal baits registered for deer control. Quick-acting lethal chemicals are available, but there are no safe methods for delivering lethal dosages specifically and solely to free-ranging deer. The use of poisons carries potential risks to other wildlife and humans. This includes potential direct exposure to non-target animals as well as secondary exposure to animals, including humans, who may consume the flesh of poisoned deer. Clean up and disposal of carcasses would add to the expense of this approach.

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 captured and killed to control local deer populations. Capture methods and legal constraints would be the same as previously described for ***Capture and Relocation***.

Once caught, deer could be killed in a variety of ways including injection of lethal drugs, captive bolt or shooting. The costs would vary with the method used. Use of the meat by charitable organizations or others could enhance the acceptability of a capture and kill program for some people. However, use of drugs to capture or kill the deer would preclude human consumption of 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 strategic locations where a shooter could then kill the deer. Bait and shoot operations may be useful in suburban and urban areas where there is not enough undeveloped land for traditional hunting. This technique has been used successfully in several small areas of New York.

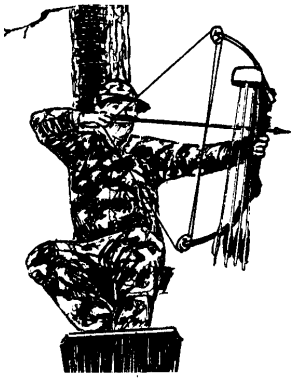
While some people believe that shooters designated for bait and shoot operations would be safer, more accurate and would routinely kill deer more quickly and humanely than hunters, these assumptions have not been tested. There are relatively few people specifically trained or experienced in this practice.

Taking deer in this manner may have the additional benefit, as does hunting, of instilling some heightened wariness in remaining deer. 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. However, wary deer may also be less susceptible to future culling efforts.

Similar to capture and kill programs, bait and shoot operations could provide a source of meat for local charitable organizations yet without concern of drug residue in the meat. Though bait and shoot operations cost more than traditional hunting (about $300 per deer killed), they are likely to be less costly than relocation, or capture and kill efforts. The implementation of a bait and shoot program in an area where traditional hunting could occur would be very controversial as it would deny citizens access to a renewable public resource.

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 people oppose hunting, and local laws sometimes prohibit hunting in urban, suburban or park areas. Some opposition reflects personal values, 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 controlled hunts can allay fears and further ensure public safety.

Controlled Hunting

The effectiveness and public acceptance of hunting as a deer management program can be increased through controlled hunts, particularly in areas where traditional hunting is impractical due to housing density, local laws, or restricted land access. 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.

DEC may be able to offer assistance to landowners desiring to implement controlled hunts. The DEC Deer Management Assistance Program (DMAP) offers landowners or communities the means to increase harvest of antlerless deer and can be very useful in controlled hunts.

DEC Perspective

As a state agency, the DEC is obligated to consider factors that may be overlooked by an individual or community. Some considerations are required by law and others are generated by broad resource, social or economic concerns. DEC wildlife staff have reviewed the issues and options discussed previously and have made recommendations on preferred options.

Management Criteria

The following factors were considered for each option prior to making 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

Damage Control Techniques are recommended to address site specific problems, whether or not population controls measure are considered. Fencing and repellents can offer effective site-specific relief, but are limited or impractical for addressing issues such as damage to natural vegetation and deer-vehicle collisions. The fact that problems may shift to unprotected sites must be recognized.

Feeding, large-scale habitat alteration, relocation to the wild or captive facilities, poisoning, and introduction of predators or diseases are not recommended solutions to overabundant deer populations for ecological, social or practical reasons.

If a decision is made to implement a Population Control Technique two basic options exist: fertility control and lethal removal. While fertility control offers the potential to control deer numbers, at present this method is experimental. DEC will permit *bona fide* research testing of this technique. However, it is likely that the applicability of fertility control will be limited to small, isolated deer populations.

The remaining candidate techniques are all forms of lethal 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. **Considering all the above criteria, the DEC's recommendations for dealing with overabundant deer in <u>urban and suburban areas</u> are:**

1. **controlled recreational hunting;**
2. **bait and shoot or capture and kill, with use of meat and hides;**
3. **bait and shoot or capture and kill, 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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Through Scientifically
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