



Department of
Environmental
Conservation

Deer Overabundance

Although deer play vital roles in the natural and cultural environment of New York and are highly valued for their beauty and grace as well as the utilitarian benefits they provide, the abundance of deer in many parts of the state is causing increasing problems, particularly in suburban and urban areas. This page and its sub-pages provide information on the origins and implications of this situation and various avenues for addressing these problems.

Why Are There So Many Deer?

After rampant deforestation and uncontrolled hunting wiped out over 95% of the country's deer in the 19th century¹³, management in the first half of the 20th century was aimed at increasing deer numbers. New York was highly successful in this effort, as were other states in the Northeast, and by mid-century wildlife managers across the country were recognizing that deer populations in many areas, including parts of New York, were outstripping their natural food supply^{11,19}. However, public awareness of the issues surrounding high-density populations has remained low. For the past twenty-five years, target population levels in New York have been set primarily through a public input process. Changes in those target levels have not adequately reflected deer impact on habitat, or, in some cases, kept pace with population growth.

In fully functional ecosystems, deer populations would be controlled by a combination of interacting factors, including food supply, predation, disease and weather. This doesn't mean that population density would be stable; it's normal for animal populations to fluctuate due to variable environmental conditions. High population densities, although they might occur in limited circumstances, would not be sustained across broad geographic areas, because mature forests don't provide enough suitable deer food to support such populations. However, fully functional forest ecosystems don't exist in New York. Even deer in large wild areas such as the Adirondacks are not living in an intact ecosystem, because wolves and mountain lions, historically their principal predators, have been eliminated. Bears, bobcats and coyotes do prey on deer, particularly fawns, but hunting by humans is currently the primary predatory force acting to control population levels (except in urban and suburban areas, where the majority of deer deaths are caused by collisions with vehicles).



Deer normally find the most to eat in edges, or transition zones between forest and more open habitat types, where there is an abundance of low woody and herbaceous vegetation. The current pattern of human land use is ideal for creating and sustaining high-density deer populations because open areas such as residential developments and agricultural fields are interspersed

Photo by Dick Thomas

with forested areas, providing plentiful edge habitat as well as a variety of nutritious crops and ornamental plantings that supplement the natural food available to deer. Local laws and landowner opinions have severely constrained hunting in many developed areas, and the resulting limited mortality combined with abundant food has allowed suburban and urban deer populations to reach extraordinarily high levels. Although better accessibility for hunters might have prevented such dramatic population growth, once populations reach high densities in developed areas it's very difficult to bring them down with recreational hunting in its traditional forms. Nor would the return of the state's full suite of natural predators be expected to significantly reduce deer populations in developed or agricultural areas, because wolves and mountain lions would avoid or not be tolerated in such areas.

What Is Wrong With Having So Many Deer?

The principal deer-related problems recognized by most people are those that directly affect human activities. The most frequently mentioned concerns include deer-vehicle collisions on roads, deer eating crops in agricultural areas and landscaping plants in residential areas, and the potential role of deer in the increase of tick-borne illnesses such as [Lyme disease](#). (link leaves DEC's website) Based on insurance claims, State Farm estimates that there are over 70,000 deer-vehicle collisions annually in New York (data provided by State Farm Insurance®) and that nationally the average property-damage cost per collision is \$3,305. Losses are not limited to property; although the [federal highway fatality database](#) (link leaves DEC's website) doesn't separate the statistics by species, in 2013 (the most recent year for which data are available) over 270 fatal crashes in the U.S. were caused by vehicles striking or attempting to avoid an animal, many of which were doubtless deer.

In 2002, New York farmers estimated their deer-related crop damages at \$59 million, and about one quarter of farmers indicated deer damage was a significant factor affecting the profits of their farms². With respect to Lyme disease, many parts of New York are considered high-risk areas for human infection, based on the density of infected ticks⁴. Reducing deer populations to very low levels can reduce tick densities and infection rates⁸ because deer are the primary food source for adult female ticks. However, less drastic deer population reductions may not lower Lyme disease risk^{6,10}. Small mammals such as rodents and shrews, not deer, are the tick hosts that pass on the Lyme-causing bacteria, and evidence from New York and other states suggests that densities of various predator species are more important than deer densities as determinants of Lyme disease prevalence, through their impacts on small mammal abundance¹².



Photo by Dick Thomas

There is also a growing awareness that deer are altering forests across the state, perhaps permanently. Just as livestock can overgraze a range and reduce it to a barren wasteland, deer can over-browse a forest. Because mature canopy trees aren't affected,

deer impacts on a forest may not be immediately obvious, but they are profound and long-lasting. Browsing by deer at high densities reduces diversity in the forest understory^{5,15}, enables invasive species to out-compete natives⁹, and prevents seedlings of many species from growing into the next generation of trees²², ultimately leading to fewer mature trees in a more open plant community with a different and less diverse species composition²⁴. In areas with long histories of high deer impacts, reducing deer population density or removing all deer may not be sufficient for plant diversity to recover^{15,17,23}, even as much as 20 years later. Some species are so thoroughly eliminated by deer that they may have to be planted if they are ever to be restored to such areas. Impacts on endemic species can be devastating. For example, evidence suggests that current deer population densities in eastern North America will result in the extinction of ginseng, a valuable medicinal herb, within the next century¹⁴.



*Rhinebeck, NY
Photo by Tom Rawinski*

The ecological changes wrought by deer also cascade through forest plant communities into wildlife communities, reducing the abundance and diversity of songbird species that use the intermediate levels of a forest³. Furthermore, high-density deer populations interfere with habitat management efforts. Because browsing by deer counteracts the regenerative effects of natural forest disturbances such as fire¹⁶, attempts to promote forest health through restoration of such

disturbances and to increase populations of wildlife species that depend on young forest stands may fail unless deer populations are reduced. Regenerative processes are impaired throughout much of New York, particularly for tree species that are economically valuable²⁰. Even in the Adirondacks, where deer densities are lower than in much of the rest of the state, both direct and indirect impacts of deer browsing must be counteracted for regeneration of a diverse forest to occur^{1,18}. Ecosystem impacts may be magnified in urban and suburban parks and natural areas, which provide important habitat for migrating birds and other wildlife but are often subjected to the highest deer densities.

High-density populations can also harm the deer themselves by increasing competition for food and transmission of diseases and parasites. Deer in lower-density populations tend to be in better physical condition⁷, all else being equal, because there is more food available to them. Because they don't come in contact with as many other deer, they are less likely to be infected with parasites or diseases²¹.

What Is The Right Density Of Deer?

The density of deer that is desirable in a given area is one that maximizes the beneficial effects of deer while minimizing their negative impacts. Finding that balance requires understanding local deer-related impacts, both ecological and social, and evaluating the costs and benefits of changes in deer density. The balance point will vary from place to place according to differences in ecological sensitivity and productivity, as well as social values and goals.

What Can Be Done About The Overabundance Of Deer?

Deer population levels in most areas are managed primarily through regulated recreational hunting. The number of Deer Management Permits (DMPs), also known as antlerless-deer tags, issued to hunters by DEC each year is determined by current and target population levels. In some parts of the state there has been virtually unlimited availability of DMPs in recent years, but even so, the desired harvest levels are not being achieved. DEC is working with stakeholders to find ways to increase the effectiveness of population management strategies in these areas.

In addition, landowners and municipalities can pursue more intensive deer population reduction on their land or within their boundaries through two special permit programs:

- The [Deer Management Assistance Program \(DMAP\)](#) provides antlerless deer harvest tags that the landowner or municipality can distribute to licensed hunters for use on specific parcels of land. The hunters can use the tags on those properties during deer hunting seasons in addition to the regular tags they receive with their licenses.
- [Deer Damage Permits](#) allow taking of deer outside of hunting seasons under certain conditions, and may allow the use of specialized techniques to increase success. These permits are issued in situations where adequate population control and damage reduction cannot be achieved through hunting, even with DMAP.

The [Community Deer Management](#) page provides additional information and resources for municipalities and their residents who want to explore options for managing deer-related impacts.

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More about Deer Overabundance:

[Deer Management Assistance Program](#) - DMAP enables biologists to help landowners and resource managers implement site-specific deer management on their lands.

[Deer Damage Permits](#) - Explains eligibility for and requirements of Deer Damage Permits.

[Community Deer Management](#) - Deer management planning guidance for municipalities and their residents.