



U.S. Department of the Interior
National Park Service
Natural Resource Information Division



Fact Sheet

Management of White-tailed Deer in National Parks

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The deer (*Odocoileus* spp.) may be one of the most valued and the most viewed mammalian wildlife species in North America. Millions of outdoor visitors savor the sights of deer and try to capture them on film. State fish and game agencies regard deer as a renewable, harvestable resource for viewing and hunting. Sport hunters annually bag about 1 million mule deer (*O. hemionus*) and 2 million white-tailed deer (*O. virginianus*). However, deer may cause profound damage by browsing on garden vegetables, flowers, ornamental bushes, and crops. Collisions of automobiles with deer in some areas of the country have increased to alarming levels. In some national parks, deer are a natural resource that may have to be managed. About 50 units in the National Park System¹ in the eastern United States and in the Midwest have identified possible or potential conflicts between the management goals and objectives of parks and white-tailed deer.

¹National parks and other entities of the National Park Service such as national monuments, national rivers, wild and scenic riverways, national scenic trails, and others are called *units* and collectively constitute the *National Park System*.

Density and Distribution of White-tailed Deer

An estimated 23-40 million white-tailed deer inhabited North America before the arrival of Europeans. An estimated 14-20 millions are believed to inhabit the United States today. The species occurs throughout the conterminous United States except in some parts of the Southwest. It is the only species of *Odocoileus* in the North Atlantic, Mid-Atlantic, National Capitol, and Southeast regions of the National Park Service.

Since the late 1950s, densities of white-tailed deer in many areas of the eastern United States have increased to previously unattained levels and the distribution across the former range has changed drastically. The causes of the changes are various. For example, continuing fragmentation of forested lands into agricultural, suburban, and other types of anthropogenic lands creates favorable habitats with year-round reliable food sources. This increase in food supply has been accompanied by a decrease in historical controls of deer populations. Animals like wolves (*Canis* spp.), coyotes (*C. latrans*), mountain lions (*Felis concolor*), and bobcats (*Lynx rufus*) that prey on deer usually do not survive urbanization and have been extirpated in many areas. Restrictions on hunting

seasons, bag limits, and available lands for public hunting have also been cited as factors.

Where white-tailed deer are hunted in the eastern United States, densities range from 2 to 15 animals/km². In the National Park System, densities are about 14/km² in Valley Forge National Historic Site, 25/km² on Fire Island National Seashore, 43/km² in Cades Cove in Great Smoky Mountains National Park, 46/km² in Saratoga National Historical Park, 65/km² in Morristown National Historical Park, and 68/km² in Gettysburg National Military Park.

Damages from High Densities of Deer in National Park System Units

The various effects from high densities of deer in National Park System units may be excessive browsing on vegetation that causes the destabilization of ecosystems and prevents regeneration of new saplings in the forest understory, injuries of park visitors from contact with deer that are perceived as tame, collisions of motor vehicles with deer, and damage of crops and ornamental shrubs and flowers in historical parks. Such effects often extend into adjacent

extend into adjacent areas of units and create conflicts between the National Park System and its neighbors.

Mandates and Policies of National Park System Units

The policies and objectives of National Park System units are based on the National Park Service Organic Act (16 U.S.C. 1 et seq. [1988], Aug. 25, 1916, ch. 408, 39 Stat. 535) and the legislation that established the various units. Although the goals and objectives of parks are developed according to management zones (i.e., natural, cultural, developed, and special use zones), they remain consistent with the prevailing policy for natural resource management, namely to manage the natural resources of the National Park System to maintain, rehabilitate, and perpetuate their inherent integrities. In natural zones, natural resources are preserved and managed with concern for fundamental ecological processes as well as for individual species and features. In cultural zones, a scene that represents the historical event or period for which the unit was established is managed where compatible to support the goals for natural zones. The preservation of either zone may require management of deer.

Management

Animals in a population may be removed only :

- when hunting and trapping are permitted by law
- fishing is not specifically prohibited
- control of specific animal populations is required for the maintenance of ecosystems in parks
- removal or control of animals is necessary for human safety and health or for the protection of property or landscaped areas
- removal is part of research by the National Park Service described in an approved resource management plan or is part of research by others

who were issued an appropriate collection permit

- removal will restore native populations in other parks or areas of cooperating entities without diminishing the viability of the populations from which the animals are taken.

Public Involvement

In accordance with the policies of the National Park Service, implementation of population control must not only be based on sound science and compliance with other federal and state laws but must be preceded by solicitation of reviews and comments by the public.



Current Management Alternatives under the National Park Service

Cooperative management is done in partnerships with affected state or county parks, state forests, state game management agencies, private landowners, county and local governments, and other federal land management agencies. For example, several federal and state agencies cooperated to manage the grizzly bear (*Ursus arctos*) in the greater Yellowstone ecosystem. Cooperative

management may be with various techniques.

Predator Restoration as implied is the restoration of native predators--usually in large natural areas--of white-tailed deer to effect population control. The predator-prey relations are extremely complex and the extent of control of the deer population is therefore not the same everywhere. The restoration of predators of deer in small parks or in close proximity to human populations or livestock may not be feasible.

Live Removal and Relocation for the reduction of large populations are usually not desirable because of the high cost, lack of acceptable release sites, and high mortality of the relocated animals.

Removal by Public Hunting can be done only in units where it is specifically authorized by the U. S. Congress. Only in these few units may hunting by the public be used to control the density of deer.

Direct Reduction by Shooting by National Park Service Personnel can be done under provisions of the National Park Service Organic Act and the National Park Service Management policies. It is the least desirable alternative.

Fertility Control (Contraception) reduces birthrates but does not reduce the sizes of existing populations. It must therefore be implemented before the populations pass established acceptable levels. If a population reaches an excessive size, fertility control may be implemented but must be accompanied by a reduction of the population size by other means. Moreover, contraception in deer is still experimental and research must provide information about the pharmacological effects of long-term exposure to contraceptives, the effectiveness of various contraceptives, administration techniques, secondary effects on the treated animals, and the safety of

humans and animals that may consume treated deer.

Fencing may be used to protect threatened and endangered plants from browsing by deer, to prevent deer from crossing roadways, and to minimize the effects of deer on woodlots, agricultural areas, and developed areas. Fencing for the mitigation of harm from deer is limited to small areas because fences can prevent desired migration or dispersal of other animal species. Furthermore, the construction of fences is labor intensive and expensive, and fences may be an unacceptable intrusion into the cultural scenes of some parks.

Landscape-Agriculture-Timber

Management can be designed to create less than favorable habitats for deer with unpalatable plant species, wide open spaces, or severely thinned forest habitats. Such management may however be too costly or conflict with the mandated objectives of a park or overall management of adjacent areas.

Repellents are compounds or substances that are sprayed on or attached to vegetation to repel browsing by species such as deer. No single repellent is suitable for the wide range of plants and conditions. Research revealed that the efficacy of repellents is low and that repellents at best are an interim solution under limited circumstances.

Research

Current research on white-tailed deer in the National Park Service is primarily into the role and possible effects of the animals on naturally functioning ecosystems and the effects of the animals on historical and cultural scenes. More than 20 site-specific studies of white-tailed deer were conducted in the past 10 years. Other research has been into the interrelations of deer and vegetation, population densities, responses of plant species to browsing by deer, the effects of deer on threatened and endangered plants and animals, and the deer as reservoirs of diseases such as Lyme disease.

For the coordination of research and management of white-tailed deer, the National Park Service established an interregional white-tailed deer team. The team assists parks with developing objectives, monitoring of deer, and criteria for judging conflicts.

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