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## Cities and the Environment (CATE)

Volume 13

Issue 1 *The Science and Practice of Managing  
Forests in Cities*

Article 16

2020

### Use of Vegetation Monitoring and Professional Sharpshooting in White-Tailed Deer (*Odocoileus virginianus*) Management at Eagle Creek Park in Indianapolis

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#### Recommended Citation

Howard, Brenda S.; Goehl, Spencer A.; Jenkins, Michael A.; Miller, Donald R.; and Brinkman, Jacob L. (2020) "Use of Vegetation Monitoring and Professional Sharpshooting in White-Tailed Deer (*Odocoileus virginianus*) Management at Eagle Creek Park in Indianapolis," *Cities and the Environment (CATE)*: Vol. 13: Iss. 1, Article 16.

DOI: 10.15365/cate.2020.130116

Available at: <https://digitalcommons.lmu.edu/cate/vol13/iss1/16>

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## Use of Vegetation Monitoring and Professional Sharpshooting in White-Tailed Deer (*Odocoileus virginianus*) Management at Eagle Creek Park in Indianapolis

High white-tailed deer abundance at Eagle Creek Park (ECP) in Indianapolis necessitated active management to improve park habitat conditions. Significant deer impacts on local natural areas were first noted in the late 1990's. Multiple years of deer browse monitoring, beginning in 2003, documented greatly impacted vegetation with heavy to severe browse damage in the park. After an initial managed hunt in 2014, population reductions have been accomplished exclusively at night by professional sharpshooters. Positive results are being evidenced through increasing pounds of venison per deer harvested and significant recovery of impacted vegetation communities.

### Keywords

urban forest management, White-tailed deer

## **INTRODUCTION**

High white-tailed deer abundance at Eagle Creek Park (ECP) in Indianapolis necessitated active management to improve park habitat conditions. Significant deer impacts on local natural areas were first noted in the late 1990's. Multiple years of deer browse monitoring, beginning in 2003, documented greatly impacted vegetation with heavy to severe browse damage in the park. After an initial managed hunt in 2014, population reductions have been accomplished exclusively at night by professional sharpshooters. Positive results are being evidenced through increasing pounds of venison per deer harvested and significant recovery of impacted vegetation communities.

## **CONTEXT**

For two decades, ECP experienced an overabundance of white-tailed deer because of a lack of hunting or natural predators and limited dispersal opportunities due to bordering interstate highways and housing developments. Higher than average deer-vehicle accidents occurred in the vicinity and a decrease in the overall size and health of the deer was observed. The forest understory had become sparse, strong browse lines developed, tree regeneration was impacted, and there was a marked increase in invasive plant species not eaten by deer. Plantings of native trees, shrubs and wildflowers were decimated, and repellents proved ineffective thereby creating the need for extensive fencing. Monitoring studies, conducted between 2003 and 2013, showed heavy to severe browse damage. Therefore, it was determined proactive management of the deer population was needed.

## **GOALS**

The goal of the ECP deer management program is to establish and maintain an abundance of white-tailed deer that allows for a sustainable relationship between biological diversity and habitat structure through comprehensive research, monitoring, education, and effective management. Utilizing nighttime sharpshooting, the first goal was to rapidly reduce deer overabundance to allow adequate regeneration and growth of vegetation to benefit the park's overall flora and fauna. Additional goals are to meet social carrying capacity, ensure the effectiveness of deer herd management, and use evaluations to formulate future management plans.

## **APPROACH USED**

Observations of strong browse lines, informal deer counts, and general poor health of deer raised concerns about the overabundance of deer within ECP. Indiana Department of Natural Resources (IDNR) botanists noted significant deer damage in 2001 and a failed attempt was made to count the deer using thermal imaging from a helicopter in early 2004. Indianapolis Land Stewardship determined more analytical information was required.



Image 1. Deer browse lines at Eagle Creek Park, Spring Pond Nature Preserve. Photo credit: Michael A. Jenkins.

Monitoring studies of deer effects on vegetation, initiated by Dr. George Parker 2003-2007 and repeated by Dr. Michael Jenkins in 2013, supported field observations with scientific data. Using a protocol published in a peer-reviewed journal, analyses of these data showed reduced height of jack-in-the-pulpit and other indicator species that correlated to a rating of heavy-severe browse damage. Woody browse monitoring surveys initiated in 2013 showed heavy browse of stems and a lack of successful woody regeneration.



Image 2. Chronically browsed Ohio buckeye at Eagle Creek Park, Spring Pond Nature Preserve. Photo credit: Michael A. Jenkins.

After extensive discussion, reduction through nighttime, professional sharpshooting was chosen as the safe, effective, and humane option to quickly reduce deer overabundance while causing the least interference with daytime park operations. Variance to the city ordinance regarding the discharge of firearms in the park was obtained and a Special Purpose Deer Control Permit was also required by the state.

A public information meeting on the deer problem and the solution to be implemented was held in the fall of 2014 and attended by over 200 people. Experts answered questions after the formal presentation and the public also provided written comments both for and against the proposed solution. Despite overwhelming public support, a small opposition attempted to stop the reduction with a lawsuit. The case was dismissed after an initial court hearing and a hearing

by the IDNR. The case and hearing was decided in favor of the City/Indy Parks, citing research that indicated management action was warranted.

The first reduction, a managed hunt in November 2014, removed 148 deer. Sharpshooters removed an additional 101 deer in January 2015. To date, 585 deer have been removed and more than 18,000 pounds of venison have been donated to the local food bank following a total of 5 reduction efforts over 4 seasons. Deer density has decreased to a degree it may be possible to continue with bi-yearly reductions instead of yearly. Careful monitoring will help determine any changes needed to the reduction frequency.

## **RESOURCES**

Funding has been a joint effort between the Indianapolis Department of Parks and Recreation and Department of Public Works. Partners have included Indianapolis Park Rangers, United States Department of Agriculture Animal and Plant Health Inspection Service Wildlife Services, IDNR Division of Nature Preserves, Wounded Warrior Outdoors, Gleaners Food Bank, Hoosiers Feeding the Hungry, IDNR Conservation Officers, local volunteers and others.

Deer reductions at Indiana state parks have served as a valuable resource to guide monitoring, assessment, and management planning at ECP. State park deer reductions began in 1993 and their assessments have indicated significant recovery of vegetation communities. The success of the state park program, in conjunction with ECP's browse studies, provided empirical data to the public and City officials regarding the necessity for deer reduction efforts.

## **KEY RESULTS**

- 27.5 lbs. of venison processed per deer initially vs. 40.5 lbs. venison per deer for 2019 reduction.
- Habitat recovery can begin once a harvest per square mile is between 12-16 deer. The 2019 reduction effort yielded 16-19 deer per square mile.
- Deer browse studies report sustained recovery of vegetation communities. Observed recovery included increased height and flowering of indicator species, increased abundance of woody reproduction, and decreased browse rates on woody seedlings and saplings.
- Two species on the statewide tach list, goldenseal and ginseng, increased in abundance and have been observed at new locations. Browse-sensitive herbs, such as trillium species, have also increased in abundance.
- Significant browse damage continues to hamper restoration efforts in reforestation plots.

## **ADDITIONAL RESOURCES**

Links to deer management at Eagle Creek Park, deer browse studies, general deer management, park floral inventories and municipal code: <https://www.indy.gov/activity/deer-management-program>

2018 State Park Deer Reduction Results (25 years of successful deer reductions in Indiana State Parks): <https://www.in.gov/dnr/parklake/files/sp-DeerRMRR.pdf>