

## **Sterilization, Hunting and Culling: Combining Management Approaches for Mitigating Suburban Deer Impacts**

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**ABSTRACT:** Based on decades of growing deer impacts on local biodiversity, agricultural damage, and deer-vehicle collisions, in 2007 we implemented an increasingly aggressive suburban deer research and management program on Cornell University lands in Tompkins County, New York. We initially divided Cornell lands into a suburban core campus area (1,100 acres [4.5 km<sup>2</sup>]) and adjacent outlying areas that contain lands where deer hunting was permitted (~4,000 acres [16.2 km<sup>2</sup>]). We attempted to reduce deer numbers by surgically sterilizing deer in the core campus zone and increasing harvest of female deer in the hunting zone through an Earn-a-Buck program. During the first 6 years of this study, project staff spayed 96 female deer (>90% of all deer on campus); 69 adult does were marked with radio transmitters to monitor movements and survival. From 2008 to 2013, hunters harvested >600 deer (69–165 each hunting season). By winter 2013, we stabilized the campus deer herd to approximately 100 animals (57 deer/mi<sup>2</sup> [22 deer/km<sup>2</sup>]), a density much higher than project goals (14 deer/mi<sup>2</sup>). Although we reduced doe and fawn numbers by approximately 38% and 79%, respectively, this decrease was offset by an increase in bucks that appeared on camera during our population study. In 2014, we supplemented efforts using deer damage permits (DDP) with archery sharpshooting over bait, and collapsible Clover traps with euthanasia by penetrating captive bolt. In concert with sterilization and hunting, the use of DDPs and deer capture resulted in a herd reduction of approximately 45% in just one year on core campus. Based on our experiences, we discontinued use of surgical sterilization, and modified hunting on Cornell University lands in 2014. Future impact mitigation efforts will focus on lethal deer control in huntable areas, and DDPs in areas closed to hunting.

**Key Words:** clover traps, culling, hunting, sterilization, suburban, white-tailed deer

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