



MAGAZINE : WINTER 2023 : FEATURE

The Bucks Stop Here

Inside Staten Island's unorthodox deer-control effort.

Anthony DeNicola, of White Buffalo Inc., preps a deer for sterilization. Photo by Vincent Tullo.

TED WILLIAMS



EVERY YEAR THE CONTINENT'S most dangerous wild animal kills about 200 Americans, injures some 29,000 others, causes roughly one billion dollars in vehicle damage, spreads debilitating diseases to tens of thousands of humans and dogs, destroys gardens, wildflowers, and herbs, threatens forest sustainability, and damages native ecosystems.

That animal is the white-tailed deer. It is grossly overpopulated in the eastern half of the nation because its major predators — wolves and cougars — have been eliminated and because suburban landscapes have created ideal deer habitat. In rural areas hunting provides only limited control; in heavily settled areas it provides none.

Ecosystem damage usually starts at about 12 deer per square mile. On New York City's Staten Island there were an estimated *92 deer per square mile* in 2017. That year there was an average of 45 deer-vehicle collisions each month from October through December (the worst time of year because it's mating season and bucks are chasing does). Gardens and ornamental shrubs were being ravaged. Lyme disease, spread by blacklegged ticks (AKA: "deer ticks"), was rampant. Something had to be done.

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As then-Mayor Bill de Blasio correctly noted, Staten Island's dense human population of half a million rendered a controlled hunt by the public dangerous and therefore out of the question. Sharpshooting by trained wildlife professionals using night-vision equipment, bait, low-caliber rifles, or crossbows could have provided a safe alternative. But the city wouldn't make exceptions to bans on firearm discharge other than by police or on outdoor archery less than 500 feet from occupied buildings. DeNicola explains that this 500-foot archery regulation rendered crossbows ineffective.

There are now an estimated 30 million white-tailed deer in the US, up from an estimated 500,000 in 1900.

But even if officials had advocated culling, it might have been politically impossible given the strong public opposition to killing any deer for any reason.

All this left only one option — sterilization.

While sterilization has been used to control overabundant deer across the US, often in combination with culling, females have always been targeted. On Staten Island, however, wildlife managers decided to try something that had never been done — surgically vasectomizing bucks.

TO UNDERSTAND THE DANGER 92 deer per square mile posed to Staten Island's native ecosystems, consider the 10-year study by the US Forest Service chronicling the effects of white-tailed deer on songbirds. The researchers found that vegetation damage caused by deer densities of just 20 per square mile eradicated least flycatchers, pewees, cerulean warblers, indigo buntings, and yellow-billed cuckoos. Phoebes and even robins were lost at 38 deer per square mile

Ground nesters like wild turkeys, ruffed grouse, woodcock, ovenbirds, Chuck-will's-widows, and whippoorwills can nest successfully in ferns, which deer avoid. But these birds require thick cover, so they suffer heavy predation when deer raze understories.

Staten Island's deer crisis is a microcosm of what has happened in most of the eastern US. By the late nineteenth-century market hunting and forest removal for agriculture had drastically reduced white-tailed deer. In 1878, for example, Vermont attempted to reestablish the species by importing 17 white-tails from New York State. Then, when eastern farmers began moving to the more fertile Midwest, forests recovered and, with them, deer.



Deer can start causing ecosystem damage when their populations grow to about 12 deer per square mile. On Staten Island there were an estimated 92 deer per square mile in 2017. Photo by NYC Parks / Daniel Avila.



Typically, when sterilization is used to control deer populations, does are the target. But under the Staten Island program, experts seek out the bucks, at a cost of about \$2,600 per procedure. Photo by Vincent Tullo.

Elimination of wolves and cougars, a ban on market hunting, and strict sport-hunting regulations sped deer recovery. The population increase in Vermont was typical — from barely more than 17 deer in 1878 to about 250,000 in 1963. Over the next few decades white-tailed deer in many urban, suburban and even rural settings morphed from resource to pest. There are now an estimated 30 million white-tailed deer in the US, up from an estimated 500,000 in 1900.

Deer had been extirpated from Staten Island. They reportedly started showing up again sometime in the late 1980s or early 1990s, probably having swum from New Jersey.

Staten Island has extensive parkland, but the rest is built out. In the parkland, and even in some residential areas, deer can survive, though generally in poor condition due to habitat they've degraded by their own browsing. Most of the parkland is carpeted with lush grass, beautiful except to those who can identify it as nonnative Japanese stiltgrass. The grass dominates the landscape because deer won't eat it. That's one reason they chow down on lawns, gardens, and ornamental shrubs.

In 2008, the New York Department of Environmental Conservation estimated Staten Island's deer population at 24. By 2017, the estimate was between 1,918 and 2,188 — a 9,000 percent increase. There was initial speculation that this resulted from more deer swimming from New Jersey, but it's now clear that it was almost entirely a function of deer fecundity in a predator-free, hunter-free environment.

In 2016, with deer-vehicle collisions at an all-time high, New York City adopted an "integrated, non-lethal, site-specific management plan" to deal with the island's exploding deer population. The plan included population control and monitoring, traffic safety measures, and public education.

For population control, the city retained White Buffalo Inc., a nonprofit with two decades of experience managing overabundant deer. The company was conceived and co-founded in 1995 by wildlife biologist Dr. Anthony DeNicola because, as he told me, he loves wild places and wild things and was horrified at the havoc overpopulated hoofed mammals — especially white-tailed deer — were wreaking on native plants and animals.

If White Buffalo fails on Staten Island, it will be a first. The company has a perfect record of saving native wildlife all over the world — everything from restoring eight species of extirpated seabirds by eliminating nonnative macaque monkeys from Desecheo National Wildlife Refuge in the Caribbean, to saving sea turtle nests by eliminating feral pigs, to protecting (in some cases restoring) 65 native mammal species and 470 native bird species by eliminating nonnative axis and fallow deer from Point Reyes National Seashore in California.

Where the human population is dense and/or where firearm discharge has been banned, the company uses crossbows instead of rifles. With both methods, DeNicola reports that all deer die instantly. He also notes that because browse is limited and habitat marginal, many are sick and/or malnourished. Where practical, and where deer are in reasonable shape, venison is distributed to the needy.

White Buffalo's work doesn't always win it friends, though. For its culling of nuisance deer, it has been threatened, sabotaged, sued, and pilloried by both hunters and animal-rights activists. The former believe they can do the job themselves. The latter believe that culling is cruel.

The company notes on its website that because "lethal deer management strategies have become impractical for legal, safety, and ethical reasons" in a growing number of communities, it has "fostered an interest in alternatives, including contraception and surgical sterilization."



New York City health staff performing tick drags at surveillance sites on Staten Island. Photo courtesy of NYC Health Office of Vector Surveillance and Control.

“It is nearly always more efficient to use firearms,” says DeNicola, “but legal and social realities (lawsuits, resistance to land access, field sabotage, etc.) dictate otherwise in many developed areas, with New York City being the extreme end of the spectrum.”

STERILIZATION OF FEMALE deer wasn’t feasible on Staten Island. The island’s 60-square-mile tangled mix of concrete, public parkland, and private land holdings made capturing deer so difficult that DeNicola decided to target males instead. Bucks are fewer in number than does, he explains, and does tend to travel in groups, so they’d watch others fall and learn to avoid tranquilizer dart guns.

When DeNicola took on the job in 2016 he described it as “a high-risk, low-probability outcome.” Sterilization of male deer via surgical vasectomy had never been attempted, and it would be hideously expensive, starting at about \$2,600 per animal (for females it’s around \$1,000). But this was a price the city was willing to pay.

The hook-and-bullet press and the wildlife-management establishment were nearly unanimous in dismissing the project as ill-conceived and infeasible. For example, Al Cambronne, whom Desi Lydic of *The Daily Show* called a “deer expert” (he’s an outdoor writer), condemned the project as “nuts” in 2018. “For this to work,” he told Lydic, “we need to capture nearly all those bucks, and if only say 20 percent remain, we’ll still have lots of fawns next spring. And one buck can happily breed many does. Bucks are going to be coming from New Jersey, and we’ll be right back where we started.”

In June 2022, Nick Pinizzotto, president and CEO of the National Deer Association, which is dedicated to “maintaining healthy deer habitat and hunting,” told me this: “We totally oppose sterilization. It doesn’t solve anything. You still have deer on the landscape causing problems.”

The same week I got the following comment from Dr. Paul Curtis, a wildlife specialist at Cornell University’s Center for Conservation Social Sciences: “White Buffalo is very professional. I’ve known Tony DeNicola for 30 years; and White Buffalo’s president, Dr. Jay Boulanger, is my former PhD student. I don’t think sterilizing bucks is the way to go. I think the data today have shown that. The total deer population based on his camera survey estimates is down from about 90 per square mile to about 70 per square

mile. That’s not going to have any effect on tick-borne diseases. Vehicle collision rates are only reduced slightly at those densities. I would have gone with sterilization of females. I told Tony that at the beginning.”

I asked Dr. Curtis for an example of what he considers a well-conceived, well-executed deer-reduction project. “The most successful one I’m aware of is right here in our backyard in Cayuga Heights [central New York State],” he replied.

This was also a White Buffalo operation and also fraught with enormous challenges requiring all DeNicola’s problem-solving skills. Deer density, at 125 per square mile, was even worse than on Staten Island, Lyme disease at least as prevalent. Deer were denuding wild and residential vegetation.

Because there weren’t enough shooting sites for rifles or crossbows, White Buffalo sterilized female deer beginning in 2012. In 2014 the state reduced the legal crossbow discharge distance from occupied buildings from 500 feet to 250 feet, opening seven sites for crossbow culling.

Culling progress was impressive until 2017, when the state prohibited placement of bait within 300 feet of roads, leaving White Buffalo but one option — darting, tranquilizing, and euthanizing by lethal injection. The needy didn’t get this venison. The chemicals rendered the animals hazardous waste, so they had to be landfilled.

“When we explained that we were sterilizing deer, they loved it and brought us bagels and coffee.”

Opposition from animal-rights activists was intense. Some sued the village, alleging that they would “suffer emotional distress and psychological injury upon viewing, hearing, or being informed of, the capture and killing of deer.” They eventually lost the suit.

By 2021, White Buffalo had reduced the deer population by 96 percent, bringing density down to a healthy, natural 10 animals per square mile. Among the many beneficiaries were surviving deer.

THERE WOULD BE LESS DOUBT about the Staten Island project if doubters kept up with it or at least checked out White Buffalo’s international record. Cambronne, for example, assumed that White Buffalo would fail to sterilize 20 percent of the male deer and that there’d be a major influx from New Jersey. Neither has happened. So far, 2,184 bucks have been vasectomized. And a three-week capture survey in September 2022 turned up no unsterilized adults. That doesn’t prove there are none left, but unsterilized bucks had been captured in all previous surveys.

White Buffalo data indicate that about 50 fawns will be born next spring — down from more than 1,000 in 2016. Influx of deer from New Jersey hasn’t been a problem and is unlikely to become one. “The New Jersey shore is heavily industrialized, so the source population is limited,” says DeNicola. “Also, the Arthur Kill [a tidal strait] is a substantive barrier that limits regular crossing.”

While Pinizzotto has it right that “you still have deer on the landscape causing problems,” he neglects the fact that those problems will eventually vanish because, like all living things, sterilized deer eventually die. And despite Dr. Curtis’s impressive credentials, no one other than the White Buffalo team knows how to approach surgical sterilization of bucks because no one else has attempted it.

White Buffalo kicked off the project in 2016 with extensive habitat surveys. It checked browse patterns and scat piles, tracked GPS-collared deer, and festooned the island with remote cameras.



Five years on, fawn birth numbers have dropped, and the island’s deer population is down by 21 percent, but the true test will be in the numbers of new births over the next few years. Photo by Martin J. R. Feehan.

Vasectomies began the same year. In residential areas deer were so conditioned to humans that the team could tranquilize them by firing dart guns from truck windows. But in the parks there are few roads, so the team had to set up more than 200 blinds and bait stations. Some bucks were darted where they stood. Others were captured with baited “Clover traps” — pipe-framework boxes covered with netting.

When traps were remotely triggered, staff rushed in to limit stress to deer, then hand-injected them with immobilization drugs. With both capture methods ointment was applied to prevent eye desiccation, and masks placed over eyes. Bucks were premedicated with long-acting antibiotic, anesthetized, then vasectomized via electrocautery. Incisions were closed with absorbable sutures or staples. All vasectomized deer were fitted with ear tags for individual identification.

When the team entered residential areas with dart guns they were frequently confronted by homeowners who loudly demanded to know what the hell they were doing. “They sounded like Tony Soprano,” recalls DeNicola. “When we explained that we were sterilizing deer, they loved it and brought us bagels and coffee.”

THIS PAST NOVEMBER, I asked Cambronne if he’d changed any of his thinking since his commentary on *The Daily Show* four years ago. He said the September capture survey was encouraging but that the real test would be the number of fawns born in the next two years. I asked Dr. Curtis the same question. “I would be surprised if they sterilized all the bucks and there has been no immigration,” he replied. “Until the negative deer impacts have been addressed, I’m not certain this project can be classified as a success.”

But five years of lower births rates have already had a positive impact. For example, the prevalence of Lyme disease, the most common of all tick-borne diseases, is down 60 percent. While total elimination of tick-borne disease is unlikely, the reduction in infections will be stunning once the sterilized deer die. And the decrease in deer-vehicle collision rates has hardly been “slight.” During the October-through-December mating season it dropped from an average of 45 per month in 2017 to an average of seven per month in 2021.

In January the Staten Island project will enter its eighth year. Even with most of the 2,184 sterilized bucks still on the landscape, the New York City Department of Parks and Recreation reports a 21-percent decrease in the deer population. While White Buffalo still needs to sterilize about 30 male fawns born last spring and the male fawns that will be born in the spring of 2023, all indications are that the island’s deer population will be cut to a natural and healthy level.

Has all the media attention about tick-borne diseases, the economic and ecological damage caused by deer overabundance, the success of past projects, and the apparent success of the Staten Island project changed public thinking about White Buffalo’s work? I put the question to DeNicola.



“There’s literally no change,” he said. “I can go into a new community, and it’s like hitting replay for the last 20 years. Exact same dynamic. Hunters aren’t happy with what we do. Animal-rights people aren’t happy with what we do. It astounds me. It’s the same exercise, the same protracted process every time. Either a community has leadership that drives the decision or the community flounders. When we finish a project, attitudes are the same as well — people are always astonished by the benefits.”

Ted Williams

Ted Williams writes exclusively about fish and wildlife for national publications. He is a former information officer for the Massachusetts Division of Fisheries and Wildlife.

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