

**Michigan Department of Natural Resources
Final Report on Sterilization of Game in Michigan
2018 Public Act 390, Section 40114(9)**

Executive Summary

One permit has been issued for the sterilization of a wildlife species in Michigan since 2017. The City of Ann Arbor (City) contracted with White Buffalo, Inc. (WBI), a nationally recognized expert in wildlife-conflict abatement and urban deer management, to examine the effectiveness of surgical sterilization and sharpshooting as a combined approach to control urban deer populations. The Department of Natural Resources (DNR) issued a permit to WBI for this 5-year study where field work and data collection were anticipated to occur through 2021. However, the COVID-19 pandemic limited activity in 2021 resulting in four years of field work and data collection. The initial permit authorized up to 80 female white-tailed deer to be sterilized over the course of the research project. This number was not amended in future years, and no more than 80 deer could have been sterilized throughout the duration of the project. The number of deer authorized for sharpshooting varied year to year, from 100 to 250 between 2017 and 2020. A recent publication by WBI (DeNicola and DeNicola 2021) included results from Ann Arbor and other communities throughout North America that recently conducted sterilization procedures on deer. Ann Arbor experienced a 47% reduction in deer density after four years, while other communities experienced a decline in deer density ranging between 29%-56% during this same timeframe. Some communities, including Ann Arbor, incorporated lethal management (sharpshooting or archery hunting) to complement the sterilization program. The publication indicates an average cost of \$1,185 for each deer sterilized across all communities. Given the cost and experience required for application, the activity of sterilization is not meant to be a widespread population management tool for game species. It is unknown if future sterilization efforts may prove useful for controlling invasive species, such as wild pigs (Pepin et al 2017). The DNR recommends that no legislation occur prohibiting this activity from use in the future, and any request for this activity to be submitted to the DNR for evaluation as a research project or highly localized management tool.

Overview

In November 2016, the Ann Arbor City Council approved Ann Arbor's deer management program, consisting of three primary components: 1) sterilization of deer by removing ovaries and returning deer to where they were captured, 2) lethal removal by sharpshooting on public lands and private lands deemed safe and with appropriate consent, and 3) providing educational materials to the community on how to live with deer, evaluating the city's fencing ordinance, etc.

The City contracted with WBI, a 501(c)(3) organization dedicated to the conservation of native species and ecosystems and with extensive experience in a variety of deer management techniques. The proposal adopted by the City was to incorporate both lethal and non-lethal methods simultaneously that were safe, supported by residents, and resulted in reduced impacts of deer on vegetation and vehicle collisions. The novel approach, incorporating ovariectomies, which prevent continued estrous cycles that are typically seen with alternative sterilization techniques (ex. tubal ligation), combined with sharpshooting activities, had not been experimentally examined previously.

Activities began in January 2017 under scrutiny from residents, conservation organizations, and the media. That year, 96 deer were culled between January 30 and February 6, with 54 does sterilized from January 22-29. Public Act 390 of 2018 was passed prohibiting the Michigan DNR from issuing deer sterilization permits until 2022. This act eliminated the possibility of additional non-lethal management in Ann Arbor, as the existing permit only authorized the sterilization of 80 deer. The goal of the

sterilization program was to sterilize a high percentage of does in the area, rather than a total number of individuals. In certain locations, lethal removal is unavailable (ex. presence of school-owned properties) due to firearm discharge restrictions.

In subsequent years, the number of deer sterilized per year decreased as the total number of deer sterilized under the initial permit approached eighty. The number of deer to be culled varied from 150-250, with a maximum number of 115 removed in 2018. No public safety issues were reported during the removal or capture process for deer in Ann Arbor during the four-year study period.

After four years of management, the researchers observed a 47% reduction in their South Study Area and a 60% reduction in their North Study Area. The researchers also noted a 58% reduction in deer numbers in Wards 1 and 2 of Ann Arbor (DeNicola 2020).

Concurrent sterilization projects have occurred in additional locations over the past decade. Ovariectomy research projects were conducted in a suburb of Cincinnati, Ohio; in Fairfax City, Virginia; on the National Institute of Health campus in Maryland; in Cayuga Heights, New York; and at a country club in California (on mule deer). Of these locations, Ann Arbor (sharpshooting) and Cayuga Heights (archery and dart/euthanasia) incorporated a combined approach, including a lethal removal technique. These communities experienced between a 29-56% reduction in population after four years (DeNicola and DeNicola 2021). While the cost for sterilization per deer in Ann Arbor was \$1,572, the average cost across all communities was \$1,185 (DeNicola and DeNicola 2021).

Conclusions

The ovariectomy technique has shown to be effective in reducing deer populations at a localized scale. Much of this reduction was experienced between years 1 and 2 and is largely explained by a combination of natural mortality, minimal fawn recruitment due to the sterilization procedure, and the dispersal of male fawns from their natal range (DeNicola and DeNicola 2021). Female deer in Ann Arbor seemed to experience strong philopatry, remaining in their traditional home ranges, which reduced immigration by other deer into these areas and helped sustain lower deer densities (DeNicola 2020). However, this high site fidelity can make it difficult to remove deer safely and lethally from these neighborhoods through sharpshooting and traditional hunting methods. With the community configuration of Ann Arbor, where small parcel sizes across large areas are typical, high site fidelity of adult female deer may limit their movements to the periphery of the neighborhood where lethal removal may be possible. This insulation of many adult females from areas where they are susceptible to lethal removal can compromise community deer management goals from being achieved.

While a previous study showed that surgical sterilization appeared to be ineffective for reducing the abundance of white-tailed deer in the absence of lethal management (Boulanger and Curtis 2016), it's worth noting that the primary technique was tubal ligation to sterilize deer. This technique does not prevent female deer from coming into estrous, which extended the breeding season and accounted for a dramatic increase in male deer visiting the primary sterilization study area. The recent research evaluating an alternative technique, ovariectomy, prevents the animal from entering a reproductive state and shows promise as a technique that can assist with management at a localized scale.

With declining hunter numbers predicted in the future, it's possible that recreational deer hunting will transition from the primary method of deer management to one of many alternatives (Diefenbach et al 2021). While sterilization is not viewed as a replacement for recreation hunting due to the expense and difficulty in applying the technique across a large scale, the recent work done in several communities

indicates it may have a role in the future of deer management in urban settings. The DNR recommends no additional legislation restricting the use of sterilization on game or other species where it may prove beneficial in preventing unwanted expansion of invasive species (e.g., feral pigs, invasive carp) (Pepin et al 2017). Future requests for the use of sterilization as a localized management technique can be evaluated on a case-by-case basis by DNR staff and permitted as deemed appropriate.

References

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