Village of Hastings-on-Hudson

White-tailed Deer Immunocontraception Project

A Collaboration between the Village of Hastings-on-Hudson, The Humane Society of the United States, and Cummings School of Veterinary Medicine at Tufts University

Field Season Three: 2016

Goals

After an extended community discussion of how to manage its conflicts with deer, the Village of Hastings on Hudson (HOH) joined with The Humane Society of the United States (HSUS) and Cummings School of Veterinary Medicine at Tufts University to undertake a comprehensive approach to deer population management and impact measurement. This collaboration features an experimental effort to apply and evaluate the PZP (porcine zona pellucida) immunocontraceptive vaccine to stabilize and reduce deer numbers in HOH.

The objectives of the HOH immunocontraception project are to:

- confirm that a hand-delivered, timed-release PZP preparation first tested on Fripp Island, South Carolina, is effective for more than one year;
- evaluate whether the same timed-release PZP vaccine can be effective and long-lasting when delivered by dart as a booster;
- test whether contraception can be used to manage a deer population in a suburban/urban environment in which deer movements are not tightly restricted by geographic boundaries (as distinct from islands and other isolated areas).

What sets the HOH deer project apart from the deer management efforts of other communities, and makes it unique, is the degree to which community residents have participated actively in every aspect of the project, tracking deer, assisting darters, and measuring impacts on vegetation in natural areas and in their own backyards.

The PZP Vaccine

The contraceptive we use, PZP, is a biodegradable protein vaccine that works by causing treated females to produce antibodies that prevent sperm from attaching to eggs. Literally thousands of animals have been treated with PZP – deer, wild horses, and 100 other species of animals ranging from bison to bears to elephants and giraffes. Its safety is well established, and most importantly, it is destroyed if eaten and cannot pass through the food chain.

The preparation of PZP we are testing at HOH includes PZP in timed-release pellets, which simulate booster injections and extend the effectiveness of the vaccine to several years. Recent research on wild horses suggest that administering boosters to females previously treated with this timed-release PZP extends the contraceptive effects for at least three years.

Methods, and Progress to Date

The HSUS-Tufts Deer Team began field work in winter 2014. In order to determine whether the vaccine is initially effective in individual deer, we capture them, fit them with uniquely numbered ear tags, inject them by hand with the timed-release PZP vaccine, and let them go.

The numbered ear tags will also help us to establish trends in deer population numbers over time, using the method known as "mark-resight." If we know the rough number of tagged does in the Village, and observe the ratio of tagged to untagged does, we can calculate excellent estimates of the number of female deer living in HOH.

A steep learning curve and the shortening of the 2014 field season because of issues related to access to tranquilizing drugs meant that the Deer Team captured and treated only eight does that year. The Deer Team did better in 2015, capturing 21 females and treating 20 of them with PZP (one turned out to be a recapture: unlike every new deer we captured, she was NOT pregnant).

As just noted, it looks like few if any of the does treated in 2014 had fawns in 2015, which is encouraging. We do not yet have good estimates of the number of deer in HOH, but we have photographic data from camera-trapping surveys conducted in autumn 2014 and 2015. The more deer we have tagged, the better the population estimates we will get.

2016 Plan

To meet the experimental and population management goals of the project we hope to capture and treat 25-30 new adult female deer this winter. Our experimental schedule also requires that we return in the fall to dart with vaccine (but NOT capture) the does first captured and treated with PZP in winter 2014.

Weather permitting, the Deer Team will be out capturing deer between February 22 and March 31 this year. To avoid conflicts with residents, and take advantage of deer activity patterns, capture efforts will take place most often in the early morning (4-7AM) and the evening (6-9PM), although there are some quieter sites on the fringes of Hillside Woods and elsewhere where deer (and darters!) may be active during the mid-afternoon hours or even late morning. What we do depends a lot on what the deer do, but…

THE SAFETY OF RESIDENTS, RESEARCHERS, AND THE ANIMALS <u>ALWAYS</u> COMES FIRST. We will **<u>NEVER</u>** dart in circumstances where we see any chance that a stray dart or an alarmed animal may put people, animals, or property at risk.

Darting occurs at short range (less than 25 yards, usually more like 10-15 yards). After being hit with a dart, deer will move some distance – usually within 100 yards of where they were darted, and sometimes much closer. They then settle down – usually in a place that feels safe to them – and lose consciousness over a 10-15 minute period. When a darted doe stops moving, we approach her, ear-tag her, remove the dart, hand-inject her with vaccine, and take body measurements. We monitor vital signs throughout. Depending on the drug protocol used, we give her agents that reverse the effects of the drug, back off, and keep her in sight until she gets up and walks off under her own power.

The team is experienced and generally well equipped to handle medical emergencies with the deer; but we also have a veterinarian on call. Dr. Richard Joseph of the Animal Specialty Center in Yonkers has generously agreed to perform that role for us.

The HSUS/Tufts Deer Team very much appreciates the support and participation of the Village of Hastings-On-Hudson in all facets of the deer project, and looks forward to working with you again this season's field effort. Use the new Deer Hotline, and let us know when and where you see deer!