

## Could GonaCon® Replace Deer Hunting?

Increasingly, state wildlife agencies are facing the dilemma of what to do about urban deer. As cities expand and claim additional acreage for shopping malls, parking lots and suburban dwellings, traditional deer habitat is replaced with urban and suburban landscapes. Whitetails can still thrive in these landscapes, so “deer habitat” may not be lost. What is lost, or at least severely hampered, is the ability to manage those deer. Gone are the hunting clubs and the traditional hunting opportunities that are no longer appropriate in the suburbs. Yet, hunting opportunities still exist in small pockets of suburban woodlands - especially for bowhunters. The stage is set for a unique discussion of the role of hunters in deer management. Hunters argue they can manage suburban deer herds if given access to a sufficient number of properties. Anti-hunters claim you can manage the deer herds with “birth control” and traps rather than bullets and arrows. Homeowners just want to be able to grow a vegetable or flower garden and allow their children to play in the yard without the threat of Lyme disease. Given these three views, it’s easy to see why state agencies devote a substantial amount of time to the topic. They’re about to spend even more time and resources on it dealing with a newly registered contraceptive called GonaCon®. GonaCon is the first contraceptive vaccine registered for use in free-ranging white-tailed deer populations. This news may not directly affect you, your QDM program or the community where you live and hunt, but it is news that could affect the future of deer management and hunting.

### **Birth Control for Deer**

Before we look closely at GonaCon, let’s review an abridged version of the birth control strategy for managing deer populations. This management strategy uses birth control rather than hunters to limit or prevent new animals from being born into the population. This approach has received much publicity because it is nonlethal and has the potential to regulate deer populations in urban and suburban areas closed to hunting. “Immunocontraception” is a birth control method that uses the deer’s immune system to prevent pregnancy. This is the most common method of inducing infertility in deer, and much research has been conducted over the past four decades to develop an effective contraceptive that can be used on free-ranging deer herds.

Unfortunately much confusion surrounds the status of fertility control agents. The public has a general misunderstanding regarding the availability and practicality of immunocontraceptive vaccines.

Despite misperceptions, overabundant deer herds cannot be controlled solely with immunocontraceptives.

Successful fertility control may limit population growth, but it does little to reduce the existing population. There are also misconceptions about vaccine availability and effectiveness.

Scientists developed contraceptives that block or end pregnancy years ago but only recently were able to develop one that is effective and practical for non-captive deer herds. Until late 2009, all research on vaccines was conducted under investigative permits, as there were no vaccines authorized for use on free-ranging deer herds. That has now changed, as GonaCon was recently registered for use on free-ranging deer herds by the Environmental Protection Agency (EPA).

Anti-hunters see GonaCon®, a birth-control drug for deer, as a non-lethal option for controlling urban and suburban deer populations.

### **Quotable QDMA:**

*“GonaCon is the first contraceptive vaccine registered for use in free-ranging white-tailed deer populations.”*

### How Does GonaCon Work?

GonaCon is an immunoconceptive vaccine for bucks and does developed by scientists at the U.S. Department of Agriculture's (USDA) Wildlife Services' National Wildlife Research Center. It's touted as a single-shot multiyear vaccine that's effective for two to four years in deer. In addition to whitetails, GonaCon has also successfully prevented pregnancy in California ground squirrels, Norway rats, feral cats and dogs, domestic and feral swine, wild horses, bison and elk.

Prior vaccines required additional treatments and/or were less effective. GonaCon's label states deer must be treated by hand injection only. This prohibits administering the vaccine via darts and increases the cost and labor necessary to treat deer. It is a precautionary measure because GonaCon will also cause infertility in human females (and possibly males). Not allowing deer to be treated via darts ensures no one stumbles across a fully loaded dart that may have missed an animal and not been recovered by the shooter. Current research is trying to develop an oral contraceptive that could treat deer by placing the vaccine on corn or other food sources, but this technology is likely a few years away.

Other than accidental injection, there supposedly aren't any human health risks associated with eating treated deer as our stomachs break the vaccine down to its basic proteins. However, there may be a health risk for treated deer. One side effect of GonaCon is a pea-sized granuloma at the injection site, and some research animals have developed small to baseball-sized abscesses underneath these granulomas.

### Quotable QDMA:

*"The public has a general misunderstanding regarding the availability and practicality of immunoconceptive vaccines. Despite misperceptions, overabundant deer herds cannot be controlled solely with immunoconceptives."*

With earlier vaccines, treated does would enter estrous but not conceive. These does would enter estrous approximately every 28 days for several months, and bucks would expend precious energy breeding and re-breeding these does. QDMA's Kip Adams was involved in some early contraceptive research at the University of New Hampshire's deer research facility, and he watched some of their captive bucks waste a tremendous amount of energy chasing and breeding does from November through February. By February, these bucks were so worn down that, in a free-ranging situation, it's unlikely they would have survived the winter. Unlike these earlier vaccines, GonaCon works in the hypothalamus portion of the brain to cut off the body's reproductive processes. This means does do not come into estrous and thus won't be bred. In bucks treated with GonaCon, suppressed testosterone production results in a lack of rutting behavior and the associated neck swelling and muscular growth. Treated bucks resemble does with antlers. The vaccine also alters antler development. In a study by Dr. Gary Killian and his colleagues at Penn State's deer research facility, bucks either remained in velvet or shed their hardened antlers four to six weeks earlier than non-treated bucks. These body and antler characteristics don't match our experiences or expectations for the noble white-tailed buck.

### **Is GonaCon a Practical Solution?**

Fertility control in deer is a rapidly advancing technology. However, even with current advancements the immunocontraceptive approach is expensive, with estimated costs ranging from \$500 to \$1,000 per deer (due mainly to deer capture and handling costs). Because annual mortality rates for suburban deer populations are low, an estimated 70 to 90 percent of the does in a population need to be treated to limit or stop herd growth. According to Dr. Tony DeNicola of White Buffalo Incorporated in Connecticut, who has been involved with many GonaCon studies, approximately 10 percent of deer don't respond to the vaccine. So, if 70 to 90 percent need to be effectively treated, GonaCon will have to be administered to 80 to 100 percent of the does in a population - a very difficult task. This only freezes population growth. It does not reduce a population, so it must be combined with a removal technique. This approach's effectiveness and practicality are limited to enclosed or very localized herds rather than truly free-ranging populations. It's clear we still have much to learn about antifertility drugs and their effects on deer behavior and management programs.

### **Will GonaCon Replace Hunting?**

So, what does GonaCon mean to the average deer hunter? It means your state wildlife agency will be dealing with the reality that GonaCon is now registered with the EPA as a usable product to prevent pregnancy in free-ranging white-tailed deer populations. Fortunately, it will be up to each state on how they'll regulate its use as it will be registered as a "Restricted Use" product for use by state or federal wildlife or natural resource management personnel or persons working under their authority. Unfortunately, it will relegate whitetails to "pest" status as the vaccine is listed as a pesticide.

Will GonaCon replace hunting? Even Wildlife Services (developers of GonaCon) does not view the product as a replacement for hunting but a tool that could potentially be used after a population has already been reduced. This is sure to become a hot topic in 2010, and anti-hunters will be singing GonaCon's praises. As hunters, GonaCon won't replace us, but our value will be increasingly questioned by non- and anti-hunters in suburban landscapes - which are only going to continue expanding across the whitetail's range. Therefore, it is paramount that we continue educating ourselves on deer biology and management and demonstrate that we are ethical and responsible deer stewards. Our actions, rather than GonaCon, will dictate how and where we hunt in urban and suburban environments.

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