

# Chemical Castration of the Coyote

D.C. Skinner<sup>1,2</sup>, M.J. MacGregor<sup>2</sup>, C. Asa<sup>3</sup>

<sup>1</sup>Neurobiology Program; <sup>2</sup>Zoology and Physiology Department; <sup>3</sup> AZA Wildlife Contraception Center, Saint Louis Zoo, St. Louis, Missouri.

## Introduction

Coyotes have been and continue to be significant predators of livestock, mainly domestic sheep. Primary control of depredating coyotes has been by lethal removal. This method has been met with mixed reviews mainly due to both public opposition and limited effectiveness of lethal control.

When depredating adult coyotes are removed from an area, a new pair rapidly moves into the vacant territory and resumes depredations. Research has shown that depredations decrease when pups are removed. Paired coyotes continue to maintain territories even in the absence of pups. Therefore, controlling reproduction may be a more socially acceptable and effective tool for managing predatory behaviors of coyotes. Surgical sterilization has been successful in controlling coyote depredations on sheep and pronghorn antelope; however, implementation costs prevent widespread use.

Chemical castration of coyotes with gonadotropin-releasing hormone (GnRH) agonist provides an alternative option for controlling reproduction. In contrast to surgical castration, which removes the testes, GnRH agonists work in the brain to

stop production of reproductive hormones and sperm, resulting in a castration-like effect.

## Objectives

The overall goal of this research is to determine if a single treatment of a sustained release, high dose of the GnRH agonist deslorelin can permanently *chemically* castrate coyotes.

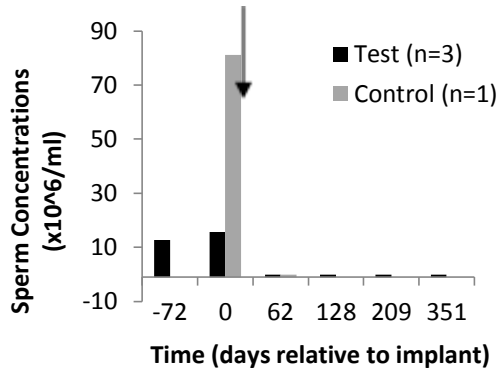
## Materials and Methods

The study consists of two groups of male coyotes housed at both the Laramie Research and Extension Center (LREC) Beef Unit and University of Wyoming Red Buttes Environmental Biology Laboratory near Laramie. All test coyotes are implanted with 47 milligrams (approximately 0.0017 ounces) deslorelin. Group one coyotes (n=3) were implanted April 2011. Group one also had a control coyote (n=1) until October 2011. Group two consists of test coyotes implanted January 2012 and control coyotes with no implant.

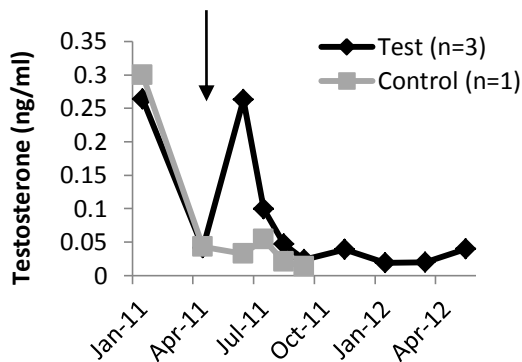
## Results and Discussion

Preliminary data from group one indicates full suppression of the reproductive axis as supported by complete absence of sperm as shown in Fig. 1. Fig. 2 shows that

testosterone concentrations remain suppressed after one year. The initial “flare” of testosterone in coyotes is a predicted drug-induced response after implant.



**Figure 1.** Sperm concentrations (x10<sup>6</sup>/ml). Implant day indicated by arrow.



**Figure 2.** Testosterone concentrations (ng/ml). Implant day indicated by arrow.

Deslorelin does not appear to reduce testosterone levels below the natural seasonal drop in coyotes. The high level of testosterone during the breeding season (January 2011) is necessary for sperm production; however, it is believed only low levels of testosterone may be needed to maintain mating integrity. This was shown experimentally in the rat: minimal testosterone levels (not sperm production) support mating behaviors.

Pending successful castration, we aim to move this to a field study to assess impacts of castration on territory fidelity and affiliated behaviors. To our knowledge, there are no known castration studies involving wild canids. Experimental research in castrated dogs has found that mating behaviors and territorial aggression persist years after castration. More studies are finding that non-migratory animals don’t rely on testosterone to drive aggression even during the mating season. This is why caution must be used when applying the role of testosterone and behaviors across non-canid species, including farm animals and other wildlife.

Implications for this research may provide an additional means of selectively managing problem coyotes. The goal is an *effective* management tool that is cost efficient and acceptable to the general public.

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### Contact Information

For additional information, contact Donal Skinner at [dcs@uwyo.edu](mailto:dcs@uwyo.edu) or 307-766-4922.

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