

Fawn Survival After Predator Control



A QDM CASE STUDY

By Cory VanGilder
with Drs. Grant Woods and Karl V. Miller

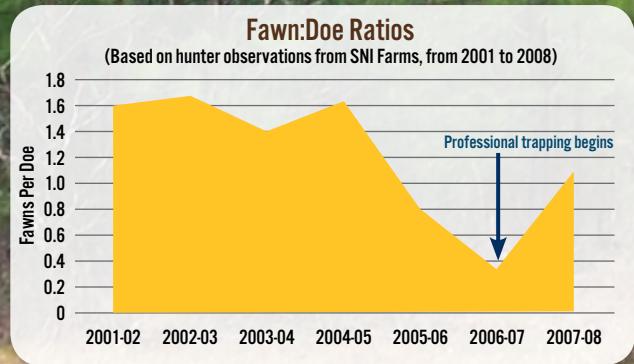
There has been a lot of interest recently among deer hunters and wildlife professionals regarding the impacts of predators on deer populations. This is particularly true in the eastern United States where the coyote is a relatively recent invader, and burgeoning coyote numbers are raising concerns. Although a few recent studies have suggested that coyotes may be having an impact on deer numbers in some areas, there are still many questions about the coyote/deer relationship. As a hunter and deer fanatic, I have always been fascinated with whitetail biology and management and find myself continually wanting to learn more. In this pursuit, I had the opportunity to conduct research investigating the impact that predators, including coyotes, had on a deer population in northeastern Alabama as part of my Master's Degree at the University of Georgia under the direction of Dr. Karl V. Miller.

This project came to light at the 2006 annual meeting of the Southeast Deer Study Group when Dr. Miller, Dr. Grant Woods, and I sat down with a private landowner who appeared to be doing everything right when it came to managing deer on his 2,000-acre property, SNI Farms, in Alabama. Despite extensive QDM efforts, in recent years the hunters at SNI Farms realized something was going very wrong.

Identifying the Problem

SNI Farms had been operating under QDM guidelines for the previous 10 years, including limiting harvest to bucks 3½ years old or older, and an aggressive harvest of does to reduce the herd density. A sample of does collected each spring from 2000 to 2003 by personnel from the Alabama Department of Natural Resources, to assess overall herd health, indicated the property had a productive deer herd. During this period, the number of fetuses per doe ranged from 1.8 to 2.1. However, after a substantial doe harvest to reduce herd density in 2003 and again in 2004, hunter observation data indicated a drastic decline in fawn recruitment. Prior to the heavy doe harvest, observation data col-

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lected during the hunting season consistently indicated a ratio of 1.4 to 1.6 fawns per doe – a very healthy fawn-recruitment rate. However, by the 2005 hunting season, observations dropped to only 0.8 fawns per doe, and by 2006, the ratio dropped to approximately 0.4 fawns per doe – quite a substantial decline in fawn recruitment!

Certainly, a heavy doe harvest can result in a *temporary* decrease in observed fawn recruitment because it can increase the proportion of yearling does in the following year’s adult population. These yearlings likely would have relatively few fawns, so the fawn recruitment rate would decline. However, the observed decline in recruitment not only persisted but worsened, even after doe harvest rates were reduced substantially in 2005. Because predation is the only factor that is highly selective toward fawns in an otherwise healthy deer population, this allowed us an excellent opportunity to assess the impact of predation on the Farm’s fawn recruitment. We designed a study to determine the seasonal diets of potential predators. Further, by intensively removing coyotes and bobcats prior to fawning, we were also able to quantify the predation impact on deer recruitment.

Gathering Data and Calling in the Trappers

In 2006, we estimated fawn-to-doe ratios using three methods: hunter observations, trail-camera surveys, and web-based camera observations. We selected only experienced hunters who recorded all deer observed during the November to January hunting season. Because no does were harvested on the area during the study period, fawn:doe ratios should have remained relatively constant throughout the hunting season. We conducted pre-season (September) and post-season (February) trail-camera sur-

veys as a second index to fawn:doe ratios. Finally, the study area contained a series of 11 web-cams on established food plots that were accessible via the Internet. The cameras could pan almost 360 degrees and had a 25X zoom, which allowed us to classify most deer observed. We accessed these cameras at random during mornings and evenings in October, November and January.

We also monitored predator abundance using scent stations and scat counts to assess the success of our trapping efforts (To learn how to conduct your own scat counts, see “Measuring Success at Reducing Fawn Predation” on page 31 of this issue). Immediately following the February 2007 camera survey, we conducted an intensive predator removal that continued until July 2007, the peak of fawning in this area of Alabama. The removal was conducted by professional trappers. I also had the not-so-glamorous task of picking up scat throughout the entire study period to determine the diets of coyotes and bobcats.

In total, our trapping efforts yielded 22 coyotes and 10 bobcats removed prior to the 2007 fawning season. Based on our scent-station surveys and our scat counts, we were very successful in removing nearly all coyotes and bobcats from the study area. As a result, we saw a substantial increase in our fawn:doe ratios. Hunter observation data indicated a 217 percent increase, February trail-camera surveys indicated a 193 percent increase, and our web-camera index indicated a 156 percent increase compared to pre-removal ratios.

Our results confirm other research indicating that intensive predator removal prior to fawning can increase fawn recruitment. However, when we look at all of the studies where predator control has been successful, there are general trends that become

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apparent. Predator removal is most effective at reducing fawn predation when:

- 1) the deer population is below carrying capacity.
- 2) predation is identified as the limiting factor.
- 3) predator populations are reduced by more than 70 percent.
- 4) the removal occurs immediately prior to peak fawning.

The high fawn survival we observed following intensive predator control suggests predation was negatively impacting fawn recruitment on this site. Until recently, coyotes have been viewed as insignificant predators of deer in many regions of the country. Although fawn predation may be of minor significance when deer densities are high, it likely is much more important when deer densities are low. This is an important consideration

when prescribing harvest goals to balance the sex ratio or lower deer densities. Therefore, deer managers should be aware of the potential effects of predators and set harvest guidelines with an understanding of the predator context on the areas they manage.

Comparing Coyotes and Bobcats

In our study, the removal of bobcats and coyotes had a major positive influence on fawn survival. But the question remained whether coyotes or bobcats were more significant fawn predators. To answer this question, we analyzed the contents of 155 coyote and 33 bobcat scats collected on the study area. Our results indicated that bobcats were almost exclusively carnivorous. The most commonly occurring foods in their diet were small mammals, birds, and rabbits. Deer remains were only found occasionally in their scats, suggesting that on our area bobcats are not an important predator of deer. However, these findings are not universal as other studies have found that in the absence of coyotes, bobcats have preyed heavily on deer. Interestingly, studies that have monitored fawn survival have noted that when present, bobcat predation occurs as fawns become older and more mobile. This is not surprising as bobcats are highly visual hunters.

In contrast, coyotes were opportunistic omnivores and fed on a diversity of prey. The coyote is highly adaptable, and they quickly exploit seasonally abundant food items including insects, soft mast, and fawns. On our study area, small rodents and rabbits were the most important foods and were present in their diet in every season. However, during summer we found fawn remains in more than 35 percent of all coyote scats. This is not surprising considering that fawning coincides with pup-rearing, which requires high-energy food items. Other researchers have reported that coyote pairs rearing pups consumed more fawns than did coyotes that were not raising pups. Although coyotes will generally eat anything, they do target different food sources, as noted in studies that show large shifts in the coyote diet as food sources become available.

Should You Manage Predators?

Intensive predator control on our area greatly increased fawn survival. However, does this mean that coyotes or other predators are influencing your deer herd in the same way? And if so, should you consider some type of predator management? The impact of predators on deer varies greatly across regions and the conditions of the local deer herds. Before grabbing the traps or the predator call,

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here are a few questions you need to ask.

■ Is your deer density already at (or above) the carrying capacity of the habitat? If you already have too many deer, or are having a difficult time controlling deer densities, coyotes may be your ally rather than your enemy. In this situation, producing more fawns by controlling predators may be counterproductive.

■ Do you have good data indicating that predation is a concern in your deer herd? Because of the variability across regions and local conditions, site-specific data are invaluable when making management decisions on the local deer herd. *Reliable* data on fawn:doe ratios based on hunter observations or trail-camera surveys are absolutely necessary before making any predator control prescription.

■ If you do decide to initiate predator control, will you be capable of increasing harvest rates to maintain deer densities at the appropriate levels? This is particularly important in areas with short hunting seasons or low bag limits.

■ Have you considered your habitat conditions first? Providing an abundance of fawning cover can be an effective

Cost Analysis

Is removing coyotes and other predators an economically feasible way to increase recruitment? As with any management decision, removing enough coyotes to have an impact on fawn recruitment will cost money. In our study we enlisted the services of professional trappers (Predator Control Group, Inc.) to make sure our efforts went toward removing predators instead of educating them. We used information from February trail-camera surveys to get a rough estimate of the cost/benefit of removing predators on SNI Farms. Our survey data suggested that the increased recruitment that we saw after the predator removal resulted in 58 (plus or minus) additional fawns. Our trapping costs were \$4,780, which means each additional fawn cost an average of about \$82.



The author with a bobcat removed during the study.

means of reducing fawn predation, while simultaneously providing abundant food.

■ Are you willing to commit the time and resources to make your predator control efforts effective? Simply removing an occasional coyote will not have an impact on fawn predation rates. In fact, some research indicates that opportunistic removal of predators may actually make the problem worse.

Predator management may play a role in management of many deer herds. However, it is not a magic bullet. Predator control must only

be considered within the Four Cornerstones of QDM. Only by first addressing habitat, hunter management, herd management, and particularly herd monitoring should you decide to embark on a predator management program.



About the Author: *Cory VanGilder is a wildlife biologist and the manager of Big Horn Ranch in Exeter, Missouri. The research featured in this article served as Cory's thesis for his Master of Science degree from the University of Georgia. He earned his Bachelor's degree in wildlife management from Missouri State University.*

About This Article

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