



INSIDE DEER RESEARCH

*A newsletter for supporters of the deer research program at the
Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville*

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Spikes and Forks

David Hewitt, John Lewis, and Mickey Hellickson

Ten years ago, in January 1998, a symposium was held in College Station to discuss the role of genetics in white-tailed deer management. One of many contentious points at this meeting was the relationship between a buck's antler size as a yearling and his antler size at maturity. This was a hot management topic in 1998, and it continues to be so today, largely because biologists with Texas Parks and Wildlife (TPW) have promoted harvesting yearling deer with spike antlers to improve the average antler size of deer in the herd. This recommendation is premised on the idea that spike-antlered yearlings will remain smaller than their fork-antlered brethren as they mature. It is also based on the assumption that spike antlers are a visible marker of deer with genetics for small antlers.

Data relating yearling and mature antler size from captive deer were presented at the 1998 conference. These data generally showed that yearlings with small antlers tend to remain small, but some scientists presented instances in which spike yearlings grew into respectable bucks at maturity. Although the captive deer data are valuable, it was not clear how those results would apply to free-ranging deer, where the environment is much more variable.

In the fall of 1998, scientists and students from the Caesar Kleberg Wildlife Research Institute along with a host of volunteers began capturing deer on four ranches in Webb County. In 1999, a fifth ranch in Kleberg County was added to the study. During the next 10 years, over 4,000 capture records were established. Captured deer were aged, fitted with ear tags and PIT tags for later identification, and their antlers measured. We had 240 bucks that were captured as yearlings, then captured or harvested again at an older age. Some of these deer were caught multiple times, so that we have 377 records of deer 2 to 8 years of age that were first caught as yearlings. We analyzed these data to determine if antler size as a yearling is related to antler size later in life.

Our data clearly show that, on average, yearling bucks that are spikes remain smaller than yearling bucks that are forks. The average difference is about 15 Boone and Crockett points at each age. There are individuals that "buck" this trend. At



photo by Randy DeYoung

any age, the largest buck among those that were spikes as yearlings was 11 to 21 inches above the average of those that were forks. The five largest deer that were spikes as yearlings ranged from 144 to 155 gross B&C points at maturity. In contrast, the five largest fork-antlered yearlings at maturity ranged from 160 to 210 gross B&C points.

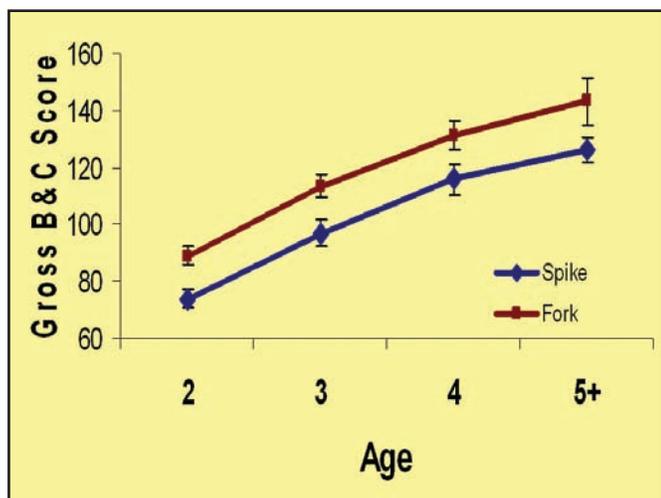
Another indication of the variation inherent in these data is that not all the fork-antlered yearlings were trophies at maturity. To the contrary, the smallest buck among the fork-antlered group was 11 to 31 inches, depending on age, below the average of the spikes.

Another intriguing observation from these data is that number of points and inside spread did not differ between spike- and forked-antlered deer once they reached 4 years of age. However, beam length, basal circumference, and total tine length all continued to vary between spikes and forks as they matured.

Results of a similar deer capture study were published recently by Ben Koerth and James Kroll of Stephen F. Austin University. Their results are similar to those of the CKWRI for deer that are 2 and 3 years of age. However, they show no differences between



photo by David Hewitt



spikes and forks after they have reached 4 and 5+ years of age.

What does all this mean to a deer manager? First, most studies indicate that, on average, fork-antlered yearlings remain larger than spike-antlered yearlings as they mature. If harvesting yearling deer makes sense in your management program, these results support the idea of harvesting spikes rather than fork-antlered yearlings because, on average, you will be harvesting deer with less potential to become a trophy.

DID YOU KNOW?

The basal circumference of deer antlers is about 4/8" greater in late August, when they are in velvet, than after velvet is shed.

White-tailed deer are not strictly herbivores. Deer living on an island in Lake Michigan eat small, dead fish that wash up on shore. Females and yearlings have ingested as many as 6.0 to 8.7 fish per minute. Female deer in South Texas eat snail shells, mouse skeletons, and egg shell fragments.

Before you reach for your rifle, it is important to recognize there are many points to consider in deciding whether to harvest yearling bucks. Goals of your deer management program, fawn:doe ratios and their annual variation, quality of forage, presence of supplemental feed, deer density, and hunting practices of neighbors could all influence your decision about harvesting yearling deer. Because all these factors vary among ranches, it would be unwise to make a blanket recommendation

on whether to harvest spikes. Furthermore, the Koerth and Kroll study did not find a difference between spike and fork-antlered yearlings as they mature, suggesting the relationship between yearling antler characteristics and mature characteristics may not be the same on every ranch.

Some spike-antlered yearlings can grow into respectable deer if they are allowed to reach maturity. Additional analyses of our deer capture data indicate that your ability to predict a deer's antler size at maturity increases as a deer ages. Thus, waiting to harvest deer with small antlers until they are 2, 3, or even 4 years of age reduces the chances of removing small bucks that will blossom into a 140-class deer at maturity.

Finally, it is important to recognize that these results have little bearing on the question of whether you can change the genetic make-up of your herd by harvesting spikes. All we investigated was changes in individual animals as they matured, not changes across generations. Although there is every reason to believe that antlers, like any other trait, would be influenced by genetics, there are many other prerequisites that must be met before a selective harvest would be expected to change antler size. That is an issue that will be covered in a future edition of *Inside Deer Research*. 



photo by Randy DeYoung

Whole Cottonseed as a Deer Supplement

Interest in feeding whole cottonseed as a supplement has increased greatly in the last few years. Nutritionally, cottonseed is high in protein (20% or more), has as much digestible energy as corn (4.0 kcals/g), and as much fiber as alfalfa hay (around 40% acid detergent fiber). The unique mix of high digestible energy and relatively high fiber are possible because cottonseed has oils that boost its energy value. There is concern that a naturally occurring chemical in cottonseed, called gossypol, could be a problem for white-tailed deer. Gossypol is toxic to monogastric animals like pigs and raccoons, which can help reduce consumption by non-target species. Gossypol has been shown to cause problems in other deer species, such as red deer and fallow deer. Initial findings of ongoing research at the Caesar Kleberg Wildlife Research Institute indicate that white-tailed deer are not as susceptible to gossypol as other deer species. Look for additional information on using cottonseed as a deer supplement in subsequent issues of *Inside Deer Research*. 

Conducting a 10 year research project involving capture of several thousand deer required substantial financial and logistical resources. The unfaltering support of the following donors is gratefully acknowledged:

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MARK YOUR CALENDARS FOR THE UPCOMING EVENT!

◇ **Deer Associates Meeting September 12, 2008 at Hyatt Hill Country Resort in San Antonio, Texas**

Deer Program on the Road

Members of the CKWRI Deer Research Program gave 9 research presentations at the Texas Chapter of The Wildlife Society in San Antonio, TX and 5 presentations at the Southeast Deer Study Group meeting in Tunica, MS. Sarah Bullock won first place for her poster, *Evaluating Whole Cottonseed as a Supplemental Feed for White-tailed Deer of South Texas* at the Texas Chapter meeting. At the Southeast Deer Study Group meeting, Jason Sumners won second place for his presentation, *Patterns of Mating in Female White-tailed Deer: Does Male Age Matter?* and Matt Moore won third place for his presentation, *Refinement of a Camera Census Technique at Three White-tailed Deer Densities*. Go to the presentations section of the CKWRI Deer Research Program website <http://ckwri.tamuk.edu/272/> to see all 9 presentations given by members of the CKWRI Deer Research team.

~ Until Next Time ~



CHECK IT OUT! THE DEER PROGRAM WEBSITE

For the latest information on upcoming events, research, bios, and much more please visit:

<http://ckwri.tamuk.edu/56/>



photo by Tim Fulbright

In February, fourteen CKWRI scientists traveled to Tunica, MS to participate in the 31st Southeast Deer Study Group. On the way, they conquered the highest point in Arkansas.

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To support the Deer Research Program, please send contributions to the address below.



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