

Dr. Deer's™ PRESCRIPTION



THE SPIKE WARS

Part 2: Scientific Method Kicks In

By Dr. James C. Kroll

Last issue I began a four part series I call, “The Spike Wars.” I gave the series that name for a very good reason. Science has become a “blood sport,” with scientists engaged in a spirited competition for more funding, promotions, awards and fame. I also lamented scientists who, according to a recent poll, are deeply distrusted by the majority of Americans; a distinct shift from only a decade ago when they were listed among parents and teachers in credibility. The average university scientist, once thought of as an “egg head,” is now more like the corporate executive. The white lab coat has given way to tasseled loafers and the gray suit. I feel many have strayed from the tried-and-true ways of the scientific method.

I often ask my students, “What is the best word to describe a good scientist?” The correct answer is: skeptical. The layman adheres to a *law* my old colleague Don Wilson (quail biologist) once proposed: “If I hadn’t believed it, I wouldn’t have seen it with my own eyes!” The scientist, on the other hand, does not believe it, even when he does see it with his own eyes. Scientists generally try to prove themselves wrong, not right. A good experiment is designed with this high standard. As I noted in Part I, the good scientist should have “no dog in the fight,” other than being a champion for fact and truth.

In the last issue, I presented the basics of what began the wars—the Kerr Wildlife Management Area study by Texas Parks and Wildlife. If you remember, it began with Texas being managed by county commissioners, some of which imposed county regulations prohibiting the shooting of spikes. These regulations were adopted primarily to protect young bucks; ill-conceived, yet well-intentioned. The general knowledge about deer into the 1970s was that you could age a buck by his points. A spike obviously was a

hunting perspectives.

This state of affairs sparked initiation of the TPWD study on spikes at the Kerr WMA. The study concluded spiked yearlings, although having forked antlers at maturity, would never be as good as their forked cohorts; and, that spikes would pass along this tendency to the next generation. This news hit like a bombshell in the deer science and management arenas. Managers immediately jumped on the idea of removing spike yearlings, as a “magic bullet” to produce larger antlered bucks. Texas,

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yearling. Of course, we now understand this not to be the case, but as we see from recent efforts by Texas and at least 40 other states, protecting young bucks is a good idea both from biological and

long known for being a pioneer in deer management (primarily through the efforts of men like Al Brothers), became the darlings of the annual meeting of the newly created Southeast Deer

Table 1. Comparisons of results from the Kerr and MSU studies on heritability of antler traits.*

Trait	Kerr Study	MSU Studies**
Points	0.22	0.22, 0.00
Spread	0.03	0.00, 0.00
Weight	0.71	0.09, 0.00
Beam Cir.	0.80	0.25, 0.00
Beam Length	0.49	0.00, 0.05

*From Jacobson and Lukefahr, 1998: Case Study: Genetics research on captive white-tailed deer at Mississippi State University, in Role of Genetics in Deer Management, Symp. Proc. Texas A&M University, 47-51.

** Lukefahr and Jacobson, 1998. Variance component analysis and heritability of antler traits in white-tailed deer. J. Wildl. Manage. 62: 262-268.

**Lukefahr, 1997. Genetic and environmental parameters for antler development traits in white-tailed deer using an animal model. Final Rept. TPWD Contract 386-0692, 31 pages.

Study Group. Back home, biologists like me were busy touring the state and presenting seminars urging people to harvest spikes. But then, the scientific method reared its ominous head.

One of the primary tenets of the scientific method is *repeatability*. Ever given any thought to the fact there are only a handful of *laws* in science? No one can doubt Newton's Law of Universal Gravitation (1686); primarily because in spite of over 300 years of effort, no one ever has been able to disprove his law. So, in good science, just because someone reports a finding, does not mean it is a law. Consider the nightly news. One day we hear that aspirin will kill you, the next it will save your life. That is not bad science; it is only the scientific method playing out. Unfortunately, neither the press nor the public understand this.

At about the same time the Kerr study was gearing up, Dr. Harry Jacobson was setting up his own research project at Mississippi State University. He and colleague, Dr. David Guynn, are pioneers in both deer research and working with the public. They are the inventors of the many Deer Management Assistance (DMAP) programs now common in many states. Texas has the MLDP program, but it really is a DMAP program. We just like to be different.

Dr. Jacobson's study was designed differently from the Kerr study. Whereas, the Kerr researchers set out

to produce a "line" of spiked and forked bucks, Dr. Jacobson used a more random breeding approach. And, *randomization* is a corner stone of the scientific method. The MSU study began in 1977, when 12 fawns were captured from the wild and bottle-reared, much like the Kerr study. More wild-caught deer were added to produce the herd of about 100 animals. The facility produced several hundred deer by 1996. Tight records on pedigrees and performance (weight and antler measurements) were maintained on every deer.

The MSU study from the start dealt with two questions: 1) what is the impact of selective harvest of bucks to improve genetics? and 2) what are the potential benefits and costs to relocating deer from one area to another to improve genetics? The first objective created a database for studying both genetic and environmental issues. The study led to a peer-reviewed paper published in The Journal of Wildlife Management (Lukefahr and Jacobson, 1998, Vol 62: 262-268), entitled: "*Variance component analysis and heritability of antler traits in white-tailed deer.*"

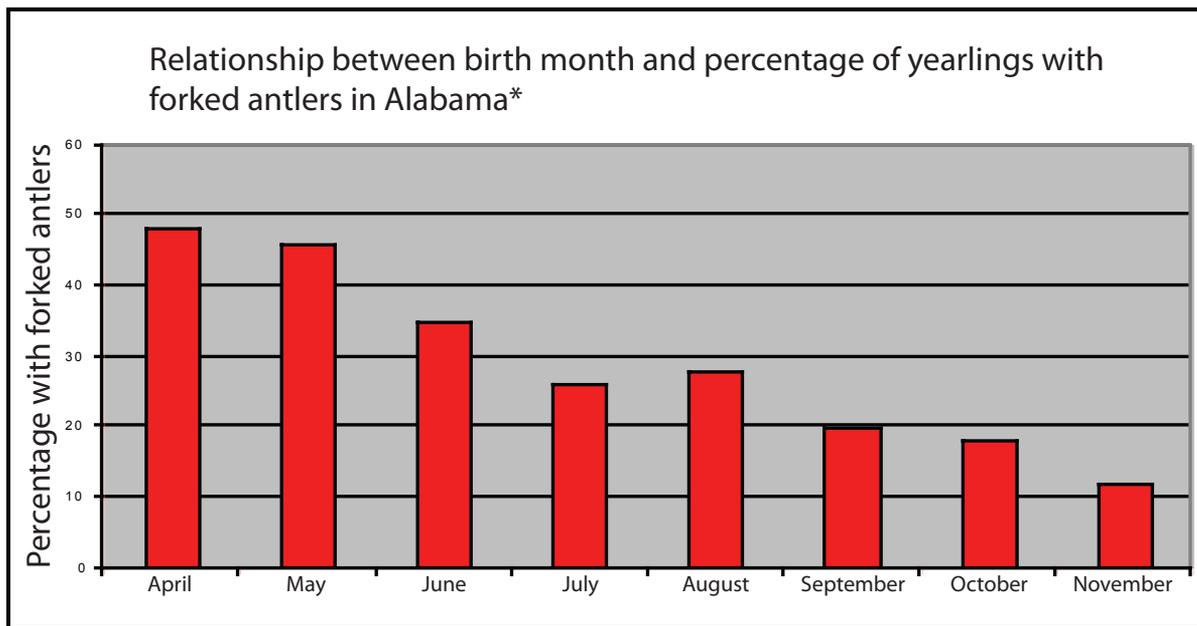
In this paper, they reported how their study was designed in detail. The deer were maintained as in the Kerr study, but all were fed the same diet. They used 220 yearling males, 166 2.5 year olds, and 146 3.5-7.5 year olds for statistical analyses. In contrast to the paper discussed in Part I from the Kerr

study, the MSU researchers concluded that there generally was low heritability, ranging from zero to 13 percent for all antler traits but beam circumference. The Kerr study also showed the highest heritability for this antler trait.

Jacobson analyzed various environmental and experimental design factors to attempt to find the cause for low inheritance values. His team concluded factors such as birth date, type of birth (singleton vs. twin), milk production (which I later supported), general mothering ability, and age and health status of the doe all had an impact on antler size. They also hypothesized other factors such as social position of the doe and her son, grazing ability (physiological efficiency), diet quality after weaning and other behavioral traits could affect antler growth. The conclusion was quite different from the Kerr study: "... our results also demonstrated no differences between offspring of spike antlered yearlings and multi-pointed yearling bucks." Table 1 compares the two studies to this point.

This research report was not the first shot fired in the wars. Earlier, the MSU and Kerr research teams had "locked antlers" at SEDSG meetings. Attendees eagerly anticipated the latest skirmish on spikes. Unfortunately, so did the public, private managers and biologists, and the press. Very quickly in Texas, support for the Kerr study became a litmus test for loyalty. About that time, I was beginning to have second thoughts, as well. The properties and herds I was managing did not seem to respond to simply removing spikes. In fact, in some herds (most notably in Florida), removal of spikes was devastating, since nutritional limitations prevent even two-year olds from having forked antlers. In the spirit of the scientific method, I became a skeptic.

The two studies discussed so far are both well-known to the public and professional biologists, but there were others going on at the same time which did not get much press. In Alabama, a research team headed up by Keith Causey conducted a similar study, in which they bred spike and fork-antlered yearlings to groups of does; and, could not demonstrate a statistically significant difference in antler quality of their offspring. Later, the Alabama research group (Gray, et al., 2002, "The Yearling



*From: Gray, et al. 2002, The yearling disadvantage in Alabama deer: Effect of birth date on development, S.E. Assoc. Fish & Wildl. Agencies, 56: 255-264.

Disadvantage in Alabama Deer: Effect of birth date on development”, S.E. Assoc. Fish & Wildl. Agencies 56: 255-264) reported that there are a variety of factors that affect antler development. Their findings supported some of those at MSU. This study, unlike the MSU and Kerr studies, was done on wild deer, from 23 wildlife management areas in Alabama. Their conclusion somewhat contradicted the Kerr results:

“Because of variability of fawning periods in Alabama and subsequent effects on physical development, as well as differences in physical development among physiographic regions, selective harvest programs based on physical characteristics of yearling males may not be suitable as a means to improve genetic quality of deer populations.”

The MSU study also found a relationship between birth date and yearling antler quality. Previous studies in South Carolina and Louisiana supported these concepts.

In Louisiana, another research team (Shultz and Johnson, 1992) conducted studies to test the Kerr hypothesis. They concluded by 4.5 years of age, there were no statistical differences in antler points and mass between bucks starting out as spikes and those as forks.

Except for the one by the Causey team in Alabama, the studies discussed so far were on penned deer; controlled and coddled all their lives. What about deer like *you* deal with each year—running from coyotes, dealing with drought, fighting it out with the other deer for survival? Dr. Charles DeYoung, in my opinion one of the premier deer researchers in the country, has been studying wild deer for most of his long career. He reported in south Texas, antler size of free-ranging yearling bucks was a poor indicator of antler size at maturity.

By the late 1990s, I was doing some serious back-tracking on my position about spikes. My personal experience in management and research, plus research findings by other scientists I respect created serious doubts about the Kerr study. To my surprise, I went from a darling to a trouble-maker—in no short order in my home state! I was considered a heretic among many of my Texas colleagues, because I dared to point out “the emperor may not have on any clothes!”

Spikes were inferior, and anyone questioning this “fact” was ostracized. Reflecting back, I am reminded of the recent developments in global climate change, in which no skepticism is per-

mitted, in spite of the fact very little science supports claims. Scientists quickly were classified into two camps: Kerr and Mississippi. This somewhat amused me, since I really did not identify with either group. I just wanted to know the truth. But, one important fact must be noted. Because repeatability is the crux of the scientific method, we must be skeptical that the Kerr results have never been repeated by any research team.

So, in 1997 I made the suggestion in a meeting of Texas biologists that we come together to design a long-term experiment to monitor antler development in free-ranging deer. By we, I mean Stephen F. Austin State University, Texas A&M University, and Texas Parks and Wildlife. My research associate Ben Koerth was in attendance, and when we left I asked him, “Do you think it will fly?” He is a man of few words, and this case the answer was “NO!” We decided to go it alone, and thanks to the significant support of over a dozen ranchers, we managed to pull off the most comprehensive study to date on the subject. And, in the next installment I will present what Ben and I found out from this study; results that further ignited the battle. Stay tuned. 🦌