Dr. Deer's™ PRESCRIPTION

THE SPIKE WARS

Part 3: The lines are drawn—the fight begins.

By Dr. James C. Kroll and Ben H. Koerth

In the first two parts of this series, James introduced you to the history behind the spike buck controversy. It all began when the Texas Parks & Wildlife Department publicized findings from a study at the Kerr Wildlife Management Area near Kerrville. Their finding was spike antlered yearlings produced smaller antlers than forked yearlings later in life; thus, spike yearlings were considered genetically inferior to forks. This work almost instantly was picked up by landowners, managers and biologists as a "quick fix" to increase antler size. James was included among these. Then came reports from Mississippi State University about work being done by Dr. Harry Jacobson, which totally contradicted the Kerr results. According to Dr. Jacobson, there was no predictability between a buck's first set of antlers and what he might grow at maturity. Obviously both studies could not be right. Other, less known studies in Louisiana, Alabama and Texas appeared to support the Mississippi position. In fact, replication of results—the hallmark of the scientific method—never occurred in other studies. The Kerr study stands alone on this contentious issue.

Ben joined our research team here at Stephen F. Austin State University in 1991, primarily to oversee field research on issues and needs identified by deer managers. Obviously, the spike issue quickly emerged as a high priority project. Our work with hunting clubs here in eastern Texas, plus James' experiences across the South had led us to doubt the validity of removing spike yearlings from the herd. Another word describing scientists is "skeptical," meaning we should be very different from the layman. A good scientist does not believe something, even when he sees it with his own eyes. In order for something to become accepted by the scientific community as a "fact," it has to be tested and tested again, each time coming up with the same results. The spike issue certainly qualified. So, by 1995 we had decided to design another experiment to test the hypothesis: "Is a yearling buck's first set of antlers a reliable predictor of the quality of his antlers at maturity?" This was not designed to be a genetics study nor were we relegated to another penned deer study; rather our study was conducted on free-ranging deer making a living in the

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wild, the kind YOU are trying to manage.

We called a meeting with Texas Parks and Wildlife Department personnel and some other scientists, offering the opportunity to partner with us on this project. It did not take long to discover we would be alone on this project. It's not for us to say why, only that is how it worked out. Fortunately, however, a number of landowners in South Texas stepped up to the plate to support the study. And, we all owe them a debt of gratitude. In 1998, we began the most comprehensive study ever attempted on this topic. It ultimately would cost well over a million dollars and thousands of man-hours of effort. At the time of this writing we have captured 6,648 deer representing 3,985 different bucks. Here is how the study was conducted.

The Study

While it may sound great on paper, studies of free-ranging deer are not easy. One of the biggest problems in studying free-ranging deer is being able to positively identify a large number of known-age bucks. Also, you have to be able to repeatedly handle the deer so measurements can be taken from the same deer from one year to the next. This is no easy task.

However, the development of the aerial net gun technique certainly has made this kind of work easier. The net gun method allows easy and safe handling of animals after they are caught. Once the animals were captured, we tagged the bucks with color-coded ear tags, individually numbered for that deer. The color of the tag instantly tells the age of that deer when they are seen again. The number tells exactly which deer it is. We also tattooed a letter and number corresponding to the ear tag inside one ear in case the ear tags came up missing for any reason. Inside antler spread was measured quickly and the antlers were removed for final measuring later. This way the animals could be released quickly at the capture site to continue to make their living as a wild deer.

By its nature this had to be a very long-term study. A large number of yearling bucks had to be captured so we can measure their first set of antlers. These same bucks were recaptured after they matured or final antler measurements were taken when the bucks were killed as mature animals during hunting season. In a nutshell, that is the study and the methods we used to accomplish this task.

More Doubts

Our study generated little attention the first two years, primarily because we kept a lid on what we were doing. There were enough scientists "jumping the gun" on results, just for publicity's sake as it is! Yet, by year three, our skepticism was beginning to be justified. We decided to give a presentation at the TTHA Hunters' Extravaganza that August as a progress report only. The reaction was explosive to say the least! Almost immediately we began to hear about things being said about us; mostly that our work was unpublished in a peer-reviewed journal, and our

The authors designed an experiment to determine if a yearling's first set of antlers is a reliable predictor of antler quality at maturity. The results, pictured from left to right, Table 1 (2.5 year olds); Table 2 (3.5 year olds); Table 3 (4.5 year olds; Table 4 (5.5 year olds).

1.5 Year old		2.5 Year old					
# points	N	# points	Inside spread	Beam length	Tine length	Circum-ference	Gross B&C
2-3	180	6.9	12.0	28.6	16.7	19.1	76.4
4+	166	8.2	13.6	32.7	25.6	22.0	93.9
Total	346						
P value		0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Significant difference		Yes	Yes	Yes	Yes	Yes	Yes

1.5 Year old		3.5 Year old					
# points	N	# points	Inside spread	Beam length	Tine length	Circum-ference	Gross B&C
2-3	85	8.4	14.9	35.9	28.5	24.8	104.1
4+	89	9.0	15.5	38.1	34.0	25.7	113.3
Total	174						
P value		0.0007	0.0381	0.0004	0.0001	0.0989	0.0001
Significant difference		Yes	Yes	Yes	Yes	No	Yes

1.5 Year old		4.5 Year old					
# points	N	# points	Inside spread	Beam length	Tine length	Circum-ference	Gross B&C
2-3	41	9.0	16.2	40.7	36.2	27.7	120.8
4+	49	9.0	16.6	40.2	38.1	28.9	123.9
Total	90						
P value		0.8452	0.2642	0.5849	0.3578	0.1903	0.3206
Significant difference		No	No	No	No	No	No

1.5 Year old		5.5 Year old					
# points	N	# points	Inside spread	Beam length	Tine length	Circum-ference	Gross B&C
2-3	24	9.8	18.3	44.9	45.4	30.7	139.4
4+	32	9.7	17.7	43.7	48.3	31.1	140.7
Total	56						
P value		0.8801	0.3321	0.2712	0.1032	0.5574	0.7453
Significant difference		No	No	No	No	No	No

sample sizes were small. We knew there were folks who would take all this personally, but personal it became. We had declared "The Emperor has no clothes," and the Emperor and his followers were not happy. In 2008, we were ready to publish our results in the journal of record for professional wildlife biologists, "The Journal of Wildlife Management."

What did we find out?

With almost 4,000 bucks recaptured, we think the issue about sample size has become moot. In fact, we like to think we now have the world's largest collection of small antlers. First year results revealed number of antler points pretty much were spread across the board. Just as many yearlings had four-plus points as those with three or less. The next year (2000), however, the percentage of yearlings with three or less points jumped up to two-thirds. It did not seem rational to us genetics could change that quickly. Then in 2001, the point distribution returned to that of 1999. Over the next six years, the pattern repeated itself, with the last four years appearing to be stuck on the high percentage of spikes and three-pointers.

Clearly, it's not possible for genetics to change in the manner we observed, so we decided to conduct some analyses using rainfall data. For many years, South Texas biologists have considered annual rainfall a good predictor of antler quality that season. However, our analyses of number of yearling antler points versus seasonal rainfall did not show any relationship; except for a weak correlation with fall rainfall. That seems to make sense, as buck fawns are weaned and on their own by October. Yet, we emphasize the relationship only held true for some of the study years. We cannot state with any authority that seasonal rainfall is the culprit in determining the number of points yearlings have in any one-year.

But, the real question remained: "Can we predict the size of a buck's antlers at maturity by what he has on his head as a yearling?" The next step was to test this hypothesis. As planned before we ever began collecting data, we divided the bucks into two groups—those that started out with three or less points and those with four or more. We chose these groups based on the regulations in use by TPWD in 61 counties at the time of our study (52 additional counties after the study).

When we conducted statistical analyses on the bucks at 2½ years, the Kerr Study appeared to hold true (see Table 1). Bucks that started out with 3 or less points had statistically smaller antlers (points and Boone & Crockett measures) than their forked counterparts. At 3½ years (Table 2), all but one measurement remained significantly different. Basal circumference no longer was different. Yet, whitetails do not mature until they are 4½ years of age; hence, we continued the study to recover bucks older than 3½ years. At maturity (4½ years; Table 3), *all differences disappeared*. Yearling bucks with three or less antler points were just as likely to produce quality antlers as forked cousins. The statistical results were consistent into the fifth (Table 4) and now sixth years.

We then asked ourselves, "But, what about the ones that turned into above average bucks?" So, we looked at the proportions of the two yearling antler classes that exceeded average. Our research and that of other scientists such as Dr. Charlie DeYoung have supported the average mature buck in south Texas "wants" to have eight points and score about 130 B&C. Of the four-point or larger yearlings, 48.1 percent broke average in their lives, while 47.7 percent of spikes and three-pointers exceeded average—a statistical dead heat. When we upped the bar to 150 inches (certainly trophy class in most hunter's book), a surprisingly small proportion of each class ever broke this barrier. Only 12.3 percent of four-plus pointers and 15.4 percent of spikes and three-pointers broke this high bar. [Do not be fooled by the difference in percentages; they are <u>not</u> statistically different.]

Now, not all deer made it through the full study. Some apparently left the ranch, some may have died naturally and legal hunters killed some later. The length of the study dictated we could <u>not</u> ask the landowners not to take any bucks. Being conscientious, skeptical scientists we asked yet another important question: "Did removal of some bucks by hunters bias our results?" In other words, were the poor quality bucks removed, leaving only the better ones for subsequent measurement? We will discuss this at length in the next installment. Suffice it to say at this point, there were <u>no</u> statistically significant differences supporting a bias against our results.

The paper was published in Volume 72 of "The Journal of Wildlife Management" under the title, "Juvenile-to-adult antler development in white-tailed deer in South Texas." We sent an advanced copy to the Department so no one would be caught by surprise by our findings. Quickly, we were invited to make a presentation on our study to the White-tailed Deer Advisory Committee, on which James serves. We were delighted to accept and prepared the talk. What we did not know was publication of the paper had set off a firestorm among proponents of shooting spiked yearlings, most notably within the Department. As with global warming science, support of the Kerr Study had become a litmus test in the Lone Star State.

Arriving at the hotel in Austin where the meeting was to be held, it did not take long to figure out what was going on. We were to present our findings all right, but we were sandwiched between an assembled group of "referees" from two universities; Texas A&M at Kingsville and Mississippi State University. Although our study had been peer-reviewed, accepted and published in the journal of record, the presentations preceding and following us were from unpublished, non-reviewed studies.

But, we are big boys and criticism is the hallmark of good science, so we were not all that upset, even though we did not know what was coming. The meeting setup allowed us for the first time to really dig into the background and quality of science that created this controversy in the first place. In the next and final installment, James will present for the first time in publication the real issues of the Spike Wars. Stay tuned, it gets really interesting.