

Dr. Deer's Whitetail World

BY DR. JAMES C. KROLL

Aging Whitetails — Some Lifelong Observations

One of my most prized possessions is a highly carbonized jawbone from Citrus County, Florida. Its owner lived and died about 1.7 million years ago. Since the jawbone was found along with a piece of antler base, its owner probably was a buck. Judging from the wear on its teeth, the deer that once possessed this 1.7-million-year-old jawbone was 7 1/2.

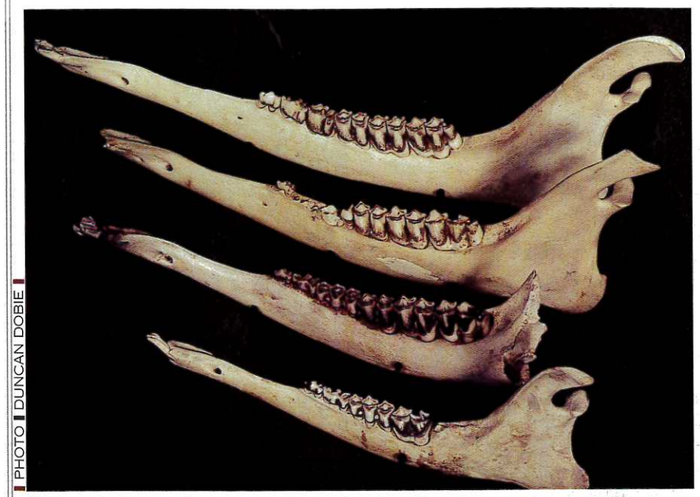


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Although the tooth-wear method of aging deer is not always 100 percent accurate (especially with older-age-class deer), Dr. Deer says the secret is to be right more than you are wrong in judging the actual age. From bottom to top, these jawbones are: 1) from a 6-month-old fawn; 2) from a 1 1/2-year-old "long" yearling; 3) from a 1 1/2-year-old yearling with new permanent teeth just beginning to erupt; and 4) from a 2 1/2-year-old deer.

Thanks to a biologist named Severinghaus, today's deer managers routinely assign ages to harvested animals. The basic methodology is referred to as either the Severinghaus technique or the "tooth wear and replacement" technique. Working with another scientist named Cheatum, Severinghaus collected a handful of known-age jawbones for study.

The two men noticed that by counting the number of teeth in the lower jaw and assessing the amount of wear on each tooth, a reasonable estimate of the deer's age could be determined. Since publication of this method in the late 1940s, literally hundreds of thousands of deer have been "aged" by managers and researchers. However, as with many tools used by biologists, the tooth wear and replacement method includes a certain amount of variability.

PINPOINTING BREEDING DATES

In reality, the aging of a deer starts even before it is born. Some excellent work by biologists like Joe Hamilton of South Carolina (who is also the founder of the Quality Deer Management Association) clearly has shown that the distance from the rump of a fetus to the top of its head (crown) is a reliable indicator of the number of days since it was conceived. Each season we collect hundreds of fetuses from harvested does to determine when deer breed in particular regions.

Not surprisingly, the fetal age data from a specific area indicates the resident deer do not all breed in one day. When we plot out the number or percentage of fawns conceived over the breeding season, many times the resulting distribution resembles a "bell-shaped" curve.

A handful of does are bred very early in the year, and an equally small number are bred very late, but most are bred within a two-week period. At least, that is the way it should be for a healthy deer herd. Over the last two decades, however, I have seen an alarming number of herds that do not exhibit the typical breeding curve.

Breeding, more and more, is strung out over 60 to 90 days. Why? Does often come into the breeding season in poor condition because of over-population. We call this a "trickle" rut. To make things worse, even when deer are in good condition, the same breeding patterns often occur in many places due to a general lack of males.

Does in most of North America start cycling as early as September, and they may continue coming in and out of estrus as many as seven times. Bucks determine when your deer breed, although they generally come into breeding condition later than does. It is nature's way of ensuring successful reproduction. I first discovered this phenomenon when conducting semen production research around the U.S.

Bucks sampled in mid to late October in the Midwest were producing large amounts of viable semen, while their counterparts in South Texas had little or no sperm at the same time. Yet, our studies on ovulation in does proved that does in both regions could be bred at the same time, *if* fertile bucks were available.

So it is the buck and *not* the doe that determines the right time for breeding. And if there are not enough bucks to go around, some of the does will not get bred during their first or second cycle. This results in fawns being born later in the year and may jeopardize their survival. The gestation period for whitetails averages 198 days, and ranges from 185 to 210 days. So a doe breeding in mid-November in Kansas will fawn about 6 1/2 months later in late May or early June.

The lush growing conditions at this time are more than adequate to support the mother for milk production. And, just as important, the fawn weans 45-60 days later at a time when there is adequate nutrition to prepare the young deer for winter. However, a fawn born just 45 days late may survive the summer, but it may starve to death during the critical weeks after weaning.

So being able to accurately age fetuses is an important aspect of monitoring the management progress in a herd. And even though the aging system is not 100 percent accurate, statistical analyses suggest we can be at least 90 percent sure of the fawn's conception date.

THE TOOTH WEAR DILEMMA

The clock for aging deer by tooth wear and replacement begins at birth. The fawn begins life with only three teeth (milk teeth) in its lower jaw, and these teeth are destined to have a relatively short life. During this time, three additional teeth erupt behind them, making the full complement of six lower jaw teeth. They are soft and become worn out by 18 to 22 months. At some point during this period, the milk teeth are pushed out by new permanent front teeth.

This makes the fourth jaw tooth the oldest. You've probably seen illustrations showing the amount of wear on this fourth tooth, followed by the fifth and sixth, and the amount of wear on these teeth often helps age deer that are 2 1/2 or older.

However, I've heard some amazing "wives" tales concerning what determines the wear on these teeth. "In our area there is a sandy soil," one guy will claim. "So the teeth of our deer wear out faster."

Others think the fiber content of browse also influences the amount of wear. The truth is, the deer in our research pens — eating nothing but prepared pellets all their lives — show no less tooth wear than deer that spend their lives out in the wild.

So is the Severinghaus method 100 percent accurate? No. Wildlife science is often defined as being both art and science. And aging a deer is as much art as science. The trick is to be right more than you are wrong. But how "right" do we need to be?

EXACT AGE: IS IT REALLY THAT IMPORTANT?

Additional research on aging deer has produced several relationships between age and a morphological (body) measurement. For example, the weight of a deer's eye lens has been shown to be a reasonable predictor of its age. However, how many hunters have the expertise and equipment to extract eye lenses, dry them and then obtain their weight?

Another useful method is similar to counting tree rings. By counting the number of rings in a cross-section of the trunk, you can estimate the age of almost any tree. Likewise, a specialized technique done with a microscope creates what are known as *cementum annuli* counts, which can give us a reasonably accurate age for deer.

In the laboratory, technicians remove the hard calcium from the tooth and then cut thin sections crosswise. After they're stained, the sections resemble those made through tree trunks. The rings can be counted and then related to the age of the deer. Comparative studies between aging by tooth wear and replacement and the *cementum annuli* methods generally agree for deer 3 years old or younger, but are different for older-age-classes. The *cementum annuli* method appears to be more accurate, but both methods are only about 40 to 50 percent correct in older-age-classes.

So how are we to age deer accurately? And do we really need to know exactly how old a deer is at harvest? Most aging techniques are plus or minus a year in accuracy, and that is more than sufficient to manage a deer herd properly. Furthermore, in my opinion, there are only five age-classes significant to managing whitetails: fawns, yearlings, immature (2.5 to 3.5 years), mature (4.5 to 5.5 years), and over-mature (6.5-plus years). These five groupings will give you all the information you need.

WHAT ABOUT LIVE DEER?

So far we have talked mostly about aging deer after they are dead. But what about *before* you pull the trigger? In 1996 I wrote a book on that very subject *(Aging and Judging Trophy Whitetails)*. This was followed by a video, and both became very popular among deer managers. In the book and video, I showed how you can use simple body characteristics to age live whitetails. Our most recent research on this topic using known ages of bucks and does has shown an amazing accuracy rate among average hunters. It all goes back to what I said earlier about wildlife management being both science and art.

When it comes to aging deer, it is more art than science. After all, when you go to the store to buy bananas, do you walk along the produce aisle looking for a fruit that ranges from 6 to 8 inches in length and matches a scientific color chart in the yellow range? Of course not! Your memory tells you what a banana looks like and that's what you buy. So it is with deer aging. Experience is the best teacher.

I once read an antique book belonging to a wealthy friend. It was published in the late 1500s and was titled *The Rules of Hunting*. Believe it or not, much of what I have just written can also be found in that book. It included chapters on judging bucks (stags) and aging them on the hoof. So when it comes to aging deer, have we really discovered anything new?

For 34 years I've been blessed to work with deer. During that time they've taught me a great deal. Some of it was learned by intense scientific study and analysis. But I've also learned as much or more from simply spending time with these wonderful animals and recognizing what they were trying to teach me. I hope we never get to the point where we try to replace the art portion of our business with pure, cold science. . . .