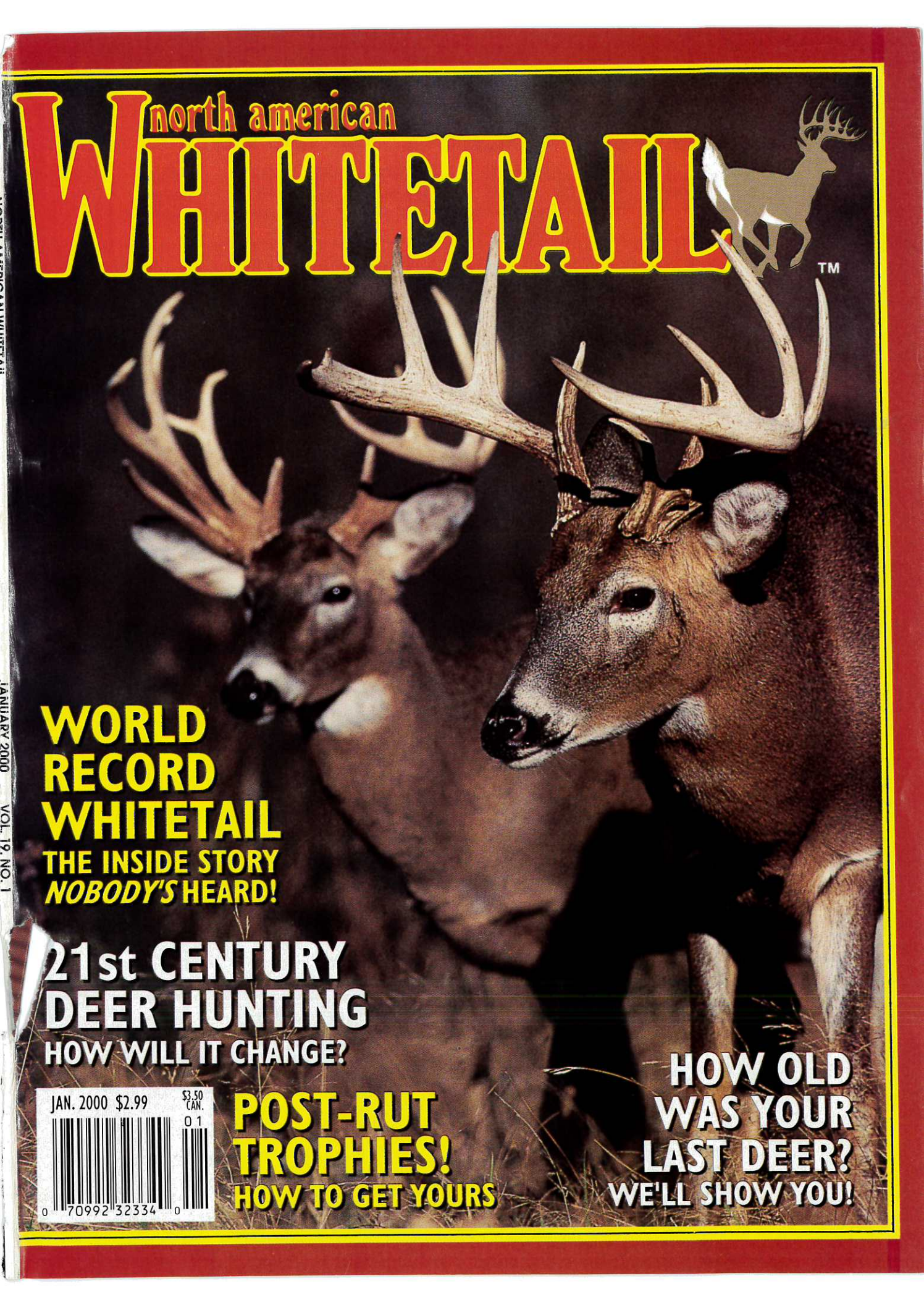
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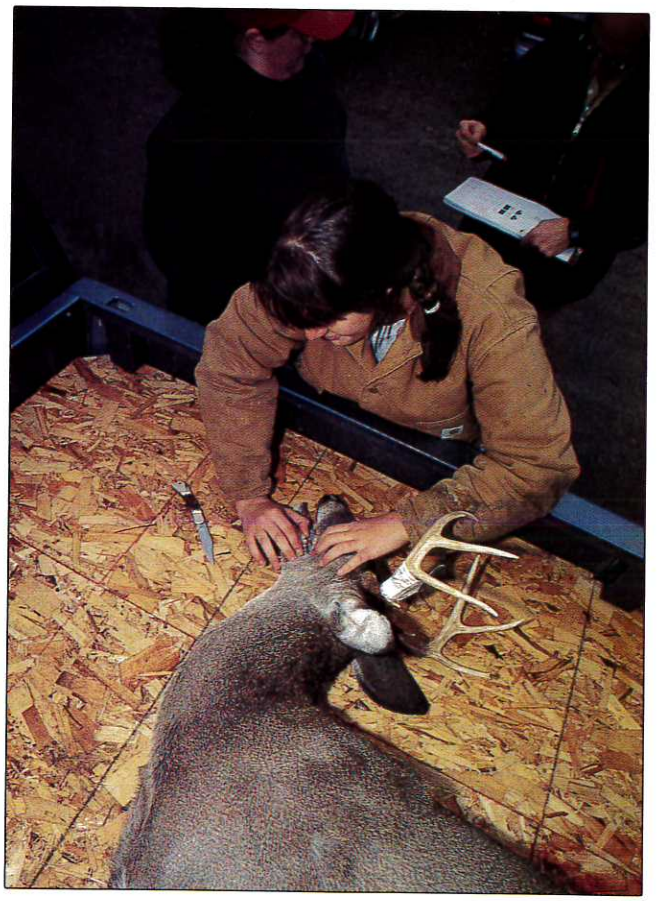
Aging The Deer On Your Hunting Land

Are you mystified by the process of determining a deer's age? Don't be. We'll teach you how to do it — and just as importantly, we'll tell you why it's a key to having a healthy herd.

by Dr. James C. Kroll

As we've discussed throughout this series on private-land management, nutrition probably is the single most important factor in growing big deer. However, even when whitetails are on a great diet, the sad truth is that they'll never realize their true potential *unless you give them a chance to grow up.*

Here at the Institute for White-tailed Deer Management and Research, we get a lot of feedback from the public; in fact, to date we've responded to more than 35,000 requests for information on food plots alone! And how to age deer — live or dead — is the next most common question we get. So there's no shortage of interest in the topic.



Check-station personnel often check the age of harvested deer to give wildlife agencies an indication of herd trends. Knowing the age of deer on an individual tract of land is of even more importance; it tells you a lot about the health of your herd and how well the management plan on your land is working. Photo by Michael Skinner.

If for no reason other than simple curiosity, almost all hunters would like to know the age of deer they've shot, as well as those that are still walking around on their land. But the benefits of being able to age deer go far beyond that. It also can show us: 1) the herd's overall age structure; 2) how antlers vary by age; 3) the progress of the management program; and 4) overall herd health. All of these are critical.

Next month, we'll look at ways to estimate the age of a deer before you shoot it. For now, let's talk about those that have already been harvested.

THE AGING CONCEPT

Finding reasonably accurate methods for aging various species of wildlife is an important job for biologists. New York researcher C.A. Severinghaus was the first person to really apply scientific observation to the topic in whitetails. Back in the 1940s, he used deer of known ages to work out the patterns through which they grow their teeth and wear them out over time.

While there have been a number of refinements (and criticisms) of this pioneering work, the end result is that 50 years after first being described in print, Severinghaus' "tooth wear and replacement" method remains the most practical one for management.

The whitetail is a ruminant, meaning it chews a cud and has a so-called "four-chambered stomach," with each of these chambers being responsible for breaking down and absorbing the various nutrients found in plants. The largest of these "stomachs" is the rumen, a large bag in which quickly swallowed food is collected for later *(Continued)*

finding late-season bucks. Late-season hunting tactics are certainly no big secret. Find the food and you'll find the deer. Most serious hunters know this relationship but still fail to adjust their hunting techniques to suit the situation.

These techniques never worked better for me than in late November 1997. I was invited by a friend to hunt a small parcel of land just outside the city limits, and I quickly decided to take him up on the offer. I spent most of a day studying topographical maps and aerial photos of the area, looking for potential food and bedding areas within the confines of the small farm. The rest of the day was spent getting a first-hand look at the property, and I soon had my stand hung overlooking a heavily used trail connecting a picked corn field with a thick cedar swamp. The next morning I arrived at my stand an hour before sunrise and waited to see if my previous day's work would pay off.

The morning started off slowly, but by 11 a.m. the action started to heat up. I was nearly frozen solid from hours spent in the subzero temperatures when a small *crack* from the pines warmed me immediately. I looked up through frost-coated eyelashes to see a mammoth buck making his way down the trail. Within seconds he was right on top of me, and my arrow anchored him within sight of the stand.

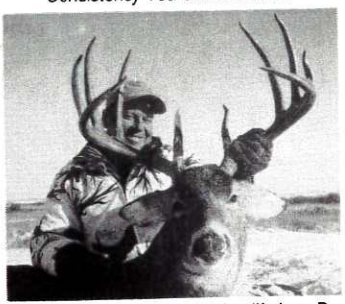
I'd be the first to admit that late-season trophy hunts seldom end this quickly or easily. I've spent hundreds of chilled-to-the bone hours on stand with nothing more to show for it than frostbitten fingers and an empty freezer. After all, by this time of year even young whitetails are hunter-wise veterans with many months of combat experience under their belts. But by the same token, you, too, should be a seasoned veteran with a few tricks of your own.

While not all 11th-hour trophies are taken in the same way, all successful late-season hunters do have one trait in common: They're willing to stick it out until the very end. Find a prime late-season feeding area and hunt it patiently, and you just might end the year with your own triumphant trip to the taxidermy shop. After all, whether we choose to believe it or not, big bucks are out there all season long. The question is, Are we?

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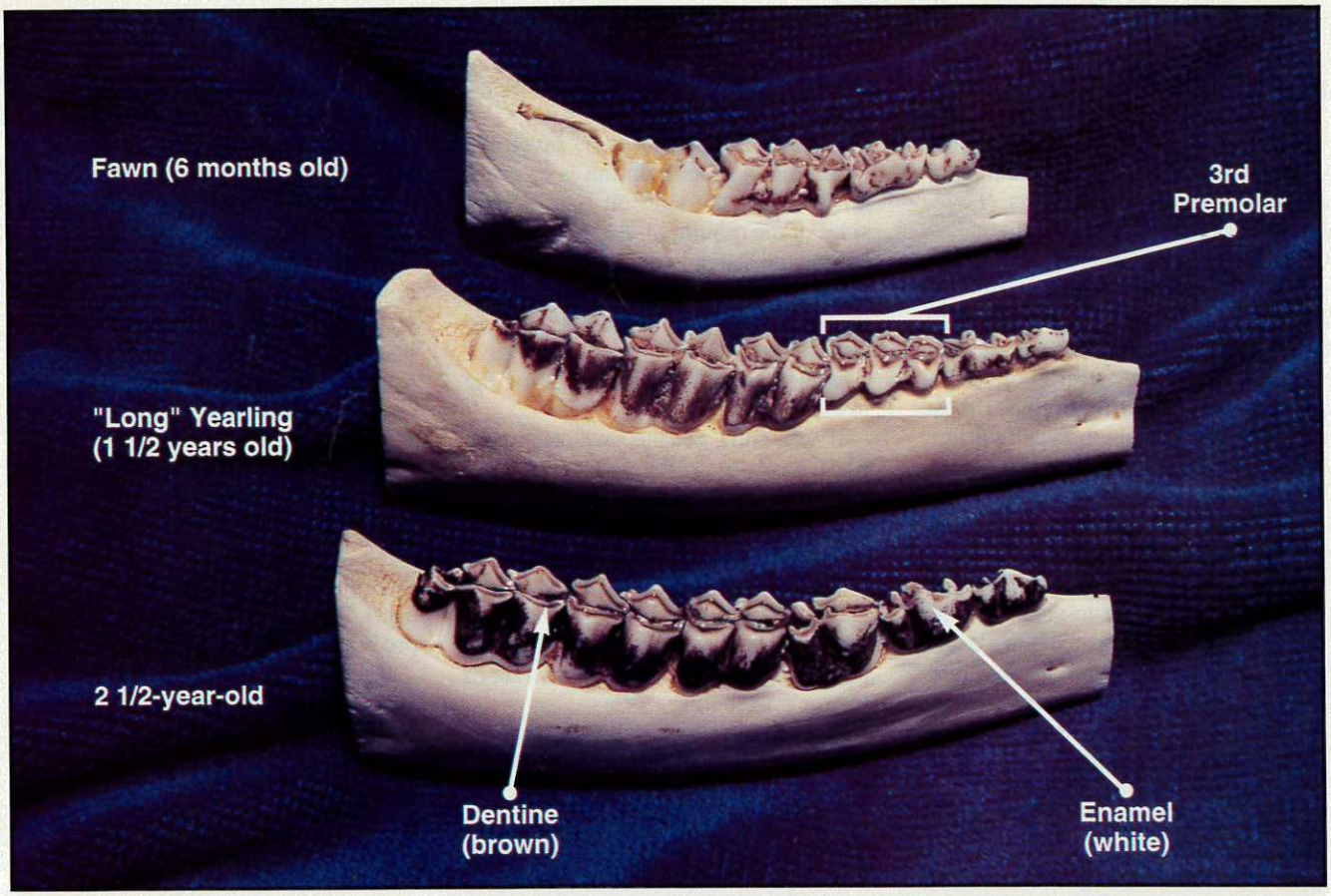
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AGING DEER BY TOOTH WEAR

These lower jawbones, taken from whitetails of known ages, show that tooth wear follows a predictable pattern.

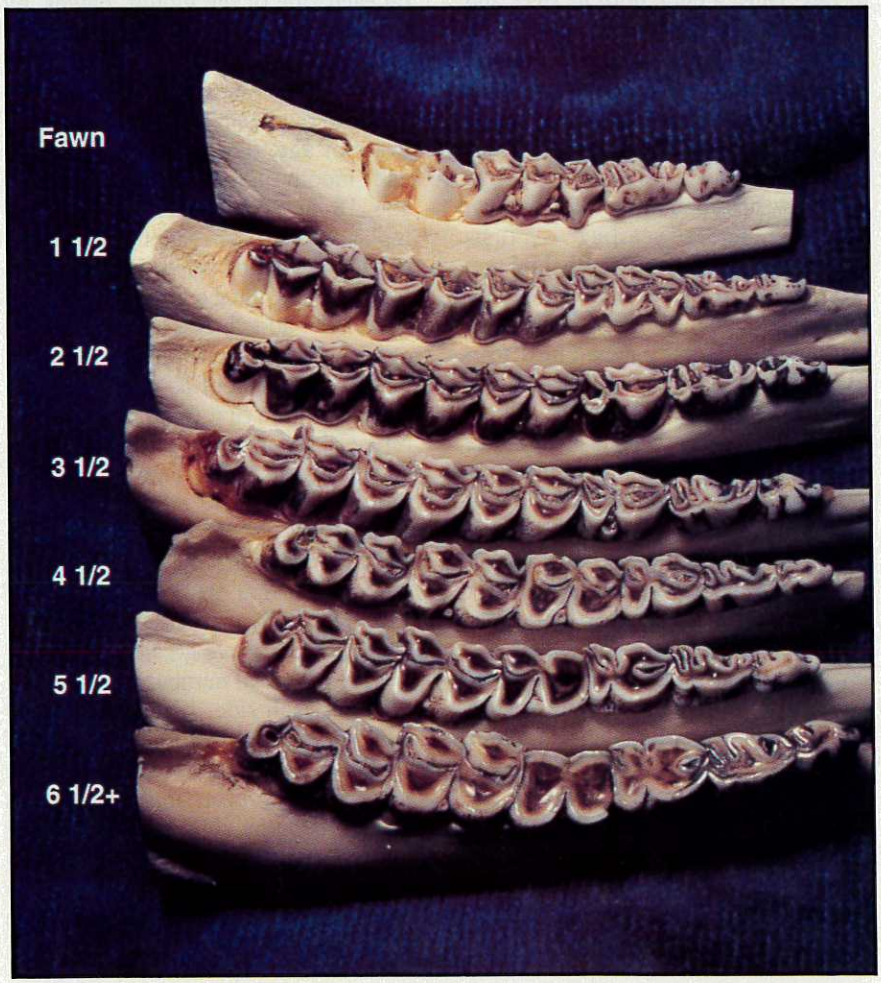
All of these were taken from the right side of the mouth, meaning the front teeth are to the viewer's right and the inner (tongue) side is to the top. These jawbones have been trimmed for display purposes; incisor teeth from the front of the mouth are not shown.

Body size gives away most fawns; however, if in doubt, count the teeth in back of the lower jaw. If there are fewer than six per side, the deer is a fawn. (The fawn above has only four fully erupted jaw teeth.)

If there are six lower jaw teeth, next check the third tooth (counting from the front). If there are three cusps on this tooth (as shown above), the deer is 1 1/2 years old, a "long" yearling.

If the third tooth has only two cusps and there is not yet any visible wear on the tongue-side cusps of the fourth tooth, the deer is 2 1/2 years old.

By age 3 1/2, the hard, white enamel on the fourth tooth has begun to wear away noticeably, revealing more of the soft, brown dentine. This wear only becomes more obvious in following years, especially on the fourth, fifth and sixth teeth.



processing.

In whitetails, the upper front teeth are absent. Instead, there's a thick pad against which the lower front teeth (incisors) pinch off plant parts. (I once heard a hunter claim that he knew he'd killed a really old buck, as the animal's upper front teeth were missing!) After being pinched off, the large plant parts are swallowed without being chewed.

Later, after the deer's return to protective cover, it regurgitates these materials and then methodically grinds them up, using its back (jaw) teeth. The pieces finally become small enough to be broken down by microorganisms in the digestive tract.

As was demonstrated in the New York study, the side-to-side grinding motion of the jaws wears down a deer's teeth at a reasonably predictable rate. Thus, the jaw teeth (especially those of the lower jaw) can give us a very good idea of the animal's age.

AGING TERMINOLOGY

Why are deer aged in half-years? The simple answer is that they're typically born in spring and harvested in fall. Thus, a buck born in 1998 and shot in the '99 season was roughly 18 months (1 1/2 years) old when taken.

Most hunters call a deer of this age a "yearling." But over time, I've come to prefer using the term "*long* yearling," particularly when dealing with hunters who grew up around livestock. In farm and ranch lingo, a "yearling" is a first-year animal. As a guy recently told me, "I saw five does, a buck and three yearlings." Upon further questioning, I learned that he really meant he'd seen five does, a buck and three *fawns*.

YOUR FIRST MOVE

In aging a deer whose jawbone is still intact, the obvious first step is to look inside the mouth. This sounds simple, but it actually can be a chore if the deer has been dead for several hours and *rigor mortis* has set in.

If you can't get to the deer before the mouth clenches shut, you still have several options. First, you can buy or make a "jaw spreader." (They're sold by Forestry Suppliers in Jackson, Mississippi.) Simply turn this metal device sideways, push it between the deer's jaws and then twist it 90 degrees, forcing the jaws apart. This generally provides you with enough room to get your hands (and flashlight beam) back into the area of the jaw teeth for an adequate examination.

If a deer's cape isn't to be saved for mounting, a second option is to use a knife to cut the skin on one or both sides of the mouth, all the way back to behind the last jaw tooth. Although the upper and lower jaw teeth will be close to each other, you should be able to pull the jaws apart far enough to give you a good view of the tops of the lower teeth.

If you can't get the jaws open and don't want to cut the cape, wait until the head has been skinned out before examining the teeth. Many taxidermy shops will save jawbones for clients, but only if requested to do so. If you take this approach, it's a good idea to pick up the jawbone as soon as the head is caped out, to reduce the risk of loss or mislabeling.

Now that we have a deer's jawbone to study, either in hand or still in the animal, let's see what it can tell us.

STEP-BY-STEP AGING

In a whitetail at least 1 1/2 years old, there are a total of six lower jaw teeth on each side of the mouth. Fawns, by contrast, have only the front three of these, which are called "milk teeth." These temporary teeth are relatively soft, and by the time the deer reaches 2 years of age, they're totally worn out and smooth on top. Usually at around age 18 to 22 months, all three are replaced with permanent jaw teeth, called premolars. Also, by the deer's first birthday, three additional jaw teeth have been added, resulting in the full complement of six jaw teeth the animal keeps for the rest of its life.

Because the first three jaw teeth are replaced by a deer's second birthday and the next three come in one at a time (from front to back), starting at around the age of four months, the fourth tooth is the oldest tooth in the jaw of deer that are over one year of age. The relevance of this fact will become clear as we go along.

Count the total number of lower jaw teeth on each side. If there are fewer than six, the deer is under 1 year of age. (Of course, most of us know a fawn without even looking into its mouth, but you might be examining only a jawbone, not the animal itself.)

If all six jaw teeth are present, the next place to check is the front three teeth. In a long yearling (age 1 1/2), these teeth show considerable wear, because they're soft. But the key is the *third* lower jaw tooth. In deer, it's the only one with three cusps (or crowns).

After this three-cusped milk tooth is shed, it's replaced by a permanent tooth that has only two cusps, like all the rest. So *if you look into a deer's mouth and it has six jaw teeth and the third lower jaw tooth has three cusps, the deer is always a long yearling (age 1 1/2).*

There are two sides of each tooth: the tongue (lingual) and lip sides. The cusps on the tongue (inner) side of the tooth will be our focus as we try to determine the age of any deer beyond age 1 1/2, for these cusps tend to show predictable patterns of wear over time.

Ruminants' teeth are made up of alternating folds of hard and relatively soft material: enamel and dentine, respectively. Enamel is whitish, while dentine is brownish or off-white. These color differences greatly simplify the process of aging deer.

Each tooth cusp is like a cone, with more inner-core dentine and less enamel as you near the gum line. Thus, as a tooth wears, the enamel becomes thinner and more dentine is revealed. Comparing the relative widths of enamel and dentine on the tongue side of each tooth lets us assess wear.

If all six jaw teeth are present and the third one from the front has two cusps, we know we're looking at a deer older than 1 1/2. Now we turn to the fourth tooth, the oldest one in the jaw. (Again, the first three jaw teeth are shed before the deer's second birthday, and the fourth, fifth and sixth jaw teeth are added sequentially before this occurs.)

If the enamel on the tongue-side cusp of the fourth tooth is as wide as or wider than the dentine, the animal is placed into the 2 1/2-year-old category. Very little wear occurs in this area prior to a deer's third birthday.

What if that fourth tooth's tongue-side cusp has a worn surface with dentine exposed? Then we move on to the next-oldest tooth in the mouth — the fifth lower jaw tooth — and check its tongue-side cusp. If there's little or no wear, the deer is classified as a 3 1/2-year-old.

If there *is* noticeable wear, however,

we must look at the sixth tooth. A lack of significant wear on its tongue-side cusp reveals the animal to be 4 1/2 years old, but if wear *is* noticeable, the deer is at least 5 1/2 years of age.

We've now run out of tongue-side cusps to examine, so how do we age a deer beyond 5 1/2? We go back to the oldest (fourth) tooth. On a whitetail of age 6 1/2 or older, the enamel is either completely or almost completely worn away from the center of this tooth. (If any enamel does remain, it's often only a small circle of whitish material.) If the center of this tooth isn't yet worn smooth, the deer is 5 1/2 years old.

All deer older than age 5 1/2 I lump into the "6 1/2-plus" category, because beyond 5 1/2, it's difficult to determine an exact age without cross-sectioning incisors. (See Page 52.)

HOW ACCURATE IS THIS AGING TECHNIQUE?

As with people, not all deer have equally durable teeth, and not all eat exactly the same amounts of the same foods. Some chew more on one side of their mouths than on the other. Due to such factors, rates and patterns of tooth wear frequently vary somewhat from what's considered "normal." This is especially true with older deer.

Knowing this, roughly every decade or so some enterprising young scientist undertakes to prove that because of variations in tooth wear, the public can't age deer accurately enough for management purposes. The implication is that some other method should be used instead. But the "tooth wear and replacement" method is the only one easily adapted for use by laymen.

Besides, even if age estimates made by this method aren't always totally accurate, I still feel they're plenty close enough. Why? Because *all biological phenomena are normally distributed.* That is, if we take any measurement or observation from a population of deer (or people or squirrels, for that matter) and graph the results, what we'll get is a data set approximating the classic "bell-shaped" curve. Most of the data will conform to the norm, forming a rounded peak. Meanwhile, relatively few specimens will show up very far to one side or the other of that peak.

To test whether or not variances in tooth wear might cause problems in managing a herd, our institute recently used a super computer to conduct more than a half-million simulations on aging error. Based on the results, we concluded that as long as you're within a year of the actual age of the deer, there's no significant problem to worry about. And the larger your data set (that is, the more deer you check), the more any errors in underestimating and overestimating ages will tend to cancel each other out.

What this means is that getting close to a deer's true age really is good enough. In fact, in all but the most intensive management situations, you really only need to be able to place deer in one of four categories: fawn; yearling (age 1 1/2); immature (2 1/2); or mature (3 1/2-plus). This will allow you to run a population model on your herd, as we've detailed in several past installments of this series.

GETTING HELP

A variety of aids now on the market can help you age deer by tooth wear. There are plaques featuring synthetic jawbones molded from known-age deer, plastic sheets you can carry into the field, etc. (Our institute has a book and video on the topic; call 409/468-3301 for details.) You also should be able to get help from wildlife-agency deer biologists.

Annually in our area of East Texas we help hundreds of landowners in their management programs. Part of our requirement is to have them collect the lower jawbones of deer harvested from their properties. They send in the dried jawbones, along with record books detailing each animal's age, weight, reproductive status (if a doe) and antler measurements (if a buck).

We then check each jawbone against the age assigned it by the club, then correct that record book accordingly if the original age proves to be in error. Finally, we encourage each club to assemble a set of known-age jawbones unique to its land for use in making future field comparisons.

* * *

Learning to age deer broadens your horizons as a hunter and makes you far more aware of the important issues in management. The better you are at it, the easier it is to make decisions that benefit yourself and the herd.

(Editor's Note: Next month, along with the author's look at estimating the ages of *live* deer, we'll bring you a feature by his research associate, Ben Koerth. Ben will profile some real-life examples of management from the files at the Institute for White-tailed Deer Management and Research. This will show why some management programs succeed while others with similar resources fail. Don't miss it!)



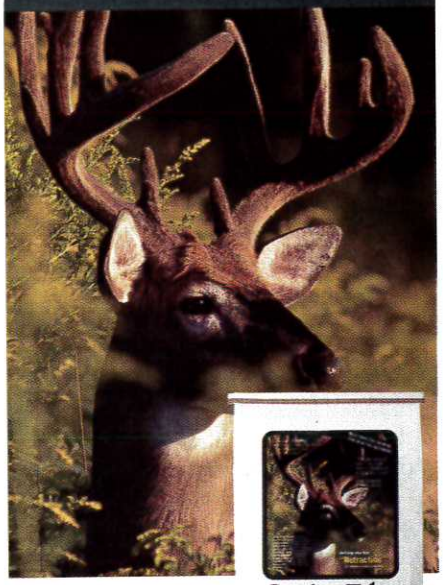
If you aren't going to save a deer's cape, the easiest way to examine its teeth is by cutting the skin from the corner of the mouth to the rear of the jaw. The presence of six jaw teeth per side, with the third tooth from the front having three cusps, shows this buck to be just 1 1/2 (a "long" yearling). Photo by Gordon Whittington.

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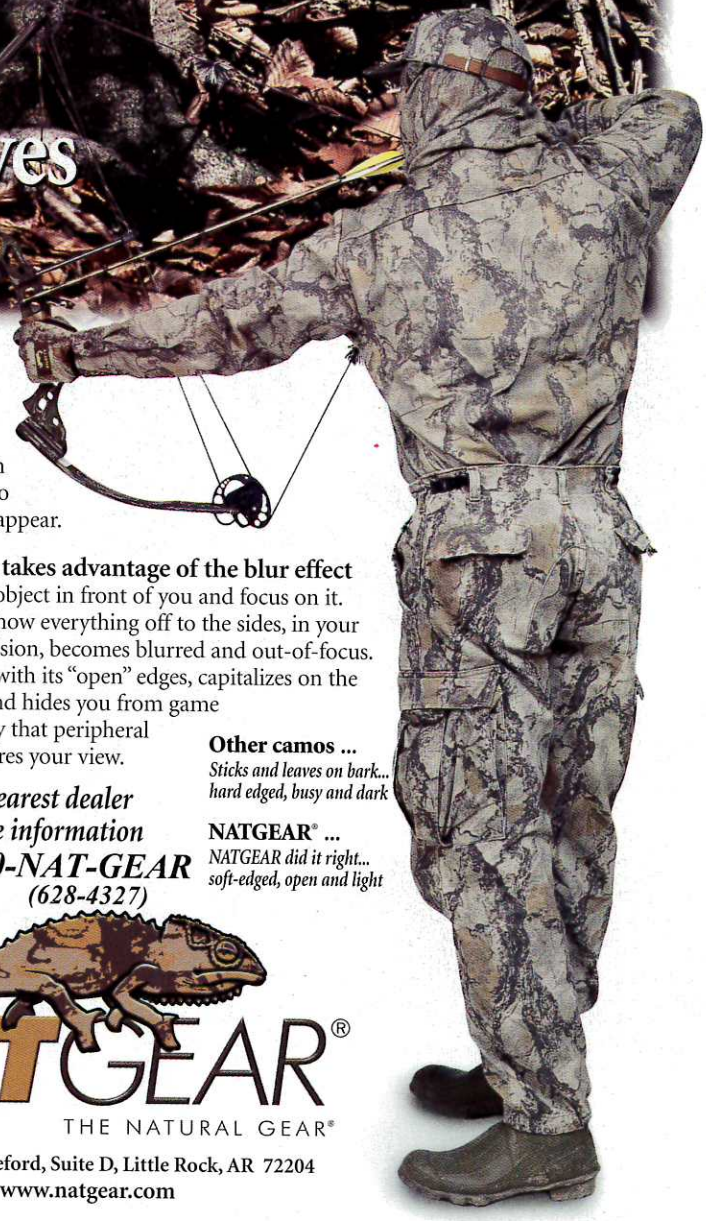
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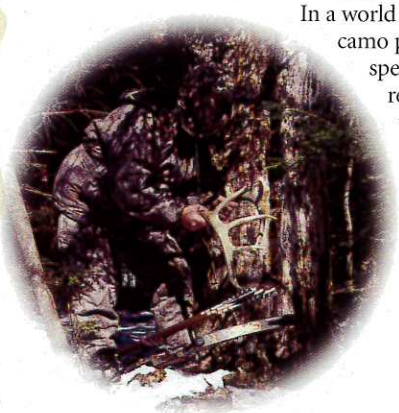


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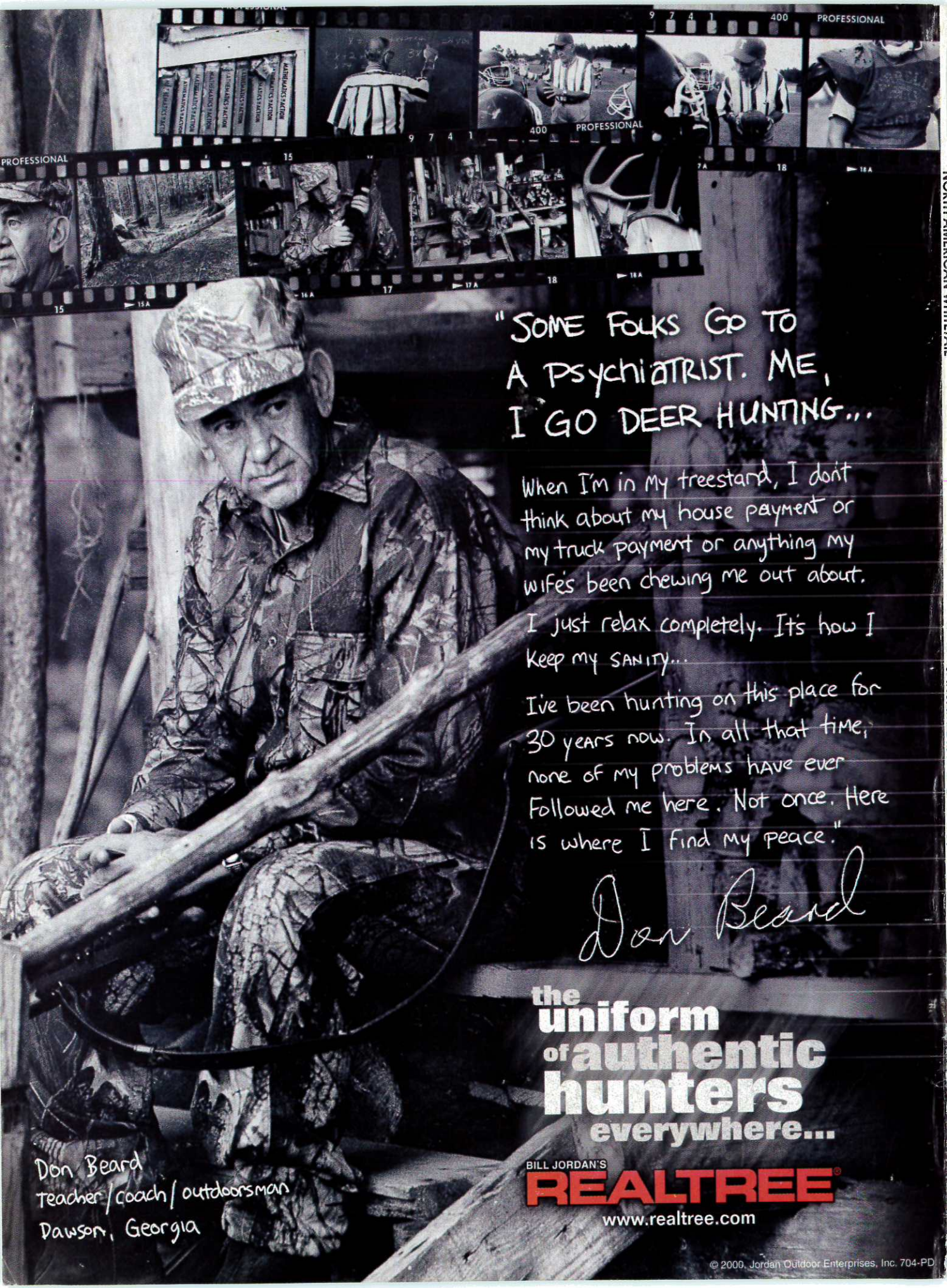
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