

# Selecting Bucks for Harvest



JOE LACEFIELD

## The *Hurdles* of Managing *Age Structure* and *Antler Quality*

By Dr. Bronson Strickland, Dr. Steve Demarais, and William T. McKinley

If your children are like ours, you've probably seen endless reruns of "Alice in Wonderland." Did you catch the part that applies to Quality Deer Management? Alice was wandering through a maze of roads and asked the Cheshire cat which way she should go. The cat responded, "That depends on where you want to get to."

"It really doesn't matter," Alice replied.

"Well, then," said the cat, "it really doesn't matter which way you go."

Deer management programs without clear goals and objectives will have trouble evaluating their progress. Like the Cheshire cat implied, you have to know where you want to go before you can determine if you've arrived or are even on the right path. In this article we describe some methods to evaluate the effectiveness

of your harvest management program, and describe some harvesting strategies to help you accomplish your QDM objectives.

The first step in any QDM program is setting realistic goals and objectives, which we discussed in the last issue of *Quality Whitetails*, in our article "Managing Bucks Means Managing Expectations." Most QDM goals involve keeping the deer population within the habitat's carrying capacity and improving the age structure of bucks. Both of these goals can be accomplished through harvest decisions. In the first case, harvesting an appropriate number of does, and in the second case, not harvesting younger-aged bucks. Once you determine these goals are appropriate, the next step is setting objectives and benchmarks with which to evaluate progress.

Your objectives and benchmarks must be realistic for your

local management conditions. Your goal of lowering deer density to improve habitat quality might include the objective of increasing body weight above the average for your area, so you need a benchmark or target for average body weight of harvested does. We commonly use the average body weight of does from similar areas within the county or soil region as an initial benchmark. If harvested doe body weights are below this benchmark then the conclusion in most cases would be that your deer density relative to habitat quality is too high. Your management response should be to increase harvest rates and/or provide more habitat improvements.

The question of deer density relative to habitat quality (i.e., nutritional carrying capacity) is significant for several reasons. Overpopulation can cause long-term habitat degradation with impacts well beyond the deer population. But, the most tangible effect is directly on the target of your management – the quality of your deer. If your goal is to maximize deer quality then you should try to attain body weights that are well above average. If your doe weights are only average, then that is exactly what you should expect from your antler quality. If your goal is for your deer population to fully express its genetic potential for antler development, then body weights should also fully express genetic potential for body size.

The goal of increasing buck age structure is tied to several objectives, such as sighting more bucks while hunting, observing more frequent and intense rut behaviors, harvesting older and/or larger-antlered bucks, and other objectives. Age structure objectives can be stated in terms of a percentage of the buck population that you want to be a certain age or older, such as 3½ years old or greater. A common QDM buck-age-structure goal is to have 30 percent of the buck population in the 3½-year-old or older age classes.

When biologists talk about buck age structure, they are referring to animals alive within the managed population. It's very difficult to accurately estimate the true population age structure. When hunters practice QDM, they purposefully choose not to harvest younger-aged bucks, so the age structure of the buck harvest is not in any way an accurate representation of the buck population's age structure.

A trail-camera survey is one method used to estimate the buck age structure. We've researched the accuracy of camera surveys, and they can be quite accurate – 92 percent of known animals were photographed during a 14-day survey with one camera per 100 acres. However, we also documented accuracy as low as 22 percent with a 10-day survey when there was an abundance of natural mast that was more attractive than the “bait in a bag” corn we were using. So, camera surveys are at best a valid estimate of the buck population, and at worst, an estimate of the minimum number of bucks alive within the population. Combine this with the challenge of estimating the ages of photographed bucks and you have considerably more uncertainty in estimating the buck population than you might desire – certainly more than when you are balancing your checkbook. But, these are some of the issues we have to live with in the deer management world. We strive to get the best possible information and then manage accordingly.

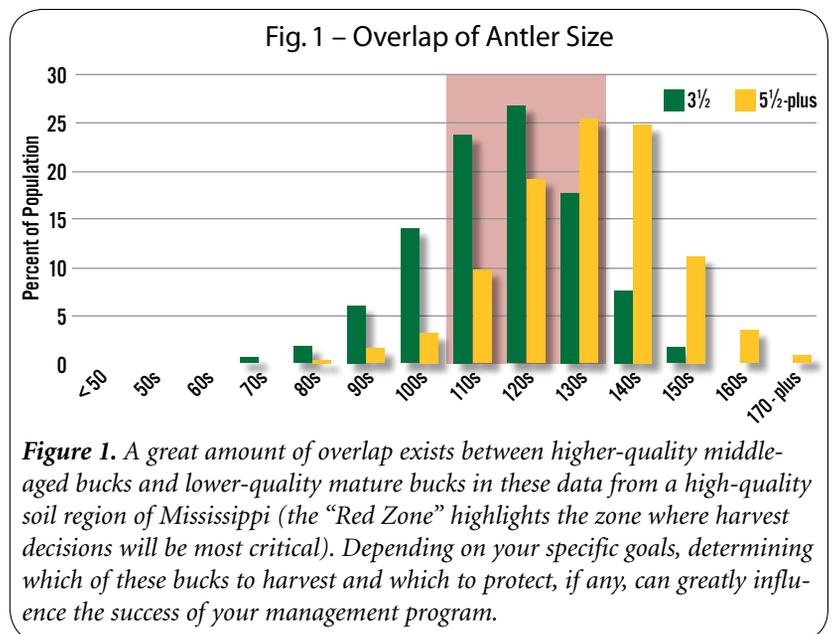
Given there usually are a specific number of hunters using a property, you may want to state harvest objectives in terms of absolute numbers. For example, your benchmark may be a harvest rate of one buck per 300 acres that ages 3½ or older, or one mature buck per 700 acres. For those interested in antler size, your benchmark may be a harvest rate of one 120-class Boone & Crockett (B&C) buck per 300 acres. Setting proper harvest rates requires knowledge of fawn recruitment, significant causes of mortality such as harvest and hemorrhagic disease, and “net dispersal” – the number of young bucks that disperse off of your property compared to the number that disperse onto your property. The number of buck fawns produced on your property will be adjusted by dispersal and then decline over time as mortality events take place.

If you managed a large property and recruited 50 buck fawns that experienced equal dispersal and just a 10 percent mortality rate (a typical non-hunting annual mortality rate), then you will end up with about 29 deer at maturity. Now add the reality that most of these mature bucks will have only “average” antlers (Review our article in the last issue of *Quality Whitetails* for an understanding of numerical limitations and issues). This gives you some idea of the population factors that must be considered in arriving at realistic harvest goals.

#### GOT BUCKS? WHAT NOW?

Once you've met your initial goals of improving habitat quality and buck age structure, you may not be satisfied with the number of larger-antlered bucks harvested. You may not be meeting your harvest benchmark for number or size of larger-antlered bucks. Our experience has shown that one of the most difficult hurdles when implementing a buck management plan deals with selective harvest decisions of middle-aged and mature bucks. One aspect of the problem is the large degree of overlap between better-quality middle-aged bucks and lower-quality mature bucks. There is extensive overlap in frequency distributions between the 3½ and 5½ age classes: the upper half of 3½-year-old bucks score as well or better than the lower half of 5½-year-old and older bucks (see Figure 1 below).

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If you hunt in a region similar to that depicted in Figure 1 and are satisfied with harvesting 110-class B&C bucks of any age, then there really isn't a problem. Have a great time! However, hunters and managers commonly express two types of frustration that are directly related to antler-size distributions.

One frustration is something like this: "Historically, an occasional 160-class buck was harvested in our area, but we've been on QDM for years and our top-end bucks are mostly 130-class."

The other frustration is: "We must have a genetics problem because we see a lot more funky-antlered bucks and big-bodied 6- to 7-point bucks."

We'll address each of these frustrations in order.

The explanation of the first frustration requires examination of the normal antler growth patterns associated with increasing age (Figure 2). Using an average of research pen data from Mississippi State University and free-ranging data from the Caesar Kleberg

Fig. 2 – Expected Antler Growth Rates

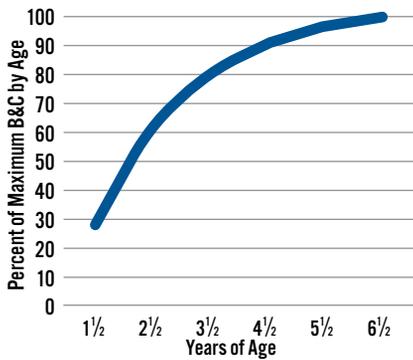


Figure 2. Average antler growth rate of bucks from the Mississippi State University deer pens and wild-caught bucks from the Caesar Kleberg Wildlife Research Institute in South Texas.

Wildlife Research Institute in South Texas, we expect the antler scores of 2½-year-old bucks will be, on average, 61 percent of their potential. Antlers of 3½-year-old bucks will be, on average, 79 percent of their potential. The pattern continues with antlers of 4½- and 5½-year-old bucks averaging 92 percent and 98 percent of their potential, respectively.

It can be frustrating for hunters following QDM principles who have harvested middle-age and mature bucks, but have been disappointed with antler size at maturity. Part of our evaluation procedure involves estimating what their 2½- and 3½-year-old bucks may have been at 4½ and 5½. If you have addressed deer density, adult sex ratio and habitat, you can use this same technique to gauge potential antler size of mature bucks on your property. You must assume the antler growth curve on your property resembles the growth curves presented here, and we recommend using the average values for an age class, not individual deer. Average B&C gross scores are listed in Table 1 for the 2½ age class and projected out to maturity using potential growth factors

Age	2½	3½	4½	5½
<b>Growth Factor</b>		<b>1.28</b>	<b>1.16</b>	<b>1.09</b>
85	→	109	→	126
90	→	115	→	134
95	→	122	→	141
100	→	128	→	148
105	→	134	→	156

**Table 1.** Antler growth patterns based on buck data from research pens and field studies. Multiply the gross B&C score by the growth factor to predict antler size in subsequent age classes.

from the ideal growth curve from Figure 2. For example, if the 2½-year-old bucks you harvested averaged 95 B&C then those bucks may have averaged 122 B&C at 3½ (multiply 95 by a growth factor of 1.28), 141 B&C at 4½ (122 x 1.16), and 154 B&C at 5½ years (141 x 1.09).

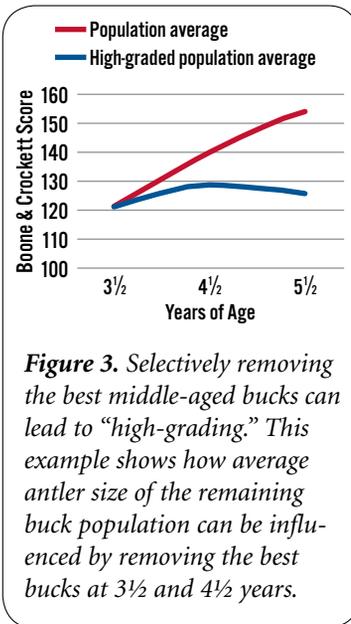
Using deer pen data we can show how harvesting the best middle-aged bucks reduces antler size of mature bucks. Starting with a group of 3½-year-old bucks, we removed all the bucks with antler scores 130 B&C or greater (35 percent of this group) and recruited the remainder to 4½. At age 4½ we conducted the same removal of bucks scoring greater than 130 B&C, and recruited the remainder to 5½. For comparison, we calculated the average B&C score for the 4½ and 5½ age classes without removing the larger-antlered younger bucks. Figure 3 on page 62 shows a 12-inch difference at 4½ and a 27-inch difference at 5½ years! This occurred simply by harvesting the best bucks from the 3½ and 4½ age classes, and keeping the smaller-antlered bucks of those groups.

*(Editor's Note: It is important for*

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readers to remember that the effects on antler size the authors are describing are a function of higher-quality bucks being removed from the scene at younger ages, leaving lower-quality bucks to prosper – often referred to as “high-grading.” This has nothing to do with heredity or genetics. Research has shown that altering genetics, for better or worse, is difficult if not impossible in free-roaming whitetails. High-quality bucks will continue to be born into populations like these, but if they are continually removed at younger ages, numbers of higher-scoring mature bucks will not improve).

Now we’ll show you a “fix” for the first frustration using data from a property in Louisiana. They had practiced QDM principles for 10 years and were frustrated that they hadn’t harvested any really big bucks. Their most recent harvest data showed 10 bucks aged 3½ years averaging 124 B&C, 25 bucks aged 4½ years averaging 128 B&C, and 7 bucks aged 5½-plus years averaging 135 B&C. The cause of their frustration was immediately clear – this was a classic case of high-grading middle-aged bucks as shown in Figure 3. Although they wanted to harvest really big deer, they were harvesting any deer that reached 120 or higher, regardless of age. Using the antler-growth factors in Table 1 we showed them that the 10 bucks aged 3½ could have averaged 158 B&C if they had been allowed to live two more years. So, the cause of their frustration was their own selective harvest



**Figure 3.** Selectively removing the best middle-aged bucks can lead to “high-grading.” This example shows how average antler size of the remaining buck population can be influenced by removing the best bucks at 3½ and 4½ years.

decisions. We can’t over-emphasize this point: managing for buck age structure by protecting the larger-antlered younger and middle-aged bucks is critical if your goal is maximizing antler size!

One qualifying remark is needed here – not every one of those 3½-year-old bucks would have survived to 5½ years of age, and some of the survivors may not have been harvested. But, one fact is irrefutable – their antlers did not grow any larger after they were harvested at 3½ years. And, two years after the Louisiana property hunters applied our “fix” to their selective harvest problem and stopped shooting their best middle-aged deer, they harvested a nice 170-class buck.

The second frustration we often hear deals with apparent “genetic problems” because of the high prevalence of big-bodied but small-antlered mature deer. The underlying cause of this frustration can also be understood by referring to the antler size distribution chart (Figure 1 on page 59). While the answer to the first frustration lies within the upper end of the 3½-year-old antler size distribution, the answer to the second one lies within the lower end of the 5½-year-old distribution. Note that about 15 percent of mature bucks (5½-plus) score less than 120 B&C, with some scoring as low as 90. These smaller-antlered mature bucks usually are passed up when hunter expectations

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### About This Article

This article was published in the August 2008 issue of QDMA’s *Quality Whitetails* magazine. To become a QDMA member and receive *Quality Whitetails*, call (800) 209-3337 or visit [www.QDMA.com](http://www.QDMA.com) for more information.

involve 130-class or larger bucks, with the hope that “next year they may be bigger.” Well, the antler growth curve shows this is not likely.

What happens over time when you don’t harvest mature, small-antlered bucks? They keep living and growing small antlers. Each year more of these bucks are added to the population of unharvested bucks, so they make up an increasingly greater percentage of the buck population. These bucks become a problem from two perspectives – they create the idea of a genetics problem and they eat a lot of valuable forage resources. And, it isn’t just B&C criteria that lead to the problem; this is especially common on clubs using an 8-point antler restriction as their harvest criterion.

The cause of the perceived “genetics problem” stems from selective-harvest decisions – decisions not to harvest. So, it should not be surprising that the solution to this frustration also will involve selective harvest decisions. To free up the resources they consume, the smaller-antlered mature bucks can be removed from the population. They may not make a wall-hanger for a veteran hunter, but there are plenty of young or new hunters who would be thrilled to harvest a mature buck with a 100 B&C score.

Both of the frustrations we’ve described stem from selective harvest decisions made by the hunter/manager – one involving harvest of the best middle-age bucks and the other from the lack of harvest of smaller-antlered mature

bucks. The base cause of these problems stems from hunters making harvest decisions based solely on antler size. This is unacceptable for advanced QDM programs.

### MAKING THOSE SELECTIVE HARVEST DECISIONS

We recognize that it can be very difficult to make the right decision regarding which bucks to harvest and which bucks to pass. We all have made poor decisions, and most likely will make mistakes in the future. The key here is striving to improve, because if you can reduce the harvest of large-antlered young

bucks and harvest smaller-antlered older bucks you will be well on your way to removing two sources of frustration.

Being able to age bucks on the hoof is one of the most important skills you can develop to help you make the best harvest decisions. It certainly is not 100 percent accurate. However, it’s relatively easy to place bucks into three age classes:

- 1½
- 2½ or 3½
- 4½ or older

These three classes will allow you to make great strides in selective harvest. It’s also easy to become enamored with the antlers when a buck appears, but this is the time you have to be most careful and not make the wrong decision. Study body characteristics and behavior before

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### Management Bucks?

The week of September 8, *Quality Whitetails TV* will sort the myths from the facts regarding spikes, cull bucks and management bucks. Learn about research that confirms why hunters should focus on age and nutrition before genetics. Re-airs the week of December 8 on The Outdoor Channel.

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Sundays 2:30 p.m.  
Mondays 2:00 p.m.  
Fridays 2:30 a.m.

pulling the trigger. Both the Mississippi State University Extension Service (<http://msucares.com>) and QDMA ([www.QDMA.com](http://www.QDMA.com)) offer publications that can help you cultivate these skills.

We commonly hear the statement: “But we don’t have time to study and age bucks on the hoof, we have to make split-second decisions and pull the trigger.” We acknowledge that all hunters don’t have the luxury of being able to study bucks for long periods of time before making the decision to shoot. However, in many situations hunters use this as an excuse. A significant portion of hunters now routinely hunt over food plots and are able to study the body characteristics before shooting. Hunters can get captivated by antlers much like a “deer in the headlights” and look at the body for the first time when they’re dragging the buck to the skinning shed! Remember, it’s better to wait and evaluate the

buck again another day than to make a bad decision.

Using trail cameras can be very helpful when making harvest decisions. A pre-season camera survey can help hunters and managers collect valuable information about the deer herd, but the survey can also be used to develop a list of bucks to be protected and those to be harvested. It’s much easier to judge body characteristics on the stand when you’ve discussed body characteristics with your hunting buddies using some good pictures.

## SUMMARY

Deer management programs must have clear objectives and goals, consistent data collection, and critical annual evaluations to be successful. Once the deer population fundamentals such as herd numbers, adult sex ratio and habitat improvements have been addressed, you may want to consider refining your buck harvest program. Determining the number, age, and antler size of bucks you choose to harvest can influence the success of your management program.

Our intentions are not to criticize if you choose to harvest middle-aged bucks. In fact, that is the goal of many QDM programs – to protect yearling bucks and increase the harvest of middle-aged bucks. You can have a very satisfying management program if this is your objective. This article was designed to help those managers whose QDM goals include maximizing the size of antlers. Furthermore, remember to keep your expectations reasonable. The combination of realistic expectations and good selective-harvest decisions will increase your odds of developing a satisfying QDM program on your property. 

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