BUILDING YOUR OWN
'DEER FACTORY'

Harvest Records Can Help Your Herd!

There's no substitute for keeping accurate records if you want to produce more and bigger whitetails on the land you hunt.

by Dr. James C. Kroll

When those of us at ***WHITETAIL*** were choosing a name for this series on managing private lands, we decided that including the term "deer factory" was quite appropriate. For a factory to be productive, there must be enough raw materials and you must have quality workmanship and an understanding of production goals. Progress then is measured by keeping records on input and output, with the difference being the factory's productivity. And so it is with a deer herd!

One of the biggest frustrations I have as a biologist is the reluctance of many landowners and hunters to keep adequate records of their management efforts. Most want to talk about the more exciting aspects of management (genetics, food plots, etc.), while such mundane areas as record-keeping fall by the wayside.

This is a serious deer-management mistake, because *good records are the only way to chart your program's progress*. And don't fall into the trap of thinking that you can keep all of this in your head. As my good friend and colleague Ben Koerth says, "A short pencil is better than a long memory anytime!"

Huge amounts of important data can be gathered by observing live deer on your land. In fact, as David Morris has detailed in recent issues, using such observations in estimating total herd size, buck:doe ratio, etc. is one of the first steps in forming a management plan. But this month, our focus will be primarily on what you can learn about your herd through *harvest* records. By combining your herd observations with solid harvest data, you can make good decisions about where your herd is and where it's going.

ASSESSING HERD HEALTH

The health of your herd is a direct indicator of the quality of your program. If your deer habitually have low body weights and high natural mortality, there clearly are problems. We don't have much luck in getting deer to tell us how they feel, so we must measure their health indirectly, using such indicators as dressed body weights, antler quality, fat storage, parasite loads and other observations of body condition.

Fall actually is the worst time to assess deer health, because that's when deer are in their best physical condition of the year. Unfortunately, because of the timing of hunting seasons, it's the only time most managers actually can get their hands on a number of deer to study. On the positive side, the significance of some important data — including a deer's age or antler measurements — isn't diminished by this problem.

Let's look at types of harvest data all managers should gather:

AGE-RELATED ANTLER MEASUREMENTS

The racks on your bucks can tell you a great deal about your herd and the progress you're making with your program. Even so, on many managed properties surprisingly little of this information is compiled on a consistent basis.

Failing to record enough details about the bucks shot on your land makes it harder to be certain of trends in antler quality. Even if several years' worth of antlers from the property can be rounded up for measurements and comparisons, if the bucks' ages weren't recorded,

KEEPING HARVEST RECORDS

Deer #	Date	Sex	Age	Weight		Antler Measurements (Inches)						In Milk?	Hunter	Comments
				Live	Dressed	Points	R. Beam Circum.	L. Beam Circum.	R. Beam Length	L. Beam Length	Inside Spread			
1	11/5	M	2 1/2	148	118	8	3 1/8	3 0/8	14 2/8	14 4/8	13 5/8		Barnes	Chasing doe
2	11/8	F	3 1/2	116	91							Yes	Daley	Full of oats
3	11/14	F	1 1/2	81	63							No	Hansen	Piebald
4	11/14	M	4 1/2	188	143	9	4 3/8	4 2/8	21 1/8	20 6/8	17 0/8		Robbins	Lots of ticks
5	11/20	F	5 1/2	131	102							Yes	Daley	With 2 fawns

Harvest records can provide good data for comparing one year to another. Graphic by Polly Dean.

there's a limit to how much can be gained from a comparison of one season's racks to another's.

For example, if you put the big rack of a 4 1/2-year-old buck shot in 1996 up against that of a relatively small 2 1/2-year-old shot on the same managed property in '98 but you don't know how old one or both deer were, what will the comparison tell you? If you think both deer were the same age when harvested, you'd get the impression that antler quality is declining, when in fact it might well be improving!

What information should you record from the racks taken on your land? At minimum, write down the number of antler points (only those an inch or more in length), inside spread, antler-base circumferences and main-beam lengths.

Of course, when most serious hunters discuss racks, they like to talk in terms of Boone and Crockett score. The B&C system can be useful for recording data from bucks taken on your land — provided you use *gross* typical score.

This score, which consists of the total of all typical measurements on the rack, is a good indicator of antler size from a manager's perspective. It's based on the rack's main frame, so neither a lack of symmetry (as would show up in a net score) nor non-typical points (which tend to come and go) skew the results.

If you opt to use the gross B&C or P&Y score of racks, your records should include a standard score sheet for each animal taken, along with at least one photo of the antlers.

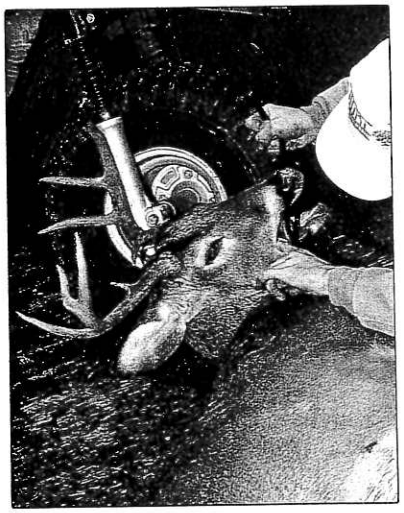
Of the various rack measurements you can take, the best indicators of progress with your management program are beam length, typical tine length, beam circumference and inside spread. If these values are increasing from year to year within an age-class, it's a good sign. While the number of points on a rack is of great interest to many hunters, it isn't a very reliable indicator of the buck's health or age.

GOT MILK?

If your doe harvest is large enough for you to draw valid conclusions from it, you can use harvest data on *lactation*, or *milk production*, to help you estimate the fawn crop.

Lactation is an important term for hunters to know, but it apparently is foreign to many of them. In fact, I once developed a harvest-record form that included a column marked "Lactating?" To my dismay, many of the hunters who used the form marked "yes" for bucks! I changed the column heading to "In milk?"

In dressing out a doe, you can hardly avoid noticing if she was producing milk, because you must cut through the udder. If a whitish or brownish liquid is present, she probably was lactating, which means she produced and weaned at least one fawn that year.



Even if you age your deer right after the kill, it's a good idea to save the lower jawbone for further study. Photo by Tom Evans.

At the end of the season, add up all the does harvested and divide the total into the number "in milk" to produce the lactation rate (percent lactating). For example, if 13 does are taken this fall, and seven were in milk when shot, the lactation rate would be 54 percent (seven divided by 13).

What we don't know from this, of course, is exactly *how many* fawns a lactating doe weaned that year. But because it's wise to be conservative in estimating the fawn crop, we'll assume that she raised only one.

Even if you have plenty of deer on your land, you want high fawn survival, so that the "pipeline" stays full of bucks for the future. In most situations, a fawn crop of at least 60 percent should be your goal.

AGING DEER

Age every deer taken on your property, without exception. I suggest using the "tooth wear and replacement" method, which involves studying the number and wear patterns of jaw teeth in the lower jaw. (If you don't know how, don't worry. We'll discuss this method in detail in future issues.)

Aging deer by tooth wear and replacement is more an art than an exact science. But while some studies have questioned the accuracy of this method, it remains the most practical way for most persons to get a reasonable estimate of a deer's age. Years of study at our Institute for White-tailed Deer Management and Research have shown that its error rate is plus or minus one year (on average) for deer older than fawns. The greatest potential for making a serious aging mistake is with deer at least 5 1/2 years old.

Even if you don't get the age exactly right, you need to be able to determine in which of the four most basic age groups a deer belongs: fawn (6 months); yearling (1 1/2 years); immature (2 1/2 years); or mature (3 1/2-plus). I think the tooth-wear technique is at least accurate to this level.

Once you've aged all of the deer harvested in a given year, calculate the percentage — bucks and does separately — in each age-class. By noting year-to-year changes in the numbers, you can monitor your progress toward having older bucks and younger does.

HEALTH

To the educated eye, a harvested deer is an open book of information. Once you have a deer on the ground, take the time to have a good look at it. Even if you must register your kill at a public check station, it's a good idea to establish a private check station where everyone hunting on the property brings their deer for recording vital harvest data.

Look carefully at the deer's coat and overall external condition. Is the animal fat and fully fleshed? Is the coat rough and of odd color? Are there numerous external parasites, such as ticks and keds (tiny insects that scurry around among the body hair)? Write all of this on your record form.

Once you've opened up the deer for dressing, just don't rip out the insides and discard them as trash. Check the amount of internal body fat (kidney, body and intestinal). We rate the amount of body fat by general category: "very fat"; "fat"; "moderately fat"; "lean"; and "poor."

Some managers with whom we work even use our scientific method to calculate *kidney fat index* (KFI). This is done by weighing the kidney with its clump of fat attached, then removing the fat and re-weighing the kidney. The kidney-only weight is divided by the total (kidney plus fat) weight, then multiplied by 100 to get a percentage. For example, if you have a total weight of 8 ounces and a kidney-only weight of 6 ounces, the KFI is 6/8 x 100 = 75 percent. Again, year-to-year comparisons of these data can tell you a lot about your herd.

There are other valuable indicators of health as well, the most important being *dressed body weight*. Again, though, it must be related to age if it's to give you much insight.

Many hunters talk about a deer's live weight, but that's not as valid as its dressed weight. The deer could have just taken a drink or filled up on forage prior to being shot, significantly distorting its live-weight measurement. Using dressed weight removes this bias and thus yields more useful data. In addition, it might not always be feasible to get a deer to a check station before field-dressing. Using dressed weight in all cases ensures that you're always comparing "apples" to "apples."

You also might search for internal parasites, such as stomach worms, but most folks don't want to get that involved, given the unpleasantness of looking for them. Besides, there's still debate as to the relevance of high internal parasite loads. While some researchers have indicated a correlation between stomach worms and deer density, others (including myself) haven't found such a link.

WHAT'S TO BE LEARNED?

All of the above information is most useful when compared from one year to the next. Some of the deer managers we work with now have some 25 years of records on their herds, and these records speak volumes about their programs. The sooner you begin compiling data on your herd, the sooner you'll be able to start spotting trends as well.

Estimates of the fawn crop tell you more than anything else. High fawn survival indicates healthy, well-fed does and suggests the potential for good deer number in the future; low fawn survival suggests problems of some kind.

At season's end, summarize your productivity data. Calculate the observed fawn crop by compiling incidental sightings, then calculate the lactation rate by dividing the number of does "in milk" by the total harvested. You'll be surprised at how similar these numbers are, even though, as noted, the lactation rate often is a tad conservative.

Long-term comparisons of other health and condition indicators, such as dressed weight and KFI, also are useful. You need to use your harvest record forms to determine average dressed weight, KFI and antler measurements for each age-class.



Check the field-dressed weight of every deer taken on the property. Such records will tell you much about the herd's health. Photo by Gordon Whittington.

As long as these measurements don't decline over time, you can assume you're at least not making "bad" management decisions. If the values increase, as they should under the type of food-source management and sound harvest strategy we at ***WHITETAIL*** endorse, you can be sure your program is moving in the right direction. In future issues, we'll get into more specifics on how to interpret your data.

HARVEST BIAS

In order for harvest records to portray your deer herd with unerring accuracy, those records must be representative of the herd as a whole. This is seldom the case, for two reasons. First, in some instances, the harvest isn't large enough to provide reliable data. There's only so much you can learn about the whole herd by studying one or two deer shot there. The bigger your sample, the more reliable your data set will be.

Also, there's always some built-in harvest bias. For starters, mature deer are far more adept at avoiding hunters than are younger deer, so a lack of older animals in the harvest doesn't always mean they aren't present. Also, hunters might choose to take only the fattest does, or only those traveling without fawns, rather than taking them at random. And many hunters have become quite selective in their buck harvest.

Such factors obviously can affect how accurately your harvest records reflect the herd's health and makeup. Is there a way around that?

Well, if your deer kill isn't high enough to give you much confidence in your harvest data, you can start pooling your records with those of neighbors. (This goes hand in hand with the valid concept of cooperative management, as Gordon Whittington notes on Page 28.) By combining the harvest records of several adjacent properties, you can develop a more reliable data set on the overall herd. Of course, the more difference there is in the management strategies on the various properties involved, the less uniform the results will be.

You can try to minimize harvest bias by encouraging your hunters to be non-selective on does. Have them shoot the first one they see, rather than seeking out only big, fat does and/or those traveling alone. But it's tough to get a non-selective harvest, particularly year after year. That's why a smart manager blends harvest records with census results and herd observations to assess his program.

IN CONCLUSION

You don't *manage* a deer herd as much as you *fine-tune* it. That is, you try something, then monitor the response. If the results are positive, you continue what you're doing; if they're negative, you make a change. Good records are a must for telling you what's working and what isn't.

A friend once compared whitetail managers who refuse to keep records to the drunkard who always drinks with a paper sack around his bottle. Why? Because neither one wants to see the end coming! If you'd prefer to be in control of your herd's destiny, rather than simply at its mercy, keeping good records can help you do just that.