BUILDING YOUR OWN
'DEER FACTORY'

5 Things To Learn About Your Herd

Before you can improve your herd, you need to know what's going on with the deer you already have. Find out the answers to these questions, and you'll be on your way to success!

by David Morris



The information age. Internet Web sites, faxes, e-mail: all means of conveying information that empowers people to take charge of their lives, to do their own thing the way they want to do it.

In deer management, information empowers folks in the same way . . . only the kind of information a deer manager needs doesn't come in over the Internet or a fax machine. It has to be gathered in the field. And what information is that?

Essentially, if you want to turn your land into a "deer factory," you need to know as much as possible about five parameters, or variables, of the herd on your land: (1) total resident population; (2) buck:doe ratio; (3) age structure; (4) recruitment rate; and (5) natural mortality.

Of these, only the total resident population is a specific number. The others are ratios and percentages, though they, too, can be reduced to numbers once the total population is known.

These five parameters lie at the heart of herd management. But before heading afield to attempt to gather this information, we need to know what the variables represent and why they're so important.

TOTAL RESIDENT DEER POPULATION

Your land's total resident deer population is just what the term implies . . . almost. With food-source management, the population of your property, plus that of the entire "managed area" your program influences, must be considered.

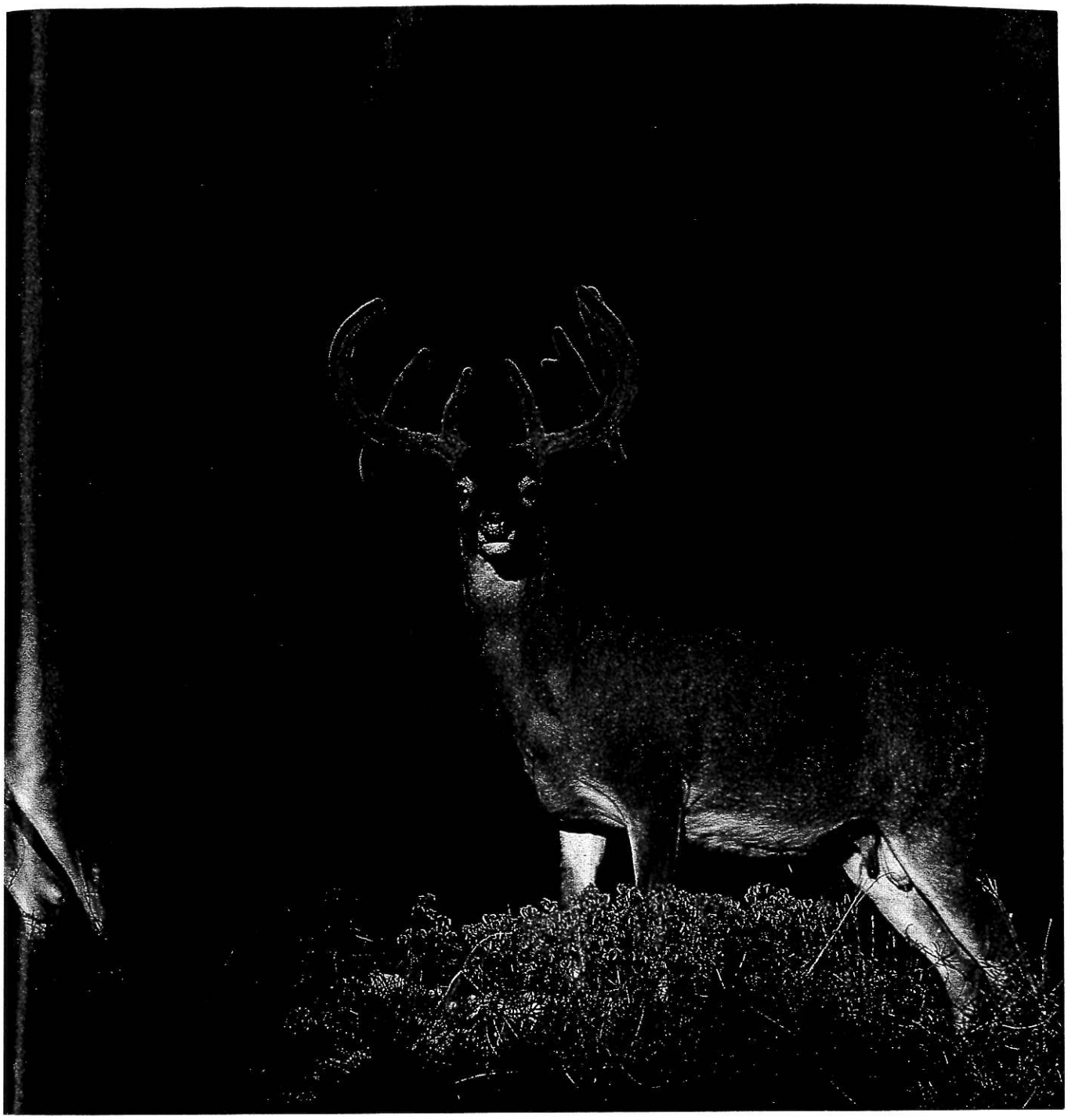
By the way, you're working with more deer than first meets the eye. Estimates of deer populations always prove to be conservative. Thus, there are more deer using your property than you think!

The more deer habitat you control, the less "your" herd probably is being shared with neighbors. If a fair number of whitetails frequently are moving onto and off your land, what your neighbors are doing to manage their properties will tell you something about what *you* need to do. On tracts with limited acreage, neighbor activity is of real concern.

The total resident deer number is one of the hardest parameters to determine as you start a management program. Whitetails aren't easy to count . . . or even see. And even if you *could* see a large portion of the herd over a period of time, counting does and fawns would pose a special problem, as they're fairly difficult to tell apart.

Although there's a way to get a reasonably accurate total count (we'll discuss it when we get to censusing), odds are you'll instead end up reaching a total resident population figure from extrapolation — that is, by estimating it on the basis of certain known numbers and representative samples. If your data are solid enough, an extrapolation can result in sufficient accuracy, even if you never make an actual deer count.

The good thing about total numbers is that if you're way off in your estimate, it'll show up rather clearly down the road, assuming you're close on the other factors. (As the other factors are percentages and ratios, they're a bit easier to gauge.)



As you start to manage the deer on your land, one of the first things you'll want to evaluate is the herd's current age structure. To have a healthy population, you need a good representation of bucks in all age-classes. Photo by Mike Biggs.

A good starting point for estimating the total resident deer number is to find out from your wildlife agency what the normal density is for your area. Then, try to determine how your herd stacks up relative to that norm, based on an examination of primary browse species (which you need to learn early on) and deer sightings.

Of course, some properties simply have a higher percentage of deer habitat than others do, and that directly influences the number of deer you can expect to find. (See Dr. James C. Kroll's habitat features on Page 38 of this issue and in the July issue.)

While you certainly need to come up with a current population estimate, that number could have little relevance to what deer numbers will be once your management strategy begins to have an impact. Therefore, it's necessary for you to project how many deer your land will be supporting as management progresses.

This raises the question "How much of a population increase is possible?" Although I'm naturally reluctant to say exactly how much your land's productive capacity can be increased or how many deer can be supported as a result of intensive food-source management, let's look at what we've achieved at Fort Perry Plantation, ***WHITETAIL***'s own facility for management research.

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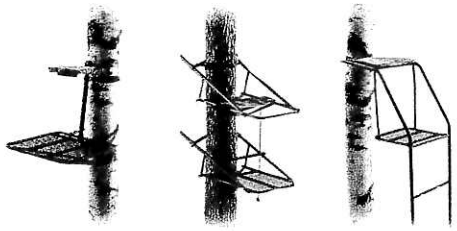
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how far we could raise the numbers while maintaining maximum herd health, individual deer size, and, most importantly, ecological balance between deer and the land. About 10 percent of the managed area is intensively farmed to produce deer food. The tract's natural productive capacity is around one deer per 25 acres.

I won't say just how many deer we had before backing off or the density we settled on, because it might raise unrealistic expectations. But suffice it to say that we now have a density *several times that of the land's natural productive capacity.* And here's the best part: According to Dr. Kroll's studies, *Fort Perry's habitat actually is healthier than the habitat on surrounding properties, where deer densities are far lower!*

In short, with the right strategy for managing food sources, you can grow impressive numbers of big, healthy deer — while actually *improving* the habitat on your land!

BUCK:DOE RATIO

The buck:doe ratio, often called the "sex ratio," simply is a way of expressing the relative number of adult (age 1 1/2 years or older) bucks to does. These ratios can be converted to percentages: e.g., a 1:1 ratio equates to 50 percent bucks and 50 percent does; 1:2 is 33 percent bucks to 67 percent does; and so on.

Tighter ratios usually are more desirable, though less balanced ratios are fine if the herd is expanding. Once the goal for the total number of deer has been achieved, a manager doesn't want to tie up any more of the population in does than is necessary to replenish annual losses. That usually translates into a major job trying to keep the number of does in check without putting so much pressure on the herd that it disrupts buck hunting.

Remember that recruitment adds bucks and does at roughly a 1:1 ratio. So, while natural mortality is higher for males than for females, badly skewed ratios almost always mean too much hunting pressure on bucks and too little on does.

The sex ratio is one of the easier parameters to determine, especially under food-source management. Methodically watching deer on food plots during late summer and early fall will give a trained observer a pretty good idea of the ratio. Just be careful not to inadvertently include

fawns in the count. Most other means of censusing also will give good buck:doe ratio data.

AGE STRUCTURE

Harvest goals determine the target age structure for your deer herd. To meet our baseline standard of returning the herd to its natural balance (see the July issue), as many bucks as possible should be allowed to reach the mature (3 1/2-plus) age-class. Once they get there, the manager can decide how many and what size/age bucks are to be taken. (We'll discuss various harvest strategies in greater detail in future issues.)



Estimating the number of resident deer on your land can be tricky. For one thing, you very likely share some of them with your neighbors. Photo by Neal and Mary Jane Mishler.

While an examination of jawbones tells us much about the age structure of bucks that have been harvested, gathering data on the age structure of living bucks is far more tricky. First, older bucks seldom volunteer for the count, as they lean toward being nocturnal and reclusive. Second, while yearlings and 2 1/2-year-olds are easy enough to identify, bucks of age 3 1/2 or older pose aging problems for all but the best-trained observers.

Experts usually can identify 3 1/2s and maybe 4 1/2s. After that, things get murky, though very old bucks (say, age 8 1/2 or 9 1/2) sometimes look their age. My solution is to view buck age structure in the most identifiable groupings: 1 1/2s, 2 1/2s and 3 1/2-pluses.

RECRUITMENT RATE

The recruitment rate refers to the

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number of fawns entering the pre-season (fall) population and is measured as the percent of fawns compared to adult does. So, for example, 80 fawns per 100 adult does would be an 80 percent recruitment rate.

A lot of things can happen to a fawn between birth and its first hunting season. Many starve; others fall victim to disease, predators (particularly coyotes) or accidents.

What's a good recruitment rate? It depends on location. In the South, East and Midwest, recruitment of 70 to 90 percent is common, assuming overcrowding hasn't reduced it to more like 40 to 60 percent. In vigorous herds, recruitment rates can run over 100 percent. (We've seen rates as high as 150 percent on Fort Perry.) In cold, harsh climates, something around 50 to 60 percent seems to be the norm.

The lowest recruitment rates I'm familiar with are on the fringes of the species' range. For example, in South Texas and Mexico, during drought years the number of fawns making it into the fall population fawn crop can be as low as 15 to 20 per 100 does. It can be so bad that virtually entire year-classes are missing, especially on heavily grazed ranches. During good years there, recruitment rates run from 30 to 60 percent.

The amount of ground cover has a major impact on fawn survival in this region because of the high number of coyotes. The more exposed fawns are, the higher the losses to predation. (On ranches with ample grass, however, recruitment can rival what you'd see elsewhere.)

Natural mortality is the most difficult herd parameter to measure in the field.

What should be the goal on well-managed land? That depends on the harvest strategy, but generally, if the manager wants a high recruitment rate and isn't getting a rate of 70 percent or better, he needs to look for a problem. Well-fed deer will drop enough fawns to achieve at least that rate. If recruitment isn't there, then something — probably predators — is causing large losses between fawning and fall.

Some managers choose to have a lower recruitment rate to help hold deer numbers at a desired level. This is especially true on very large tracts. For instance, I hunt a huge ranch that zealously protects predators so they can help hold the herd in check. The landowners keep the buck harvest very low, so there's no need for high recruitment. In fact, it would cause real problems in herd control.

Usually, though, more intensively managed properties need high recruitment. Often, a manager will encourage high reproduction in the early expansion stages and then seek to moderate recruitment once the program settles into a maintenance level. It all depends on the program. If a high harvest is your goal, recruitment also must be high.

For my money, recruitment rate is the easiest of all herd parameters to estimate. Several afternoons of field watching in early fall will provide pretty good data, as will almost any of the other censusing methods we'll be discussing.

NATURAL MORTALITY

Let's first define natural mortality as we'll be using the term. Basically, it includes all mortality other than the planned harvest. Obviously, this can and does include a lot of deer deaths that aren't "natural": neighbor kills, road kills, poaching, etc. Still, for our purposes, we'll consider any death that takes place outside the control of the manager to be "natural" mortality. Even beyond planned harvest, human-caused deer deaths on a property can exceed natural mortality related to other factors.

Natural mortality is the most difficult herd parameter to measure in the field. Most often, this is done by trial and error: You make an assumption and see if reality supports or rejects it. Even so, a field analysis normally will give you a fair idea whether natural mortality is relatively low, moderate or high.

From that, you can assume an annual mortality rate based on "accepted" norms, which range from a low of 10 percent in tightly controlled herds to a high of 25 percent in high-risk herds. A good across-the-board number is 15 percent. If you want to play it safe, go to 20 percent for bucks, for reasons we're about to discuss.

Even excluding man-caused losses, bucks suffer greater natural

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mortality than does because of something called *post-rut mortality*. As the name implies, these deaths follow the rut, and they're brought about by stress and injury suffered during competition for breeding privileges. In some herds, post-rut mortality has been calculated to be as high as 25 percent among prime breeders, though 15 percent is probably more representative.

Among the most insidious forms of natural mortality can be road kills. In some areas, road kills actually account for more deer deaths than hunters do. On a tract exposed to highways — especially highways with major food sources nearby — heavy losses to vehicles can be expected. These losses are largely non-selective, though fawn deaths seem a bit disproportional.

A large hunting property I once managed was bordered on all four sides by paved roads, one of which was a major highway. Vehicular deaths were such a major source of deer mortality that I had a staff biologist check for road kills almost every day for 16 months. During that time, he found 52 deer killed by vehicles — and that's not counting the ones that made it off the road right of way before succumbing to injuries sustained from a car/deer collision.



Fawns face many perils between birth and their first hunting season. Predators, disease and starvation are among the factors that can lower recruitment. Photo by Len Rue, Jr.

Again, losses of deer to neighbors also can be devastating and must be factored in. The worst thing about bad neighbors is that they're usually highly selective toward bucks — especially good ones. With bad neighbors and/or high exposure to roads, "natural" mortality for bucks can run 50 percent or even more. You must take all factors into account.

Poaching rarely is a crippling problem, but it can be a nuisance. Usually, poaching is most prevalent along roads, especially when food sources are nearby. (Remember this when laying out your food plots.)

True natural mortality usually isn't too high, but there are exceptions. For instance, during the winter of 1996, my home area in northwest Montana lost over 60 percent of its deer to incredibly deep snow. Older bucks took the brunt of it.

In '95, I hunted the highest concentration of deer I've ever seen. It was on the Milk River in eastern Montana. The next fall, bluetongue (epizootic hemorrhagic disease) swept through the herd and cut it in half. When I was managing a large property in the Southeast several years ago, that area also suffered alarming bluetongue losses from time to time. Extreme droughts also can cause unusually high mortality. However, such devastating die-offs seldom are suffered by well-managed herds.

Predation, even on adults, can be a serious factor. In some Northern areas, wolves can cut deeply into deer populations, especially during winter. In the West, cougars take their fair share of deer, and feral dogs can be a problem anywhere. But because of wide distribution and abundance, coyotes are overall the top predators on whitetails. Still, on most managed places, predation isn't a big concern, at least for adult deer.

The real problem with natural mortality is that while it can go on year 'round without ever drawing your attention, the cumulative effect can be devastating. It's not enough for a buck to escape these perils 99 percent of the time — just one miscue, and he won't get any older. To expect bucks in high-risk areas to go five years or more without crossing paths with one of the many fatal pitfalls out there is asking a lot.

* * *

These, then, are the five basic herd parameters with which you need to be concerned as a whitetail manager. Next month, we'll talk about the many ways to census a herd in order to collect data on these variables. Stay tuned!

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