Dr Deer's™ PRESCRIPTION

Understanding Recruitment

By Dr. James C. Kroll

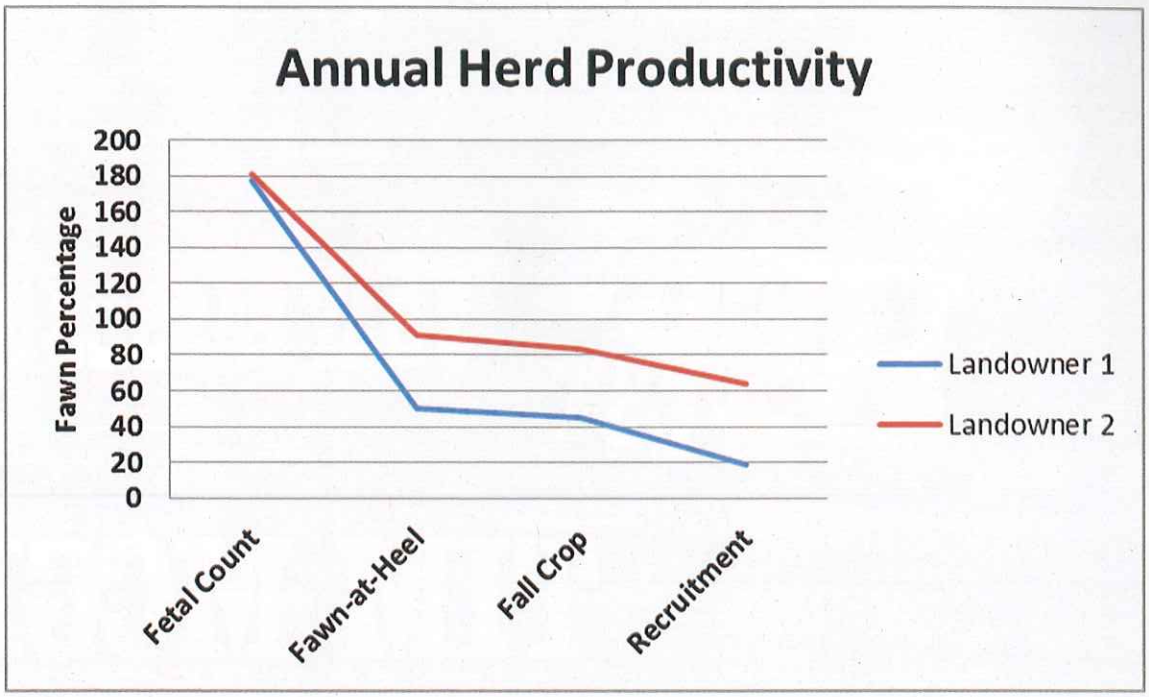
Although I have written a great deal about the topic of "recruitment," there still seems to be a great deal of misunderstanding about what this deer herd health metric is, and how you go about estimating it. So, the purpose of this issue's column is to give you a better understanding of this very critical subject, as well as to provide guidance into how to conduct a recruitment study.

Fawn crop vs. recruitment?

You often will hear biologists refer to your *fawn crop,* most commonly as a percentage. After a late summer or early fall helicopter count, your biologist may say, "We estimated you have a 55 percent fawn crop this year." What that means exactly is, you have 55 fawns for every one hundred does—55 percent. That can be a useful number, but is it really? We have been conducting deer herd reproduction studies in many geographic regions for almost four decades. Scientifically we carry these studies much further than the average landowner or professional deer manager. We begin by estimating how many fawns are conceived during last year's rut. This is done by shooting samples of does during later winter, removing the fetuses and aging them using models produced and published by other scientists. This research is not easy to do, and the methods probably should not be discussed in print; but, needless to say it involves breeding does at known times and then euthanizing them at various intervals and measuring the fetuses at that stage of gestation. That requires a large sample size, so you see why I am reticent to talk about methodology. Yet, this is critical information and any does sacrificed in the process contribute to a worthy cause.

The most useful model in our opinion is one developed in South Carolina by Joe Hamilton and his colleagues. We have found other models particularly lacking in reliability, so we stick with the Hamilton model. (You can purchase a fetal aging scale from Forestry Suppliers in Jackson, Miss.) There is disagreement about the accuracy of fetal aging, but reliability is not an issue when it comes to fetal counts; they are either there or they are not! When I first began work as a deer biologist, I bought into the idea that average fetal count was a very good way to measure herd health. As time went on, I learned through experience that by the time fetal counts deteriorate, th herd is way past where you want them to be. If you examine





the graph, note both a well-managed and poorly-managed property can have about the same average fetal counts.

The next step in a scientific analysis is to determine how many fawns actually are born and survive the critical first two weeks of life. This can be done in two ways. First, you can spend a lot of time on your property, counting does and fawns; the average of which we call *fawn-at-heel* estimates. The graph of the two properties now begins to show some differences. When fawns are born is very important, and in each geographic region, the rut is timed to have fawns on the ground and weaned at the best time of the year for that region. Herds in poor shape often have "trickle" ruts, which means breeding occurs over a long period of time, translating to an extended fawning season some 198 days after conceptions. Coyotes and other predators "love" trickle ruts, as they produce a sustained yield of new fawns on which to feed.

By fall, the number of fawns born has again been reduced, as you can see by the two comparative properties in the graph. It is at this time biologists come in to estimate population size (in Texas as part of the Managed Lands Deer Permit Program). Some biologists start in August, which is not a good time to be counting fawns, but satisfies department requirements, nonetheless. That's when the "50 percent" fawn crop figure discussed earlier arises. Yet, in many of the areas I work with in the North, this number is still quite high. In Michigan, for example, it is not uncommon to have 80 percent fawn crops in October. It may be nice to know how many fawns you have going into the winter, yet much different coming out of winter.

If you live in South Texas, you probably are saying, "What does that have to do with me? We don't have winter kills down here." Yes—*but* what happens if the hurricane season does not produce the rains necessary to grow fresh plants for your newly weaned fawns? Once weaned, they are pretty much on their own. So, even in warmer climates there can be significant over-winter losses.

That brings us finally to *recruitment*. My definition is it represents the number of fawns born last spring that are alive the current spring. It also can be expressed as a percentage (see graph). The significance of this number is illustrated when you factor in age-specific annual mortality or bucks. Again, this will depend on climatic conditions and predation. However, it is my position that it is mathematically impossible to produce mature bucks with less than 40 percent recruitment. And, many areas have as low as 12 percent in some years. My goal generally is 70 percent. To achieve this high number, you have to really be managing your herd and habitat. It also includes predator management, which is becoming a very important issue throughout the country.

So, how do you estimate recruitment? Again, you can conduct an incidental sightings study, recording each deer (sex and age) you see on your property. The easiest way, however, is to use trail cameras, which are systematically distributed around the landscape. Ben Koerth and I published journal articles on the subject years ago, so the methodology is out there and increasing in use. For Texas, I recommend you conduct your recruitment studies right at the end of winter (February-March), while farther north that may mean monitoring as late as May.

Using this information

So far, I have outlined how you can monitor the fate of your fawn crop over the year, beginning with conceptions and ending with recruitment. At each step along the way, there can be limiting factors affecting survival. Once you identify where your bottleneck of mortality is, you then can devise strategies to mitigate or improve survival. For example, if you have low fetal counts, only one thing can be at play—poor nutrition; either due to too many deer or low quality habitat. If, on the other hand, you have high fetal counts, and then low fawn-at-heel, the problem again can be related to nutrition (seasonally), or to predation. In such cases, supplemental feeding, food plots and predator management may be appropriate. Hence, you can see the utility of acquiring all this information. And, any landowner (especially in a state like Texas) can obtain this information without a great deal of training. Fetal counts are the most tricky, since they involve being able to legally harvest does late in the year, and having the experience to age fetuses. If fetal aging is not possible, you can opt for the remaining information.

I hope this clears up the difference between fawn crop and recruitment, as well as, explaining what this information can do to improve your management.