Buck Fawns on the Ground: The Awesome Power of Fawn Numbers in Producing Big Bucks

by Stuart W. Stedman

What is Most Important Factor in Producing Big Bucks?

1. Age?
2. Nutrition?
3. Genetics?

That question has generated many intense debates around South Texas campfires. But the answer is NONE OF THE ABOVE **THE KEY DRIVER IN THE PRODUCTION OF BIG BUCKS IS THE NUMBER OF BUCK FAWNS THAT SURVIVE EACH YEAR**. Think about what happens if you have low numbers of buck fawns year after year. With low numbers of buck fawns year after year,

- You will have low numbers of mature bucks, so you will not have ~~AGE~~ in the herd;
- Feeding or good nutrition will only impact a few mature bucks, so ~~NUTRITION~~ will have limited impact on the number of trophies; and
- The bell curve of antler scores—which defines the chance of producing a big buck—will be small and only operate on a few mature bucks so the odds of ~~GENETICS~~ outliers are low.

Buck fawns on the ground is the *sine qua non* (a Latin phrase meaning "without which, not") of big buck production. Without consistent numbers of buck fawns on the ground, the chance of producing a huge buck is low.

Why is Fawn Production Often an Afterthought?

Let's face it. Everyone focuses on their bucks as they start to get survey or motion camera data at the beginning of each season. Fawns, after all, do not have antlers. For years (until the light bulb went on for me), fawn survival (i.e. the number of fawns divided by the number of does) was just a number that my Excel spreadsheet calculated. The real problem is that fawn survival is a *distant issue*, something that becomes relevant only 5 or 6 years later. It's difficult to think 5 or 6 years ahead. Imagine telling your friends: "The deer antlers looked poor, but I'm really excited about our high fawn survival." I never did that. Until I got it.

My Assumption (You Provide Supplemental Feed) and My Goal in Writing this Article

This article assumes that you provide supplemental feed to your deer herd. In South Texas at least, supplemental feeding is the only sure way to manage fawn survival; otherwise, you will be at the mercy of spring and early summer rains. Like quail. Fawn survival is certainly critical on an unfed ranch, but you will have difficulty doing anything about it.

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[At the suggestion of Dr. Dave Hewitt, I use the term “supplemental feed” instead of “protein feed.” “Protein feed” is the term that almost everyone uses to describe a pelleted deer ration that so many of us provide to our deer. But Dave rightly points out that protein is *often not* the most limiting nutrient. Perhaps the obvious benefits of “protein feeding” come instead from energy or something else in the pelleted ration. Sounds like another email blast topic. Dave?]

My goal with this article is to encourage you to focus on fawn numbers, if you do not already do so. I am also going to explain why fawn numbers are so important. Finally, I am going to point out the one potential downside of increasing buck fawns on the ground.

I should mention that the importance of buck fawns on the ground is a *ridiculously* simple concept. I could sum up the article with the following sentence: *The more buck fawns you put on the ground each year, the more mature bucks and the more trophies you will eventually have*. The problem is that there is a lot of noise in deer management practices that obscure the key driver in the production of big bucks: buck fawns on the ground.

How Did the Light Bulb Come on For Me?

When we started supplemental feeding about 12 years ago, I wanted to prove to myself that the results would justify the expenditure. We were selling hunts back then and I wanted to see if the extra revenue from supplemental feeding would exceed the cost of the feed. So I built a complex population model in Excel. I used the following inputs: buck and doe mortality; buck:doe ratio; bell curve antler data; a bell curve shift to the right from a higher plane of nutrition; fawn survival; initial population density; targeted population density; buck harvest at various ages; and doe harvest. The outputs were numbers of does, the number of 140 class, 150 class, and 160+ class bucks, and revenue. My model was complex, elegant, and powerful.

Okay. Stop right here and reread the preceding paragraph. Your eyes will glaze over a bit as you try to think about how all of these input variables might affect a model that predicts numbers and sizes of bucks. But those inputs are exactly what you face when you manage your deer herd. And I discovered, and as I will try to explain in this article, most of that stuff is noise that obscures the critical importance of buck fawns on the ground.

After I built the model, I started adjusting the input variables. The light bulb went on for me when I found that the most powerful variable—and the only one that moved the needle at all—was fawn survival. Higher fawn survival meant more revenue; lower fawn survival meant less revenue. My model showed that FAWN PRODUCTION DRIVES THE ENTIRE SYSTEM. That insight was one of those rare “Ah, Ha!” moments in life for me.

The Simple Math of Buck Fawns on the Ground

Buck Fawns on the Ground =

Number of Does X Fawn Survival % (Fawns/ Does) X 50% (1/2 the fawns are male)

As an example, if you assume a fawn survival of 60% and 50 does in a herd, you will have 15 buck fawns on the ground (50 does X 60% fawn survival X 50% male = 15 buck fawns).

Simple stuff, but think about what this arithmetic means. If you want to increase buck fawns on the ground, you can (1) increase fawn survival (by providing supplemental feed and adequate grass for ground cover) and/ or (2) increase the number of does. Increasing doe numbers makes sense. If you want to produce more widgets, build a bigger factory. Does are your factory.

One More Concept: The Probability of Producing a 160+

Buck antler sizes (for a given age or at maturity) are normally distributed—i.e. the B & C scores follow a bell curve. This insight comes from my analysis of some of the early Faith Ranch random capture data. A bell curve of 75 mature buck antler sizes in South Texas looks roughly like this:

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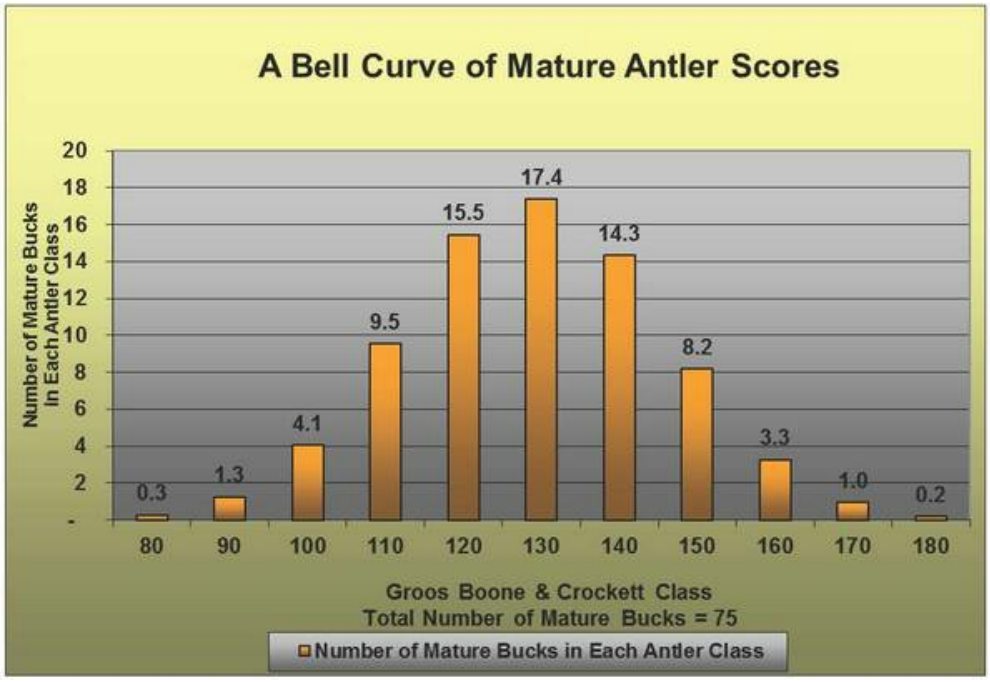
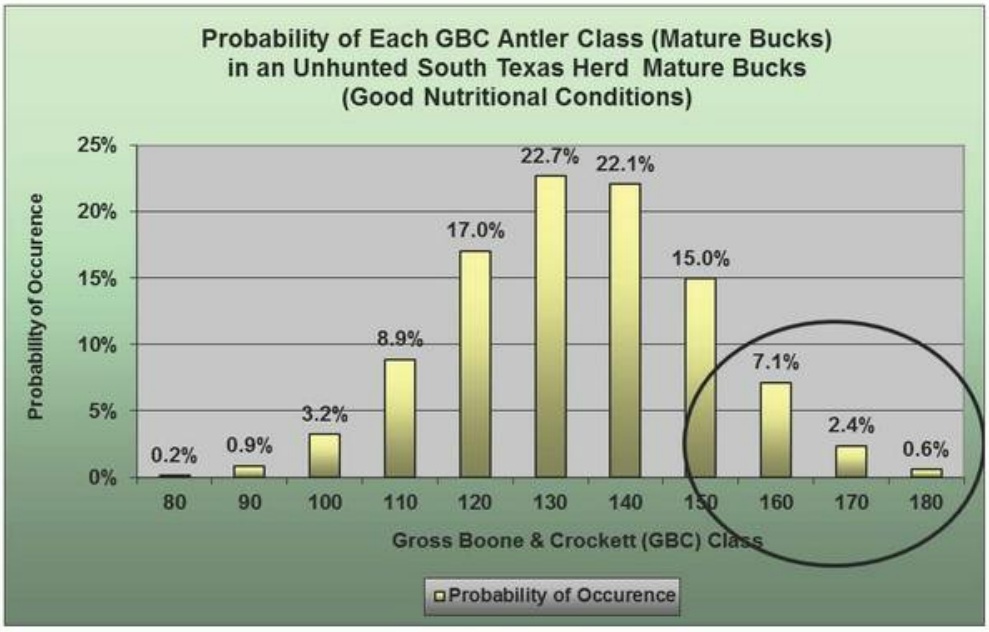


This bell curve contains several important concepts:

1. Most of the bucks in a deer herd will have average sized antlers. It's hard to fight Mother Nature's bell curve. Mother Nature abhors outliers as much as she does a vacuum.
2. The y-axis on the above chart shows the number of bucks in each B & C class. The total number of bucks in this fictional herd is 75. Double the number of bucks to 150, and the number of bucks in each B & C class doubles (and the entire bell curve gets bigger). This is the essence of buck fawns on the ground.
3. Although the absolute numbers are important, a bell curve is a statistical concept. You will not have 17.4 130-class bucks. In fact, the most useful way of depicting a bell curve for deer management is percentages of mature bucks in each B & C class.

The following bell curve shows the *probability distribution* of a buck herd in South Texas under good nutritional conditions:



To determine what percentage of your mature bucks will score 160+, add the probabilities of 160s, 170s, and 180s: 7.1% + 2.4% + 0.6% = 10%. I will therefore assume that 10% of a buck herd on supplemental feed in South Texas will score 160+ (although I believe that the 10% probability will increase with sustained supplemental feeding over time).

The Relevance of 10% of the Mature Bucks with 160+ Antlers

Do you want to know how many mature 160+ bucks you will probably produce? Easy: simply multiply the number of mature bucks in your herd by 10%. (Well, not so easy if you cull your lesser bucks. Culling reduces the number of bad mature bucks still in your deer herd so the actual percentage of 160+ bucks will be higher since you have removed some on the left of the bell curve. The numbers in a probability distribution will always sum to 100%.) Still, absent culling 10% of your mature bucks on feed should score 160+.

How do you increase the number of 160+ bucks? Simple. Increase the number of mature bucks, a number that you can then multiply by 10%. How do you increase the number mature bucks? Put more buck fawns on the ground.

Numbers of Buck Fawns Produced: Fawn Survival % X Number of Does

Increasing fawn survival and increasing doe numbers each have *direct and proportional* impact on the number of buck fawns on the ground. Moreover, each increase (fawn survival on the one hand and doe numbers on the other) multiplies together to proportionally increase the number of buck fawns produced. Let me explain the simple math:

- If you *triple* fawn survival from 25% to 75%, you *triple* the number of buck fawns you produce. ***Example:*** if you have 50 does, a 25% fawn survival produces 6.25 buck fawns (50 does X 25% fawn survival X 50% male); a 75% fawn survival produces 18.75 buck fawns (50 does X 75% fawn survival X 50% male).

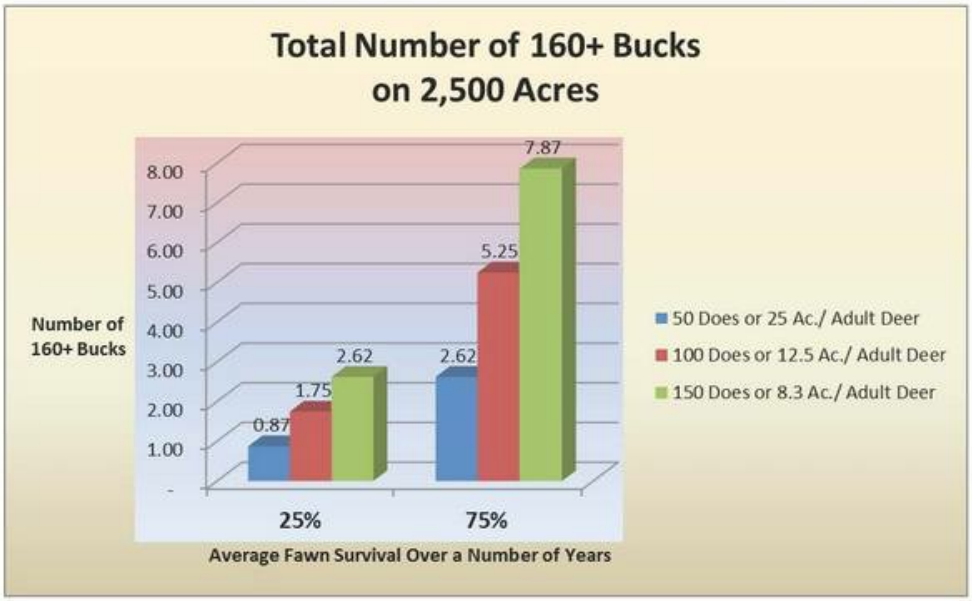
- If you *triple* doe numbers from 50 to 150 and keep the fawn survival at 25%, you *triple* the number of buck fawns you produce. ***Example:*** if you have 50 does, a 25% fawn survival produces 6.25 buck fawns (see above) but if you *triple* the number of does to 150, you *triple* the number of buck fawns to 18.75 (150 does X 25% fawn survival X 50% male).

- If you triple fawn survival AND triple the number does, you increase the number of buck fawns by NINE TIMES. Each multiple (the doe increase and the fawn survival increase) can be multiplied together to get the total increase in buck fawns. ***Example:*** if you increase fawn survival from 25% to 75% AND you increase doe numbers from 50 to 150, you increase the number of buck fawns from 6.25 (50 does X 25% fawn survival X 50% male) to 56.25 (150 does X 75% fawn survival X 50% male). In other words, a 3X increase in fawn survival and a 3X increase in doe numbers will result in a 9X increase in buck fawns (3X multiplied by 3X = 9X).

Now What About the Number of 160+ Bucks?

The powerful effect of increasing fawn survival and doe numbers carries directly through to number of mature bucks, although there will always be fewer mature bucks than buck fawns produced because of natural mortality. And remember that absent culling, 160+ bucks will represent 10% of your mature buck herd (or higher if you cull). The relationship is simple: increasing buck fawns on the ground by 6X (say, by tripling fawn survival from 25% to 75% [3X] and doubling doe numbers [2X] = 3X times 2X = 6X) will increase the number of 160+ bucks in your herd by 6-fold.

The following graph accounts for natural mortality in calculating the total number of 160+ mature bucks in a herd on a 2,500 acre ranch under 2 fawn survival conditions (25% and 75%) and 3 doe number scenarios (50, 100, and 150 does). By increasing fawn survival from 25% to 75% (a 3X increase) and by increasing doe numbers from 50 to 150 (a 3X increase), the number of 160+ mature bucks increases from 0.87 to 7.87 (a 9-fold increase, as the math would predict). Here is the same data in graphical form:



Imagine the Impact on a 2,500 Acre Ranch: 8-160+ Bucks versus 1-160+ Buck

Can you imagine how much your hunting experience and enjoyment would improve if your herd contained 8 (7.87 rounded) 160+ bucks instead of 1 (0.87 rounded)? You can do this by increasing fawn survival and doe numbers, both of which put more buck fawns on the ground. Increasing buck fawns on the ground is the essence and the great promise of intensive deer management.

Why Don't More Deer Managers Embrace Increasing Buck Fawns on the Ground?

I think many deer managers and biologists are uncomfortable with high deer densities. After all, increasing buck fawns on the ground really involves raising deer densities. I believe that part of this discomfort comes from the workhorse of wildlife management theory—density dependence. I will not get into density dependence here, but the idea is that bad things happen as population density increases (you outstrip the "carrying capacity" of the land) and good things happen if you lower population density. All biologists are indoctrinated in density dependence theory and so a recommendation to raise deer numbers—however powerful the math—makes many biologists uncomfortable.

I would be uncomfortable, too, but I think supplemental feeding largely eliminates density dependence concerns—with one possible exception: the density sweet spot.

The Density Sweet Spot

Is there a deer density in a herd on supplemental feed that maximizes the benefits to deer from native nutrition yet still provides the benefits of the powerful math of buck fawns on the ground? Is there a deer density that is so high—even with supplemental feed—that deer antler sizes decrease? Dan Friedkin has called that ideal deer density the Density Sweet Spot. It is a powerful metaphor, and it is one of the most important areas of deer research today. At what deer density is antler size maximized in a supplemental feed environment? That would be the Density Sweet Spot. If found, it should not be exceeded.

My Current Thinking

Although I look forward to more research results on the Density Sweet Spot issue, I think the powerful math of buck fawns on the ground—in a supplemental feed environment—overwhelms the negative effects of deer competition for native forage. Furthermore, my impression is that supplemental feeding—if done diligently and if the quantity and availability of supplemental feed is increased as deer density increases—relieves much of the pressure on native habitat. Future research may cause me greater concern about high deer densities. For now, though, it is hard to argue with the powerful math of buck fawns on the ground.

About the Author: Stuart W. Stedman is a businessman from Houston whose family owns the Faith Ranch in Dimmit, Webb, and Maverick Counties. He has been a supporter of the Deer Research Program of the Caesar Kleberg Wildlife Research Institute since the mid 1980's and has been a member of the Institute's Advisory Board since 1991.

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