



PHOTOS BY KEVIN YOUNG, GREG WICHMAN AND DALE DUWALL

## Infrared-Triggered Cameras:

# Putting it All Together

**This series taught you how to use your cameras to survey a deer herd. How can the information guide your management decisions?**

**By Jason Snavely**

Congratulations! You have successfully completed your first camera survey of your deer herd using the technique I described last October in an earlier installment of this series. The 14-day survey period is over, and you have pulled your cameras and organized packs of photographs obtained from the lab or plugged your flashcards into your personal computer.

You have looked over your photographs to distinguish individual bucks based on their antlers and determined how many buck, doe, and fawn photographs you have. Based on the number of “unique” bucks you captured on film, you have determined the population factor that has helped you convert raw numbers of does and fawns into an estimate of the number of individual does and fawns in your herd. In fact, you’ve taken your survey a step further and estimated age and Boone & Crockett score of your bucks as well as the ratio of yearling spike bucks to yearlings with branched antlers, an indicator of herd condition. Ultimately, you have all of your estimates on paper including density, adult sex ratio, estimated buck age structure, fawn crop, estimated B&C score and yearling spike ratio.

There’s only one question on your mind... “Now What?!”



*Seeing numbers of bucks like this one increase in your camera surveys over time is evidence that your management decisions are working. Todd Reabe of Brillion, Wisconsin, caught several bucks on film coming to this scrape, but this buck bedded down and stayed awhile, triggering the camera multiple times.*

How do you begin to interpret your results? What do these numbers tell you about the deer on your property? What management actions should you take this hunting season?

This article, the fifth in this series on infrared-triggered cameras, will focus on how to summarize, analyze, and organize your results and how to connect these numbers to your decision to pull the trigger or pass.

### Density Estimate

When I talk to hunters about camera surveys, they are generally most concerned with the number of deer that utilize their property during the hunting season, which is closely tied to the number of deer per square mile in their area. While it is an inter-

esting piece of the puzzle to estimate, it is important to realize that your density estimation is only one aspect of the survey.

Density estimates derived from camera surveys define a “population” contained within the study area whether it is 100 acres or 10,000 acres. However, free-ranging deer may be regularly crossing property boundaries throughout the year. Reported home-range sizes of white-tailed deer vary across their range as well as during the rut, fawning, winter and other times of year. Other factors that can affect home-range size include sex and age and the quality and diversity of the habitat. Most landowners and hunting clubs do not control enough acreage to keep deer from wandering off their property. Also, some animals that are on the property never show up on film. Therefore, it is important to keep in mind that your density results reflect a “snapshot” taken during your survey period. When making management decisions from deer density estimates, always compare trends in your data over time. Never make crucial decisions from one survey. Fortunately, the above movement factors that affect your density estimates do not adversely impact your age and sex ratios. But these still represent a snapshot only.

To truly gain insight into your deer herd you need to repeat your camera survey regularly. The key to estimating deer density with infrared-triggered cameras is to keep your methods consistent from year to year. Record camera station locations with a hand-held GPS unit, and operate your camera surveys for 14 days to pick up as many animals as possible. Research shows that camera surveys lasting longer than 14 days are not cost effective and do not significantly increase accuracy. I maintain simple bar graphs of the “total estimated population” from all of my annual



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camera surveys. If survey methods remain consistent, I can isolate trends in response to the management program. Even when you maintain consistent survey methods from year to year, many variables may affect your results. For example, when acorns are abundant, your bait piles face some stiff competition. Always remain aware of this possibility and seek assistance while interpreting your data if something seems out of whack.

Even though the value in your data lies in trends, most managers still want to hear a number — a target density. Unfortunately, I can't give you a rule of thumb that covers the entire range of the whitetail. Contact your state or regional wildlife biologist, com-

municate your goals for your property, and ask them to help you develop a target deer density for your region and habitat type.

#### Adult Sex Ratio

Whether obtained from observation data, camera surveys, or a combination of the two, the adult sex ratio can tell you a lot about a deer population. Much has been written about sex ratios in *Quality Whitetails* and for good reason — it is a very important indicator of deer herd condition. Fortunately, this ratio is relatively easy to manage through regulation of the trigger finger. As long as your antlerless harvest program is improving the adult sex ratio, you are headed in the right direction.

Most adult sex ratios across the white-tailed deer's range are skewed toward females. Research identifies several negative factors that skewed sex ratios have on deer populations, including prolonged breeding and fawning periods, increased post-rut, mortality on bucks, decreased competition for does during the rut, and increased rut-related stress on young bucks. Adult sex ratio is managed with the landowner's desired population composition goals in mind. Although these goals are often extremely diverse, most management programs aim for one adult male for every one to two adult females.

I have found that most of my clients are very satisfied when our estimates approach an adult buck:adult doe ratio of 1:2. This target ratio is only obtained through a restraint in harvesting young bucks and moderate to aggressive doe harvests. After a few years of data collection and harvest adjustments, you will begin to notice trends. I suggest maintaining bar graphs with a “quality zone” at 1:1.5 or a number that you feel comfortable with.

#### Number of Unique Bucks 1 1/2+ Years of Age

Graphing the number of individual bucks photographed in your annual camera surveys is not only fun, it also serves as an excellent gauge when assessing your ability to protect immature bucks from harvest. Providing secure cover and sanctuaries for young and middle-aged bucks on your property during the hunting season is crucial to maximize the number that reach the older

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age classes. As previously mentioned, you are bound to lose bucks to neighbors during the hunting season. The extent to which this affects your management program can be minimized with a detailed management plan that focuses on property layout or “deer landscaping.” Ultimately, the success of your deer management program is largely dependent upon your ability to protect immature bucks from premature harvest.

### **Fawn Recruitment**

One of the best indicators of deer herd condition in relationship to habitat quality is fawn recruitment. Most biologists refer to fawn recruitment as the number of fawns that survive to their first hunting season. This is quite different than the fawn crop, or number of fawns actually born. Research has identified a strong correlation between habitat quality and deer density relative to fawn recruitment. In general, as a deer population increases beyond the carrying capacity of the habitat, the number of fawns recruited annually decreases. In low-density populations where high-quality food is plentiful, twin fawns are the norm. Under these circumstances many female yearling does, and even some fawn does, will produce fawns. On the other hand, as the population density increases, competition for food also increases, and fewer adult does give birth to twins while many yearling does and all fawn does fail to produce fawns. It is important to note that in a few areas where habitat quality is very poor (e.g., coastal Florida), this “density-dependent” relationship often does not hold true. In these areas, little difference in fawn recruitment is observed from low- to high-density deer populations.

It is helpful to graph fawn recruitment using a quality zone that represents a goal for your specific management plan. Like density and sex ratio, this number varies dramatically across the whitetail's range. While a general rule of thumb is difficult, most managers shoot for a fawn recruitment rate of at least 0.75 fawns that survive to the opening day of the hunting season for each adult doe in the population. If your results yield 35 fawns and 59 adult does, your fawn recruitment is 35 divided by 59, or 0.59 fawns/adult doe. Note that in extremely productive areas, fawn recruitment can exceed 1.0, whereas in extremely poor areas fawn crops of less than 0.20 are possible.

### **Buck Factors**

Buck age structure estimates and yearling spike ratios are two helpful population characteristics to track on your property. Although hunter expectations vary immensely, I find that quality hunts abound when at least 30 percent of the adult buck population (all bucks over 1 1/2 years) is 3 1/2 years of age and older. I also like to see approximately 15 percent of the bucks in the 4 1/2+ age bracket. These numbers may differ according to your specific goals for your property.

The yearling spike ratio is obtained by dividing the number of spike-antlered yearling bucks by the total number of spike- and branch-antlered yearlings combined. For example, if you estimated seven spike-antlered yearling bucks and 19 branch-antlered yearling bucks, your yearling spike ratio is 27 percent — 27 percent of the yearling bucks in your survey carried spikes for their first set of antlers. It should be stressed that, even under good management, the percentage of spike-antlered yearling bucks in a given population varies considerably. As such,

I encourage you to seek advice from an experienced deer biologist in your area to determine what is a realistic goal for your property.

### **Building Your Deer Management Tool Box**

Professional deer managers have several tools and techniques to choose from when we put our hands on any deer management program. Just as you might select a different set of tools when you are under the hood of your pickup than if you were tuning your bow, we select the most effective set of tools for the particular project we are dealing with. Although the specific tools and techniques may change as we move from one region to another or from one deer population to another, one thing is certain, we take everything but the kitchen sink. When managing deer on private lands I continually stress the importance of gathering as much data as possible from which to base sound management decisions. I do not take extreme measures to crank up doe harvests or tweak age structure with data from only one technique. I draw from several techniques. A few bad management decisions may take several years to correct.

Past issues of *Quality Whitetails* have zeroed in on the importance of consistently recording accurate harvest and observation data. These two types of data, along with infrared-triggered camera surveys, are what I most commonly incorporate into herd-condition analysis when making management decisions. It does, however, get even better. Think about the tools that are required to work on your pickup. Sure, many of you can accomplish a lot with a screw driver and a wrench. However, think about how much more effective you would be if you also had a good socket set. If you incorporate browse surveys or habitat analyses into your management decisions your chances of success are much greater.

I hear it all the time: “I counted all of my pictures from my camera survey, and my results are frightening!” or “We decided not to harvest any does this year because our density estimate was so low!” I can't stress the importance of placing your focus on trends over time as opposed to the results of one or two camera surveys. When collecting data, whether it's observation data, harvest data or camera surveys, any number of variables can affect the outcome. Weather and mast crops are two significant factors. In Pennsylvania, the 2004 acorn crop on many of my study sites was average to poor. Even camera surveys conducted late in the year were not disrupted by acorns. Go back a few years, however, and some of the best acorn crops in history made poorly timed camera surveys challenging at best.

New developments and new ideas in the use of these cameras for deer management are constantly arising, and I will continue to share my findings with you. In the meantime, this month QDMA will host an Online Think Tank on infrared-triggered cameras at their website, [www.QDMA.com](http://www.QDMA.com). Log in and ask a question. I look forward to hearing from you!



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