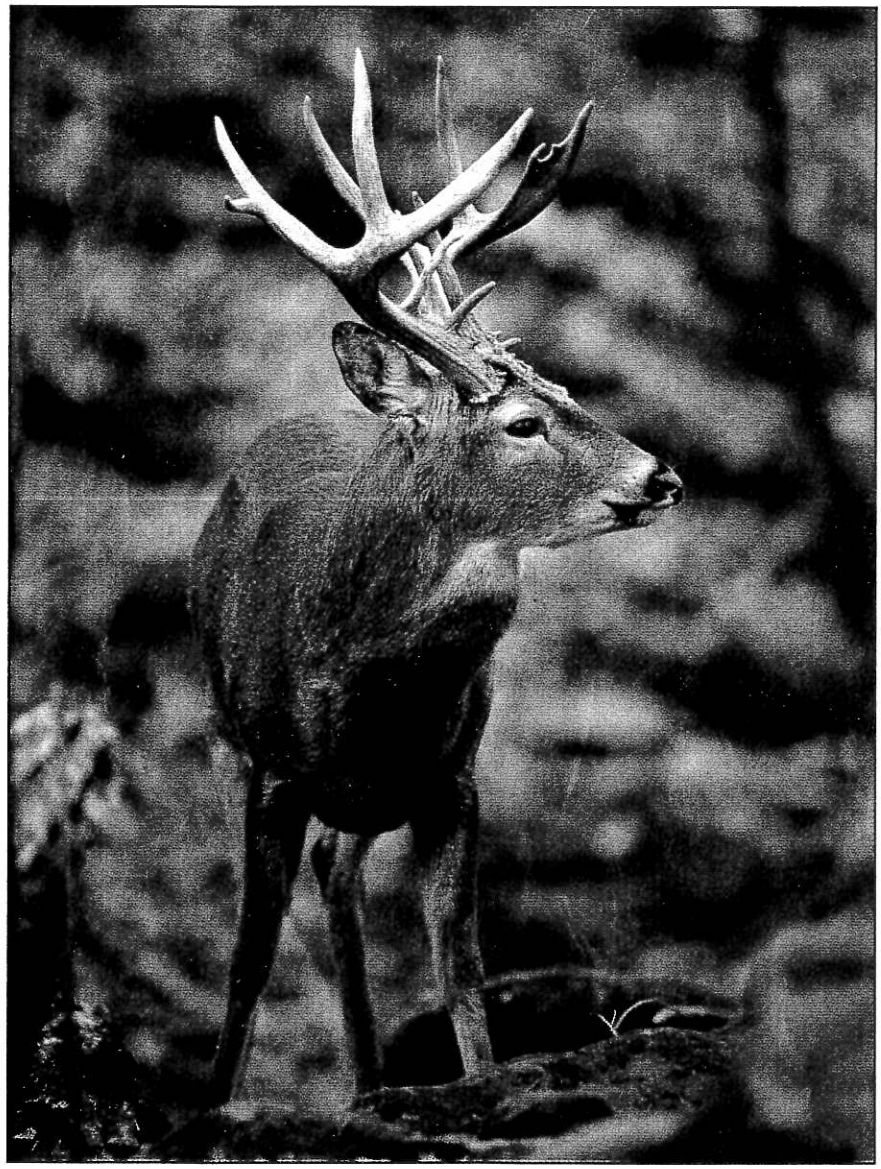
TARGETING
A Buck's Home Range

Research has proved that a whitetail's home range is usually elliptical in shape and that it has identifiable elements. How can you use this knowledge to help you bag a trophy buck?



BILL LEA

by Dr. James C. Kroll

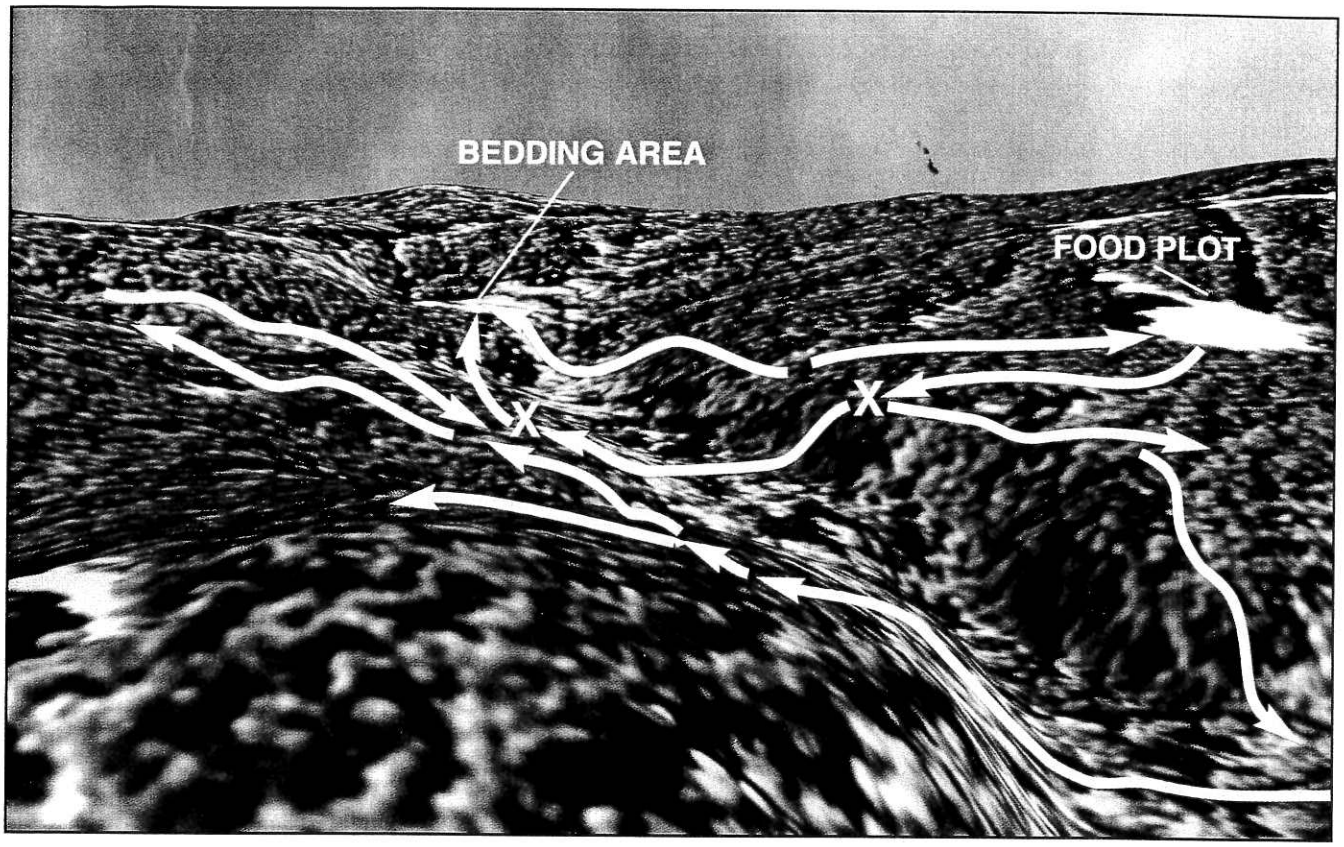
During the late 1960s and early '70s, several of us researchers set out to learn more about the home ranges of whitetails, through the use of radio-telemetry. This involves using miniature radio transmitters attached to animals to track their locations. We used a collar that would hold a transmitter beneath the deer's neck. An antenna protruding from the top of the collar broadcasted a signal that could be detected from up to three miles away in the right habitat.

During our initial attempts to radio-track whitetails, we were happy if we could narrow down the location to within 100 acres. Thanks to improvements in transmitter and monitoring technology, we now can narrow down a deer's location to within a few square feet.

LEARNING FROM RADIO-TELEMETRY

It was one thing to locate a deer with reasonable accuracy, another to make sense of the data. One location meant little, but a string of them could yield significant results.

The first years of my research found my graduate students and me doing 'round-the-clock stints monitoring the movements of specific deer. If, for example, we marked each



Here's the home range of a buck the author's team tracked by radio signals. The major axis (length) is along the drainage, while the minor axis (width) is across it. Each "X" marks a good stand site. (On this infrared image, the red areas are softwoods, the blue-green areas hardwoods.) Image courtesy of Dr. James C. Kroll.

animal's location every 15 minutes, that would limit us to no more than four individuals. After all, you seldom could receive more than one deer's radio signal from a single antenna location. We most often obtained "fixes" on the deer every hour or so. By doing this over a 24-hour period, we could monitor a deer's movement about the landscape.

After radio-tracking a deer for several days (the transmitter batteries weren't all that good), we had on our map a number of points that resembled the pattern of a good turkey load. We then drew lines around the outside of the points to give us an idea of the home range of each deer.

Today, these methods never would pass the scrutiny of a scientific peer review, as there simply wasn't enough data to draw unerring conclusions. But back then, nobody ever had used radio-tracking to show where deer went. This was good stuff!

From these studies in the Pineywoods of East Texas, we made our first estimates of home-range size. Meanwhile, other scientists were conducting similar studies in other areas: Dr. Larry Marchinton in Florida and Georgia, Dr. Harry Jacobson in Mississippi, and Dr. Jack Inglis elsewhere in Texas.

We all came up with pretty much the same results: Most of the studied deer had relatively small home ranges (using these simple statistical estimates) of a square mile or less. In Mississippi, however, Dr. Jacobson was coming up with much larger areas. He even had a buck that periodically swam the Mississippi River to Louisiana! Also, some of my East Texas bucks were showing unusually long movements of five or more miles. It also appeared that bucks and does were very much different in their movements.

Because early studies were conducted when it was difficult to find and catch older bucks, much of our work was based on yearlings. With the advent of drive nets, tranquilizer guns and helicopter net guns, it became possible to include older bucks in research studies. And when we started studying older bucks and using more sophisticated statistical and computer analyses, we found we'd been way off in our initial estimates of home-range size. Yet even in the more primitive days of study, we all came up with one basic observation: *Whitetail home ranges tend to be elliptical, not circular.*

Drawing limits about radio locations of a specific animal can produce a misconception that the animal uses space uniformly. More detailed studies tended to yield information that much of the space within the home-range ellipse wasn't used. There were pockets of high use, and those of little or no use. That's when we *really* began to learn about deer! More accurate locations permitted us to move in and take detailed measurements of the habitats preferred and shunned by deer.

As I reported in ***WHITETAIL*** many years ago, one of our key conclusions was that deer have centers of activity and travel corridors. The reason behind the elliptical home range soon became obvious: Deer tend to spend time in one or more areas foraging and in others bedding. For bucks, bedding areas often take the form of sanctuaries that can't be approached without the intruder being detected. *(Continued)*

There still was another contributing factor: Deer tend to associate with drainages, which by nature are linear. When combined with multiple centers of activity, the result is more often than not an ellipse.

We break the ellipse into two axes: major and minor. The major axis tends to be aligned along a path leading from bedding (sanctuary) to feeding, while the minor axis encompasses more than one of these travel corridors.

The length of the major axis is highly variable, depending on the proximity of quality feed and cover. In Alberta, for example, the major axis tends to be quite long (often several miles), due to the location of good forages far from escape cover. They don't call this "big woods" for nothing! In open farm country, on the other hand, the home range might be more circular, as habitat elements tend to be small and patchy.

We've tried to produce the smallest home range possible, by breaking up the habitat into smaller and smaller patches. In so doing, we've found 80 acres to be the smallest home range in which we could get a deer to stay without a physical barrier. Thus, I now believe this is the innate minimum home-range size, though I have yet to prove it to my satisfaction.

HUNTING THE ELLIPSE

You might be thinking, *This stuff is interesting, but what does it have to do with me taking a big buck this fall?* Quite a bit, potentially.

During our radio-telemetry studies, we've sometimes tracked not only bucks but also hunters. On more than one occasion, we just knew a buck was about to get killed, only to observe him neatly avoid contact with the person. Such events were part of the reason I began writing about hunting deer. I was tired of growing nice bucks only to see hunters have trouble harvesting them!

In hunting older bucks, the *setup* (ambush site) is the primary determinant of success. The setup should be chosen only after careful analysis, which we call "patterning." Obviously, understanding how deer utilize space and habitats is a key component of this process. Knowledge of deer movement and home-range size and shape is important here.

The fact that home ranges tend to be elliptical suggests there is some degree of linearity of habitat features influencing deer movement. This linearity is due to the fact that deer have more than one need to satisfy. In its barest form, the most common needs are food and cover. The connector in all of this is the drainage, which always is linear.

As noted, whether a home range is extremely elliptical or more circular is influenced by the structure of the habitat (landscape). More complex habitats tend to produce relatively circular home ranges, while simpler ones produce extended ellipses. So the first step is to analyze the area you hunt.

There are many sources of aerial photos, both free and for a fee. Try the Internet (www.terraserver.com) or your local Natural Resources Conservation Service (the former Soil Conservation Service) office. Some hunters even hire pilots to take them up in private planes so they can take their own photos. In this way, I've acquired up-to-date images for less than $200 — money well spent, in my book.

However you come to acquire your photos, the next step is to critically analyze them. Identify such important features as drainages, feeding areas (food plots, agricultural fields, stands of oaks, etc.), potential cover and sanctuaries. If you're working with an older photo, be aware that some features might have changed since it was taken, so you'll want to check out these features on the ground.

If you have topo maps to go with them, you also can note such geographic features as saddles (low spots that connect the heads of drainages) and extremely steep areas. *In almost all cases, if there are drainages present, deer will orient their movements with them in some way.* Most of the time, a travel corridor will follow the contour along a drainage. Deer tend to minimize effort by walking along contours, not across them.

The next step is field reconnaissance to confirm your photo analysis. Look for trails, especially those marked by rubs, and map them on your photo. Because home ranges tend to be a series of overlapping ellipses, there usually are breaks between them, caused by topography and habitat. Rarely have I seen home ranges extend across the total landscape. Even within a deer's home range there are places where it spends little time.

When you find trail sign, be sure to mark the travel direction on your map/photo. A deer will move along both axes (short and long) of the ellipse, but most significant move-



The author shot this outstanding buck at Mustang Creek after figuring out where to set up between bedding and feeding areas. Photo by Bill Grace.

ment will focus on the *long* axis. Although this can be a mile or more in length, the short axis tends to be less than a half-mile wide in most areas. This narrows down your choice of setups.

Now consider the "typical" (if there *is* such a thing) activity pattern of bucks. They tend to leave their beds in late afternoon and travel toward their staging areas, arriving at dusk. They stay there most of the night, intercepting does, then return to the same sanctuary or another one in early morning (often before dawn).

In most cases, bucks don't return to their sanctuaries by the same paths on which they leave them. They even vary their return trails by some system I haven't yet been able to define. But once you've found the long axis of the deer's home range, you can devise a plan to observe one or more trails along it, in hopes of being near the right one on the right day.

Midday buck movements are significant but generally short. The exception is when bucks are traveling with does. Then they might move at any time of the day.

Occasionally, I've modified the home range of deer in my hunting area to help the hunting. Nothing does this better than improved food sources. You can establish new centers of activity in this way, even pulling deer away from more traditional feeding areas.

Let's look at two personal examples from last season. My season began in Alberta, with old hunting buddy Dave Bzawy. Along with partner Terry Berkholtz, he operates Alberta Wilderness Guide Service.

Dave and Terry are masters at patterning deer in Alberta's fringe habitat, using aerial photos and topo maps, plus a lot of boot leather. Sure enough, when I arrived in Edmonton, I learned that Dave already had patterned several bucks, one a mature 10-pointer.

The basic pattern for these bucks was to bed in thick cutover and blowdown areas for much of the day, then travel downhill to seek does at fields planted to alfalfa and barley. Nearly all of the trails paralleled drainages cutting into the upland bedding territory. Clearly, then, the deer exhibited two main centers of activity within their home ranges: bedding and staging. The trick was to set up to intercept one of the big guys as he moved along the major axis of the ellipse.

Dave and I carried in a tripod stand and put it on a ridge between two drainages. I had an impressive view from there, and the first day of hunting yielded many sightings of bucks and does. It was about three miles to the main feeding area from which the bucks would be returning each morning, so we assumed they'd show up no earlier than 8:30 a.m.

The first day I sat in my tripod, playing what Dave and I call "the tennis match." You know: look one way, then the other, then back again. You're worried that you'll be looking the wrong way when the buck comes out. Sure enough, as I was watching some does to my right, I looked back to the left, but too late! The big buck already was in the edge of the forest before I could get onto him.

More complex habitats tend to produce relatively circular home ranges, while simpler ones produce extended ellipses.

Luckily, it was early in the week, and I had confidence in my setup. Behind me was a maze of drainages filled with dense conifer thickets. I knew the buck had to be bedding there; it only was a matter of time.

I mentally recorded the distribution of active trails crossing the cutline. There were two primary ellipses separated by a "dead zone" of about 200 yards. Farther down the cutline was another "dead zone" approximately 500 yards from the tripod. I was sitting smack in the middle of the home- range ellipse and had the luxury of seeing the full extent of the minor axis. What a spot!

The next morning, a doe came out of the spruce bottom at about midslope. She paused, looked back and then crossed the cutline, heading downhill. I got ready. At 300 yards the big brute emerged, cautiously sniffing her trail, and my 7mm Rem. Mag. dropped him in his tracks.

When Dave arrived on the scene, we sat down to have some coffee, talk of hunts gone by and appreciate another fine buck. Such times bind hunters better than a welding rod.

December found me back in Texas, hunting on Mustang Creek Ranch with my friend Bill Grace. I've been helping him manage his ranch for years, and he's grown some great deer. We'd been trying to get one old buck for the past two years. Each year prior to the season he'd been as regular as you could want; then, once the season began, he was nowhere to be found. We wanted a shot at him, but he hadn't been cooperating.

In 1999, we'd concluded that this buck was moving to another area each fall, in response to a similar shift by the does. There was little fall food in his normal area, so as the does shifted their center of activity elsewhere then, he was following them.

Rather than pursue the buck, we decided to establish a food plot within his summer range to hold the does there. It worked beautifully. Last fall we were seeing does in the area, whereas the previous season there had been little activity.

The trick now was to set up on the buck. As had been the case in Canada, he was bedding at higher elevation and moving down along drainages to the feeding area. In this case, there were two general drainages used by several bucks responding to the new food plot.

We constructed a ground blind of juniper branches and dead limbs, as there are few huntable trees in the area. Luckily for us, the old buck showed up that first evening, and one bullet dumped him in his tracks.

In both of these cases, knowledge about the home ranges of mature bucks produced great results. We positioned ourselves along the major axes of home-range ellipses, after some careful study and thought about what the deer were doing, and we caught both bucks traveling.

CONCLUSION

Nothing will get you a big buck every time out; however, understanding home ranges will greatly boost your odds. Plus, it will add to your appreciation of this marvelous animal, and that's a reward in itself.