

36 HOURS

BY DR. JAMES C. KROLL

"Survival of the fittest." This concept was developed, of course, by Charles Darwin, who's credited with the evolutionary theory still widely debated in classrooms and churches around the world. But whatever your beliefs on the matter, it remains safe to say the ultimate impact on any individual's existence on earth lies in what's left behind.

And that's certainly true of whitetails. Much of a buck's or doe's life is devoted to getting its genes into the next generation. Unlike humans, whitetails have a discrete breeding season lasting only about three months, with its exact length depending on many intrinsic and environmental factors. For a doe, much of the year is spent protecting and nourishing the product of reproduction (fawns). For bucks, similar amounts of energy are expended getting ready for combat and other activities relating to breeding.

"Success" for a buck comes with fathering fawns. The total number he sires tends to be lower than you might imagine — in fact, it's usually only a handful. For a doe, success is measured by the number of fawns she recruits to 1 year of age. Of course, she's likely to have longer to accomplish the task of

Above: All hunters know the rut is when bucks become most active in daylight. But the biology of how bucks and does get together at the right time for breeding isn't nearly as well understood. *Photo by Ron Sinfelt*

ABOUT THE AUTHOR > Dr. Kroll is founder and director of the Institute for White-tailed Deer Management & Research in Nacogdoches, Texas.

passing her genes into the next generation; in most populations, does usually lives about twice as long as bucks.

Regardless of gender, the most critical time of year for an adult whitetail is the approximately 36 hours in which buck and doe come together to create new members of the deer community. This is also the rough time frame many hunters eagerly await, based on the belief "peak rut" is the best time to shoot a trophy buck. But while much has been written on this subject, the events leading up to actual breeding and what takes place during the process are poorly understood by the majority of hunters.

KEY ELEMENTS

For most of the year, whitetail bucks and does might as well be different species. They have different habitat preferences, different nutritional needs and strikingly different social lives.

Whereas does are born into and live in tightly knit social groups, bucks become more and more loners as they age. A young buck often will pair up (outside the rut) with an older one. Eventually one of these deer dies, leaving the other with little in the way of what we might call "companionship."

At the Institute for White-tailed Deer Management & Research, our early radiotelemetry studies proved even unhunted bucks become almost fully nocturnal by 4 1/2 years of age. They find out-of-the-way places in which to bed and only tolerate rivals in common feeding areas. Based on this, years ago we began piecing together how bucks and does manage to get together long enough to breed. Slowly, we parsed out details such as where bucks prefer to bed (sanctuaries) and how they travel from these beds to feeding locations (via travel corridors).

Then came discoveries about how deer communicate in the woods. The whitetail's ancestors first appeared in the vast tropical forests of Asia, where deer densities probably were low. Faced with the communication challenges this creates, deer began to use chemical secretions from glands to leave messages on trees and other vegetation (signposts).

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deer world. By combining forehead and tarsal gland chemicals, through a contortionist movement of forehead to hind leg, a buck paints the top of his head with scents that say, "I'm here, ready to fight, ready to breed and in shape to do it!" The interdigital gland, which on all deer lies between the toes, plays a critical role in identifying exactly which deer is communicating these messages. It's especially the case with does inspecting signposts.

Staging areas are where bucks and does congregate prior to and during the rut. They're generally downwind from where does feed in late evening and during the night. Such areas tend to have a dense understory of "rub-able" trees, which serve as signposts.

WHAT TRIGGERS BREEDING?

Whitetails belong to a group of ruminants we call "short day breeders."



Nature's plan is for a doe to choose a buck shortly before she's ready to breed. She then maintains contact with him for the roughly 36-hour span during which she's capable of conceiving. *Photo by Ron Sinfelt*

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During the long summer days, a deer's reproductive system is pretty much lying dormant, especially in bucks. As the days get shorter, however, hormonal changes triggered by the pituitary gland ultimately produce striking behavioral and physical changes in both sexes.

Deer innately measure day length by bioassaying the amount of the chemical melatonin in their blood. The pituitary gland, once thought to have been a third "eye," monitors the amount and duration of light coming into the eyes. As day length shortens, the gland gradually is stimulated to produce melatonin, which in turn influences another part of the brain, the hypothalamus. It, in turn, influences production of sex hormones. In essence, deer have to go through puberty annually. (I don't know about you, but that was a challenge for me. I can't imagine having to go through it every fall!)

Over most of the species' range, does begin to cycle through as many as seven annual estrus cycles in September. (In some areas, such as South Florida, this cycle can start much earlier in the year.) The actual span during which a given egg can be fertilized by a buck is about 36 hours after it leaves the ovary and travels down the oviduct to the uterus. In order for an egg to become fertilized, the doe has to find a mate and maintain his attention until their union can result in conception.

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The need for this precise timing is why staging areas are so important. While bucks certainly can encounter does anywhere on the landscape, the most likely place for doing so is a staging area. A doe approaching ovulation suddenly finds the scents left in staging areas very enticing; in fact, often she'll rub her forehead against the signpost to mark herself with the scent of the best candidate she can find for the most critical time of her year: conception. Making a bad choice can mean the difference in the survival of her line.

Again, deer breeding can take place as a result of casual meetings, but the proper introduction is through the signpost. That's also where the third critical gland, the interdigital, becomes important. As noted, secretions from this gland provide a distinct identifying chemical signature to each deer in the woods. A single sniff of a trail can reveal which deer — buck or doe — has passed, and maybe even how long ago.

Much is misunderstood about what a buck's nose can and can't tell him about a doe approaching ovulation. Our research has clearly proved that the chemicals in deer urine are complex and very short-lived. Imagine a deer woods in which every time a doe urinated she'd leave behind enticing chemicals that lasted for days! This would be a very confusing situation



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for bucks, to say the least.

"I saw a doe come running by my stand," a hunter often will assert, "and a little later, a buck came along the same trail with his nose to the ground like a bloodhound!" What is the buck using to help him trail the doe?

The conclusion drawn from such sightings is that she's leaving behind chemicals originating from her reproductive tract. The reality is the buck is trailing her using scent from her interdigital glands. He's identified her as the one to follow, and he continues to do so by her individual "everyday" scent. Another buck randomly crossing her trail at that point probably would totally ignore it.

The chase is an important part of the rut. I feel it helps stimulate eagerness to breed and holds the buck's attention until the doe is at the peak of readiness for conception. Of course, the chase also can cause problems for the buck, in that the ruckus draws the attention of rivals. Where there are numbers of bucks, this quickly creates a "moving party" of suitors. The chosen buck then must fend off challenges from others of various ages, and sometimes he loses to a better (more fit) buck. The doe is the true winner in all this, as hopefully she ends up with the best father she can find for that year's fawns.

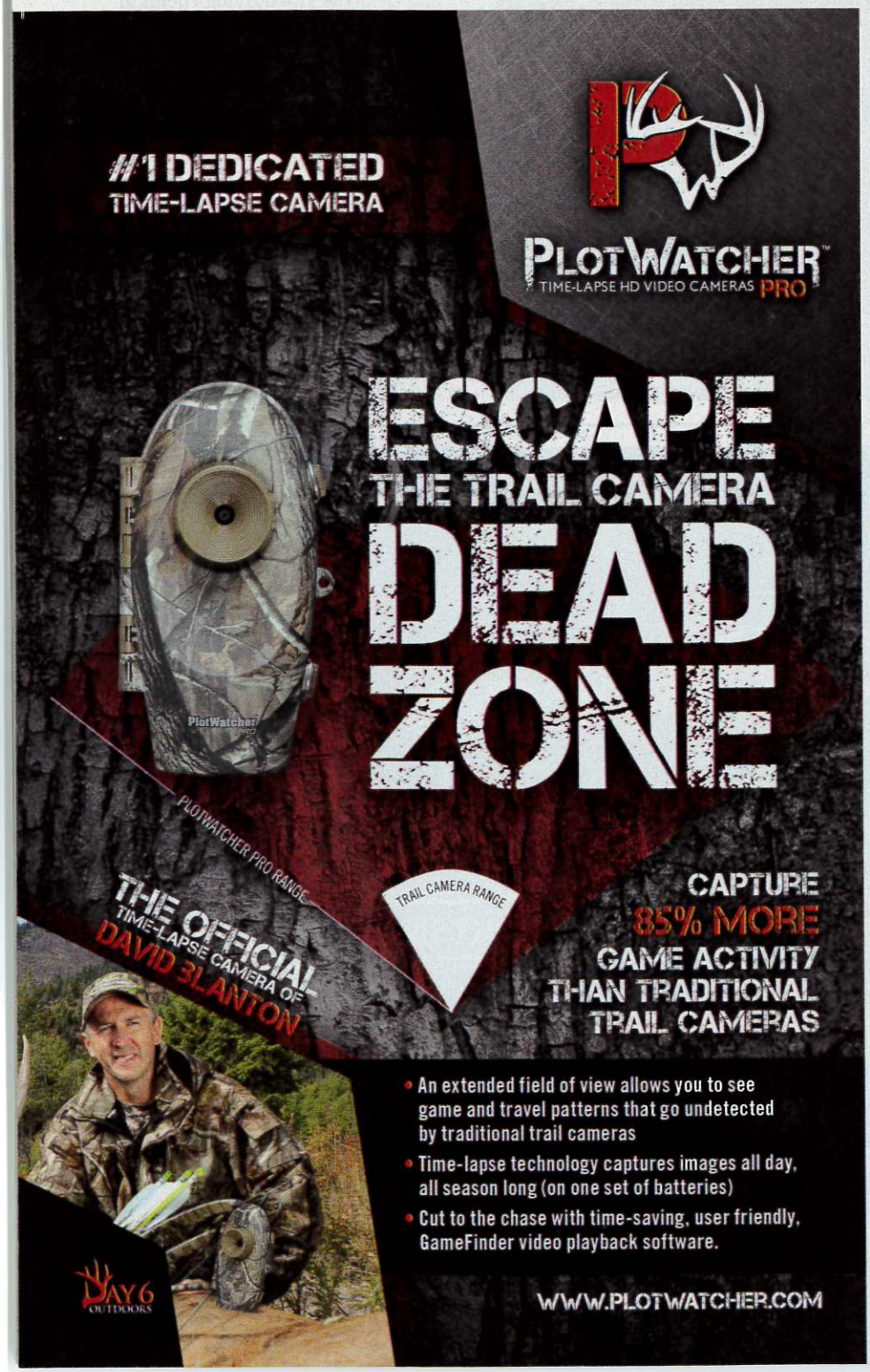
Whitetail bucks don't have a large scrotum:body mass ratio like that of a bull or sheep ram. Thus, they're "built" to breed only a handful of females each year. In order to ensure conception, the buck must copulate more than once. This requires him to remain near and to guard the doe until there's no longer danger of another buck becoming a father.

From the time a buck and doe meet until successful breeding takes place normally is about 36 hours. Our research on artificial breeding revealed that, while a doe becomes more and more attractive to bucks during the 56-60 hours leading up to ovulation, there's a 36-hour overlap between follicle maturation and release of the egg into the oviduct. The buck must attend the doe for at least this span to ensure conception.

Once breeding is successful, the doe won't ovulate again during that annual cycle, making her unattractive to other bucks. Any doe that fails to find a suitable buck will either have to recycle through the process or opt for a lesser-quality mate. Unfortunately, in areas with heavy hunting mortality of bucks, the only mate she might find is a yearling. Traditional deer management, which led to overpopulation and skewed sex ratios, has changed the breeding season for many herds. Too often does end up accepting lesser bucks because no prime-aged mate exists.

USING THE INFORMATION

What does all this have to do with the rut in your area? I hear a great deal about "lockdown," which refers to the time when mature bucks hook up with "hot" does and seem to disappear. In herds with a pronounced primary rut that peaks over a few days,



the "chasing and tending" time restricts where bucks are moving and how long they're in a particular place. Knowing a given buck will be busy tending a doe for about 36 hours can give you an edge. If you see many chases over a day or two, bank on older bucks then becoming scarce for a couple of days. After that, they'll relocate or return to staging areas to seek more mates.

So knowing where active staging areas are provides you a real edge at this time. Rather than becoming frustrated by a lack of buck movement, search for pockets of current doe activity, then locate staging areas and the trails leading to them. You can be sure a buck that no longer has a doe to tend will return to such areas in search of one.

Mapping rub lines leading to and from staging areas will significantly boost your success. Over time, you'll even learn to predict where these areas will be and when they'll be used. And when you can predict the exact location of rutting activity before it begins, it gives you a huge edge in setting up a winning ambush. **NAW**

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Join The Discussion

During deer season, wouldn't it be great to keep up with what other serious whitetail hunters across the continent are experiencing in their own woods? In essence, that would create the world's largest deer camp!

To make it happen, we just revamped the "Community" section of our website, *northamericanwhitetail.com*. Because user photos are so popular, we've focused primarily on making it quicker and easier to share them. Whether you want to show off your son's first buck, the view from your tree stand or your favorite food plot, it's now a snap to do so.

Not only can you easily share photos, you can see a stream of images from other users and engage with them by simply commenting, liking or sharing on social media.

As part of this transition, support for our NAW+ iPhone app will cease and no longer sync with the website. Additionally, user profiles and points will be deleted. We're inviting you to help us launch the beta of the new community, to make it bigger and better than ever.



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