



DEER ASSOCIATES ENEWS

News from the Deer Research Program at Caesar Kleberg Wildlife Research Institute

The Logical Buck, or How to Become an Ancestor

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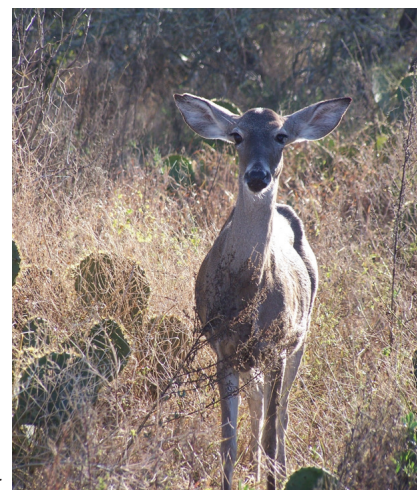
By Randy DeYoung

Natural selection is the ultimate risk-reward system, where success is defined by how many descendants survive to the next generation. The most successful or “fit” individuals are the ones with the greatest number of surviving offspring. Thus, any trait or behavior that enhances fitness will be favored, while attributes that diminish fitness will disappear. This simple idea was the basis for Darwin’s influential theory. Complexity enters the picture mainly because there are many different paths, or strategies, to success.

In deer and many other species of mammals, males are “dead-beat” dads, and provide no assistance to the female in rearing young. Without the burden of provisioning young, male mammals focus their energy on competing for mating opportunities. The most successful strategy in male–male interactions is dictated by the distribution of resources, which affects the distribution of females. The male’s competitive ability relative to other males then determines his success.

Species that live in open habitats often aggregate in large groups for protection from predators. This type of mating strategy is often termed ‘harem-mating,’ and is typical of many populations of elk and red deer. If one male could monopolize access to an entire group of females during the rut, he could be assured of a chance to sire at least some offspring, and perhaps many offspring. For instance, a long-term study of red deer in Scotland found that the most successful stag sired more than 80 offspring during his lifetime! In the harem system, males must fight to defend the harem from interlopers– and they fight often. To be successful using the harem strategy, a male must be aggressive, physically mature, and have comparatively large antlers.

White-tails don’t seem to use the harem strategy. This is probably because white-tail does live in small groups in brushy habitats; it would be difficult to maintain and defend a harem under these conditions. Instead, white-tails pursue and court individual does. Bucks form a temporary “tending bond” with an estrous doe, and will remain with her for 24–48 hrs. Bucks do not have territories, but will follow the doe and defend her from all other males. A buck might attempt to guard one or more does for the entire rut, but by investing in such a small number of does he would miss any additional breeding opportunities. Furthermore, he would take the risk of being run off by a larger buck and waste his investment in time and effort– an inefficient strategy. Instead, white-tail bucks only remain with a doe while she is in estrous, enabling the buck to breed and then resume searching for additional receptive does. This breeding strategy is termed a “roving” strategy. As long as the time it takes a buck to locate another doe is less than the average duration of estrous, the odds favor this “roving” strategy.



White-tail does live in small groups in brushy habitats; a harem-defense strategy isn’t viable.



*'Tis better to have fought and lost than to never have fought at all. –A. H. Clough
For a white-tail, persistence and a good memory may be more important than fighting.*

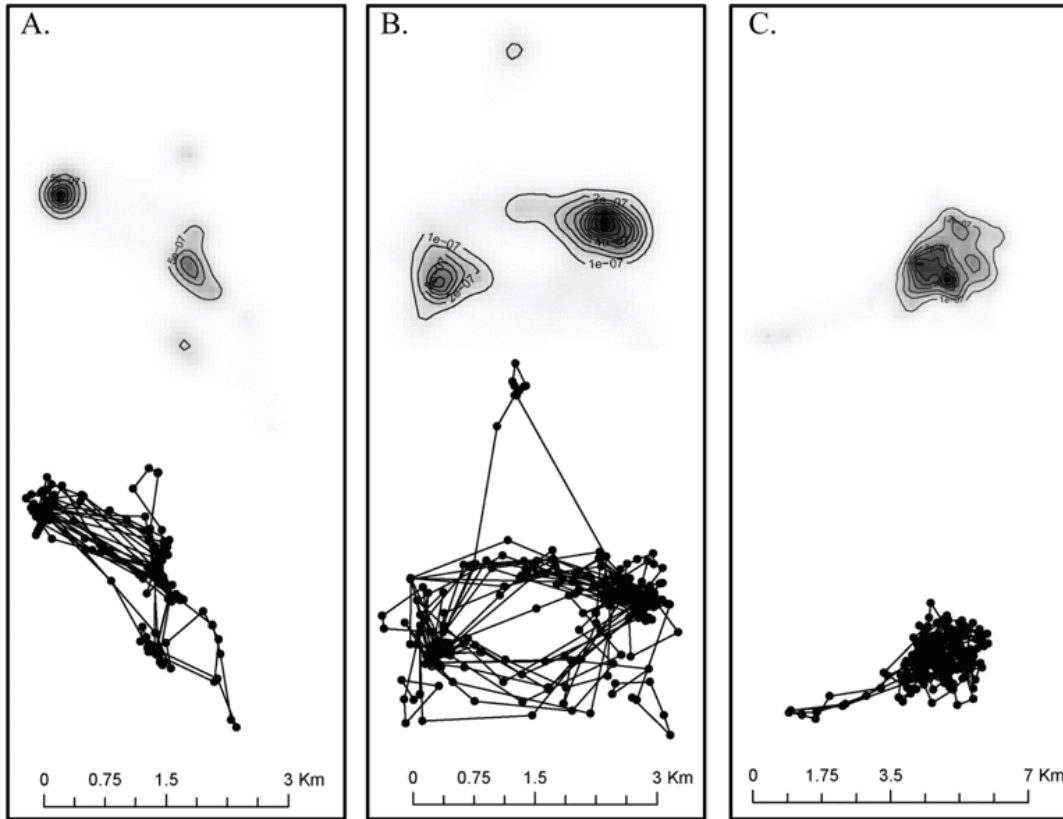
Until recently, there was no good way to study how bucks implemented their roving strategy. Randomly wandering around in search of an estrous doe might pay off occasionally, but seems inefficient. The recent advances in GPS technology provided a chance to figure out just how smart bucks could get. Recent CKWRI graduate Aaron Foley used the new technology to study buck movements for his Ph.D. research, and tracked over 100 bucks during 5 rut periods at the King Ranch.

Aaron found that the bucks were indeed pretty logical in their approach. First, bucks rarely left their home ranges, but remained in areas they were intimately familiar with. In fact, buck movements during rut were not random at all—they moved among, and repeatedly returned to, discrete areas about 50 ac in size where they expected to find does. Interestingly, the average time between return visits was about 24 hrs. This 24-hr rule is an efficient use of time, given that estrous lasts 48–72 hrs, and bucks are probably able to detect onset of estrous at least several hours prior via scent and behavioral cues. It appears that white-tail bucks can invest their energy in competitive searching for mates. Fighting occurs and is important in head-to-head arguments over individual does. However, a buck does not need to be the most dominant in an area to breed— he just needs to be the most dominant one to find that particular doe. The main battle seems to be locating does at the right time, which requires persistence and a good memory.



Bucks probably locate does and assess their estrous status via scent communication

The results of Aaron's research have revealed some fascinating insights into deer behavior, and conjure up visions of Bill Belichick madly diagramming football plays on a whiteboard, devising the latest blitz package. Fortunately for us hunters, I'm sure the bucks we followed didn't consciously make these decisions, and neither did their ancestors. However, the ancient bucks that used this strategy proved more successful and left more descendants than bucks who followed other strategies. Buck behaviors during the rut have long seemed erratic, but only because we haven't known the bucks' strategy. This logical approach explains why some bucks only show up at a given blind once a day, morning or evening. It also means that if a buck has been seen in a particular location a few times during the rut, it is likely he will show up again— a hunter need only be persistent, and hope the buck shows himself during daylight hours. The next time you observe one of these rutting bucks, remember the old adage to work smarter, not harder, and have some respect for these logical bucks.



80% of success is simply showing up.' – attributed to Woody Allen

Bucks repeatedly re-visit areas where they expect to encounter a doe group during rut, as depicted by these GPS movement tracks.