

# Do Wolf Tracks and Few Deer In Your Fall Hunting Area Mean What You Think They Mean?

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Imagine hiking into your favorite deer hunting area up in the northwoods for opening weekend of the white-tailed deer firearm season, or two weeks beforehand, to scout for deer sign. For hours you visit some of your favorite spots that over the years have yielded varying amounts of satisfactory to very good return on your hunting investments, be it in the form of decent-sized bucks with racks that made you feel good to talk about, or antlerless deer that simply provided suitable amounts of venison for the table.

But this year, you observe little in the way of fresh deer sign. Not only that, you've seen quite a few fresh wolf tracks, maybe some scat. Perhaps, somewhat understandably, your immediate conclusion is, "*Wolves came in and chased out all the deer; probably killed quite a few of our deer too.*" I've been a research biologist with the Minnesota Department of Natural Resources' Forest Wildlife Populations and Research Group for 19 years, and I've heard this determination expressed many times by relatives, friends, and other fellow deer hunters, young and long-time veterans of the woods alike. It's never been terribly difficult for me to understand how or why some people jump to this conclusion...not much deer sign, conspicuous wolf sign, and little additional information. Wolves chase and prey on deer... everyone knows that. Stories of such experiences have been circulating through the deer hunting population for decades, and each time they're told or a new experience is logged, the conclusion comes closer to being "Fact." A wolf pack moves through an area, whatever the season, and the deer either scatter out of the area like rats from a sinking ship, or meet their doom "en masse." Hunters are a bit more sensitive to this scenario though when it appears to occur just before or during the fall

hunting season. Stationed out of Grand Rapids all of that time, I recently completed a comprehensive 15-year study of white-tailed deer that involved, among other things, monitoring the movements, survival, and specific causes of mortality of about 450 radio-collared, female white-tailed deer on four study areas... mostly does at least one year old, but including many fawns, even newborns, beginning at several hours to about seven days old. My team and I also similarly monitored about 55 radio-collared wolves from seven to eight packs with established territories covering the deer study areas. We've learned a great deal from the data generated from this long-term study, as well as from anecdotal observations documented during extensive hours of fieldwork, on the ground and from fixed-wing aircraft.

The overwhelming preponderance of evidence based on our findings, as well as on those that have come before from studies elsewhere in Minnesota and North America, does not support the notion that wolves move into an area and come to dominate portions of the woods in the fall (or any other season) by either preying on large numbers of the resident deer or causing them to flee clear out of that area.

Wolves are not particularly effective hunters of white-tailed deer. Despite the fact that deer outnumber wolves in Minnesota's forest zone by some 175 : 1 (600,000 deer : 3,400 wolves), wolves must range and search widely over large pack territories (52 to 555 km<sup>2</sup> (20 to 214 mi<sup>2</sup>) to obtain the number of deer (15 to 20 adult-sized deer per wolf) they require to sustain their numbers over time. Indeed, studies have shown quite clearly that most of their hunting attempts are brief and unsuccessful, typically lasting a matter of only a few minutes. And so, as has been documented for years in the scientific literature and shared



with the public through various media outlets, wolves live a “feast or famine” existence, eating little for up to two weeks at a time. And they end up surviving primarily on the less fit or most vulnerable individuals in the deer population...the very young, old, sick, injured, or nutritionally compromised...because those are the ones they can catch.

But the wolves’ limited success in preying on healthy deer is probably more a reflection of this prey’s exquisite skills in avoiding wolf predation rather than of the inadequate predatory abilities of the wolf. White-tailed deer are highly vigilant animals, able to forage almost continuously during feeding bouts, and yet, respond very quickly to the sights, smells, and sounds of wolves and other predators. Once wolves begin hunting in a specific area, deer become increasingly vigilant, and when a wolf is detected and the decision to flee is made, a healthy deer can reach a top speed of at least 56 km per hour (34 miles per hour) and can hurdle obstacles as high as 2.4 meters (8 feet). The bare ground or shallow snow cover typically found during northern Minnesota’s early November firearm season is most favorable to the deer’s escape from wolves, and consequently, wolf predation rates on them are very low. From 1991 to 2005, a total of only 7 of 677 female deer radio-monitored during the November firearm seasons were killed by wolves; these occurred over six of the fifteen firearm seasons. No deer were killed by wolves during the other nine firearm seasons. During the Octobers preceding those firearm seasons, only seven other females were killed by wolves over the 15 years. Similar study findings were documented in a long-term study in northeastern Minnesota by research biologists, Drs. Michael Nelson and David Mech.

So if successful wolf predation doesn’t explain the apparent absence or low numbers of deer in certain areas during the firearm season, could it be that the wolves are simply chasing them out of the vicinity? The findings of many studies indicate that this also is highly unlikely. Most of these brief chases of deer by wolves span relatively short distances...just 100s of meters (or yards). Further, during 1,000s of hours of radio-tracking deer and wolves from small planes, and from documenting fresh tracks on the ground over days, weeks, seasons, and years, we’ve noted that deer move relatively little in response to the proximity of wolves in the area. Even in winter when increasingly deep snow becomes advantageous to the wolves’ predatory efforts and kills of deer are made, the other radio-collared deer do not flee from the study areas, but rather continue to reside within

their established home ranges (that area on the landscape that a deer inhabits seasonally to fulfill its requirements). I remember observing (from a Cessna) a pack of wolves within an aspen regen stand...some bedded, some standing...with collared and uncollared deer scattered all around them, many within the same regen stand, no more than a couple of hundred meters (or yards) away. The deer were involved in a variety of activities...some were feeding, some walking, bedded, and standing. Interestingly, I detected no apparent sign of excitement on the part of the wolves or alarm exhibited by the deer relative to the nearby pack. I’ve always remembered it as an image of predator-prey coexistence similar to that many of us have viewed in the documentaries of lions and their various ungulate prey on the African plains. The camera would often show them in close proximity, seemingly calm (although the ungulates were surely vigilant and on alert), unless an active chase or pursuit was initiated by the lions. To me, this clearly suggests a certain confidence on the part of the prey in their ability to escape should their predatory neighbors decide to initiate a chase, although for those “less fit” individuals, it may be somewhat ill-founded.

### So What’s the Answer?

So what most likely explains the apparent low numbers of deer on certain hunting areas during any given firearm season? Based on what we know about deer ecology, there actually are a number of plausible reasons that could either partially or largely account for this. Studies have shown that white-tailed deer inhabit relatively large areas within the forests during the fall, particularly adult bucks. Nelson and Mech reported average-sized fall home ranges as large as 750, 230, and 150 hectares (1,853; 568; and 371 acres) for adult male, yearling male and adult female white-tailed deer, respectively. It is highly probable that during any given year’s firearm season, resident deer have distributed themselves where many simply are inhabiting portions of their respective home ranges that don’t overlap with the hunting area(s) in question. This is particularly likely if the given hunting area is small relative to the size of the fall home ranges of the resident deer. This prompts one to wonder, “What is the true effective size of the area actually being hunted?”

An additional factor may be whether a given hunting area lies within typical winter range for deer versus their spring-summer-fall range. From radio-tracking the locations of our study deer, as well as deer in northeastern Minnesota (Nelson and Mech), we’ve determined that most deer in north central and northeastern (approximately 75%) are seasonal migrators. This means that



typically these deer inhabit distinctly separate home ranges during spring-summer-fall versus in winter, sometimes separated by up to 20 kilometers (12 miles) on average, but by even more for some deer. The timing of these migrations in any given fall from spring-summer-fall range to winter range is highly variable from deer to deer, and year to year, and is strongly influenced by current weather conditions (snowfall, ambient temperature), depth of snow cover, and in some cases, by predation pressure from wolves as well. Although some deer in some regions of northern Minnesota may migrate from their spring-summer-fall range to winter range by early November, for most deer, it occurs later than this.

Finally, in some areas deer densities may actually be low in a given firearm season, because numbers of deer in the larger surrounding vicinity (or Permit Area) have decreased. Reductions may be due to recent winter severities and associated lower survival rates, low subsequent survival of newborn fawns, greater recent hunter harvests, or some combination of these sources of mortality. Greater hunter harvests may have been a deliberate management strategy applied by issuing increased numbers of antlerless permits to bring the local population closer to goal, or it may have been unintentional. In the latter case, management cannot precisely control the actual harvest; consequently, sometimes more deer are taken than intended.

The realization that relationships in nature are complex becomes increasingly obvious with continued research and increased understanding of aspects of white-tailed deer ecology, such as movements, survival, and causes of mortality. The wolf-deer and hunter-deer relationships are no exception. Recent



research on elk has shown that predation risk from both wolves and hunters has significant effects on changes in group size, movement rate, and habitat use for this prey species, but the effect from hunters was stronger. Only future research can determine if this applies to white-tailed deer as well. The reasons for low deer numbers in certain hunting areas during some firearm seasons may be several and varied over the years and from location to location. What the current status of our knowledge tells us is that it's not simply a matter of wolves moving into hunting areas and deer disappearing. 🦌

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