



FIELD NOTES



THE NEWSLETTER OF
THE SOUTHWEST WISCONSIN CWD, DEER AND PREDATOR STUDY



Is Buck Dispersal Influencing the Deer You See in Your Area?

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Spring brings a multitude of changes to Wisconsin: flowers bloom, sandhill cranes return north, the countryside turns a brilliant green. Deer are moving and changing as well. Ragged gray winter coats give way to sleek rusty-red. Winter's lean times fill in with the flush of green growth and fresh browse, and those cute little spotted fawns take their first steps. Another big and perhaps unappreciated change also takes place among deer, one that's akin to a giant game of musical chairs. Each spring, a whole bunch of yearling deer pull up stakes in search of a new home. This phenomenon is called dispersal. It is an important part of the life history of nearly all critters, and in the case of white-tailed deer in Wisconsin, it's a process that might play a role in the spread of chronic wasting disease. This article describes the dispersal process, what we've learned so far about dispersal in southwest Wisconsin and what we hope to learn as the study progresses.

In the spring, last year's fawns turn one year of age (hence the name 'yearling'). By the time spring comes, they've spent nearly a year following mom, doing what she does and going where she goes. But once their



A whitetail buck in autumn

mothers are ready to give birth to this year's young, the yearlings find themselves unwelcome. Does drive their yearlings away so they can concentrate on their new fawns. Later in the summer, some yearlings will rejoin their mothers. Others will strike out on their own. Bucks are typically much more likely to disperse than does, who tend to rejoin their mother and new siblings.

Yearling bucks may also disperse in the fall, either for the first or second time, believed to be in response to buck aggression during the rut. Yearling bucks, being the small guys on the block, bear the brunt of this aggression and may decide to move on. Ideally, they find an area where there is less competition for does.



A doe and a collared fawn browse a field in summer. Photo: Jerry Davis.

Why disperse?

Researchers believe that one of the primary reasons for dispersal is to minimize inbreeding. Remember that all animals are trying to maximize the number of offspring they produce, so avoiding inbreeding and competition for mates makes sense. But why don't they all disperse? Dispersal can be risky as the deer are venturing into unfamiliar territory. It can be energetically taxing (lots of walking!). It's also not necessary for all animals to disperse in order to avoid inbreeding and mate competition. One of the many interesting avenues of dispersal research is in understanding (and predicting) which individuals will disperse and which will stay put. We're also interested in dispersal distance and how the landscape facilitates or hinders dispersal.

Lessons from previous research

Deer research we conducted from 2011-2014 gave us some insight into dispersal. We had dispersal information for 319 yearling bucks in two study areas: northern forest and eastern farmland. Yearling bucks had a 41% dispersal rate in the Northern forest and a 55% dispersal rate in the eastern farmland. Average dispersal distances were about 3-4.5 miles. Bucks that were heavier at capture were more likely

to disperse. We also found that bucks with forked antlers the subsequent fall were more likely to have dispersed than spike bucks, which indicates that there may be some threshold of physical vigor before a yearling buck will disperse. We found that rivers and roads had some effect on reducing dispersal distance, in that there was a tendency to end the dispersal on the near side of larger rivers and roads. One limitation of our previous studies is that we didn't have GPS collars. We had to find deer the old-fashioned way, using standard radio-telemetry to triangulate each deer's position, usually once a week. We could tell when a deer left his natal range (a technical term for the place where the deer was born) and when and where he ended up, but we had no idea what path the buck took to get there. Now we're using GPS collars, which give us many, highly-accurate locations for each deer.

Help for Hunters

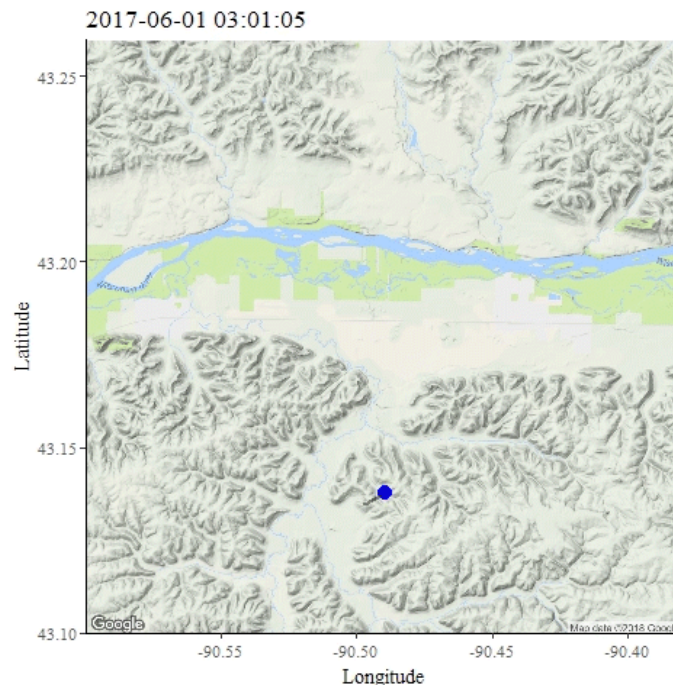
Hunters often ask us how they can increase the number of older bucks on their properties. Of course, all old bucks were once yearlings. And we can see that as many as 60% of yearling bucks are out looking for a new home range every year in southwest Wisconsin. Increasing your desirable habitat may increase your chance of enticing a yearling buck to establish his home range on your land. If you are a landowner interested in improving habitat on your land for deer management, you can contact the DNR's [Deer Management Assistance Program](#). The program helps by giving landowners recommendations on how to create better habitat whether that be through projects or managing the deer herd to densities the habitat can support. All of this can increase the appeal of a property to dispersing yearling bucks.

What we're seeing so far in this study

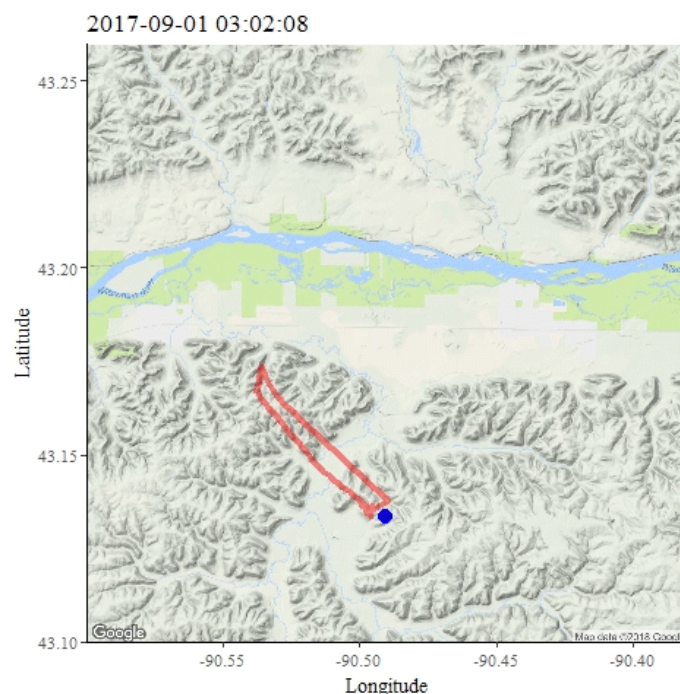
Beginning in January 2017, we set out to place GPS collars on 200 adult deer, including yearling bucks, every winter for four years. We receive geolocations on each deer multiple times a day (up to once each hour). As these data accumulate, patterns will emerge. It will take some formal statistical analyses to really make sense of everything we're seeing, but in the meantime, we've got some preliminary findings, some cool stories, and some even cooler animations of collared deer moving across the landscape!

In this article, we are looking at 46 GPS-collared bucks that received collars in 2017 and would have their first birthday during Spring of 2017. We found that 60% (28/46) displayed dispersal. Breaking it down further, 30% (14/46) dispersed in the spring and 41% (19/46) in the fall. This dispersal rate is certainly higher than observed in the northern forest deer and pretty similar to what we saw with the eastern farmland bucks.

GPS collars have enabled us to observe an interesting behavior that is linked to dispersal. Before their final move, many bucks go on what researchers call “excursions,” which might be scouting trips to look for a new home or possibly failed dispersal attempts. Yearling bucks will wander out and return to their natal range once or a few times before setting out for good. A great visual example of an excursion is from buck 5854. From the videos below, you can see two different excursions in June. Buck 5854 then returns to his natal range and stays there for the rest of the summer. In the second video you can see he disperses in the fall and, interestingly, lands in the area of his first excursion. The first excursion path is highlighted in red in the video. Obviously, there was something the buck found on that excursion that led to the selection of his new home range. This is a very neat example of GPS collars giving us a fuller picture and catching things we used to miss with older technology. We’re excited to dig into these data to see what they tell us about what bucks are looking for when they search for a new home.



The excursion path of Buck #5854 in June 2017. Buck #5854 left his natal range in early June and went on two excursions over the course of ten days.

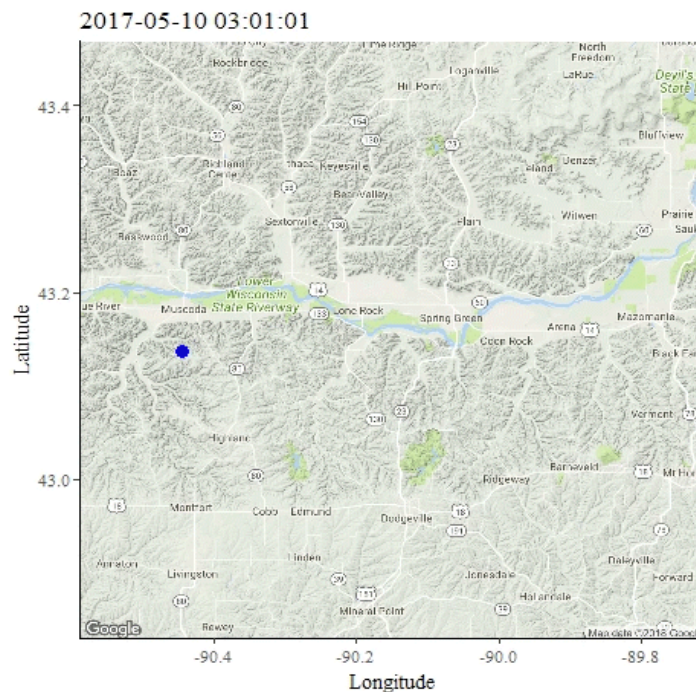


Buck #5854 dispersed in September 2017, returning to an area he explored during his spring excursion.

Buck 5854 showed us what a relatively short dispersal movement can look like. From the natal area to his final landing spot, Buck 5854 moved about two miles, under our average of 4.3 miles. We had some extreme movers as well. They're outliers, but they give us an idea of what is possible. Buck 5092 moved a whopping 28 miles in a little under a month! But he didn't stop there. After that journey, he followed almost the exact same path backwards and finally settled on a new home range just under eight miles away from the natal range. A very cool thing to watch!

The story of buck 5092 then took another interesting turn. This buck died January 2018. Post-mortem testing revealed that he was infected with CWD. (He did not test positive at initial capture.) We can't be certain whether he was infected prior to dispersing or if he became infected later. Did he contract CWD within his natal range? How many deer did he interact with on his journey? How many mineral licks did he visit? Do deer like this have an outsized role in the spread of CWD across the landscape? These are tough questions to answer, but they highlight the importance of understanding the dispersal process.

It will be fascinating to continue to follow the yearling bucks throughout this study. We will continue to study the why, how and impacts of these dispersals. The GPS collars will continue to help us look behind the curtain and give us data that will help inform future management decisions. Stay tuned for more updates on dispersal and other topics.



Buck #5092 went on a 28-mile excursion in May 2017 before turning around and following his path back. He settled about eight miles from his natal range

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