Home Ranges and Movements of Desert Mule Deer

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Hunters have long wondered about the whereabouts of that magnificent buck they saw before the hunting season, or maybe that buck they caught on their trail camera or maybe the one they saw running over the hill last year. Somehow, some way those big bucks have the uncanny ability to disappear.

Many of us spend the entire season chasing that big one asking ourselves: Where did he go? Did he go nocturnal? Did he hunker down? Is he dead? Was he poached? Did my neighbors harvest him? Are my hunting strategies flawed? Did he leave the county? It’s almost as if they disappeared.

These exact questions have been asked for decades across West Texas. Landowners, managers and hunters alike were asking many questions about the behavior of mule deer. Knowing that research opportunities are fueled by good questions, the Borderlands Research Institute initiated a series of studies to assess seasonal home ranges of mule deer bucks across West Texas.

Radio telemetry studies allow researchers to get a glimpse into the life cycle of wildlife that most are not afforded. This is especially true today.
When GPS collars and satellite-computer interfaces provide almost real-time locations and an overwhelming amount of data.

We launched our study on mule deer movements beginning in 2006, but because habitats vary considerably across the Trans-Pecos, we wanted to ensure that we monitored mule deer movements across different mountain ranges. Even today, some 10 years after our initial launch, we are still collecting movement data on mule deer bucks.

To date we have captured, radioed and monitored more than 75 different mule deer bucks from six different ranches. Below we provide some initial findings including the movements and home ranges of mule deer bucks with respect to age, season and the presence of supplemental feed. (See Figure 1.)

Mule deer bucks were captured using netguns shot from helicopters. Mule deer were then transported to a nearby processing station, where they were ear-tagged, measured and radioed. Mule deer were also aged by wildlife biologists using a combination of tooth wear and replacement and cementum annuli techniques. Mule deer were released within one mile of their capture site. Radio collars were programmed to record a geographic location (GPS point) every five hours for as many as two years. Some deer were recaptured after the initial two years and a new collar was attached.

**Age**—For this aspect of the study, we focused on mule deer bucks that were 4.5 years old or older and compared home range sizes between age cohorts. As shown in Figure 2, mule deer home ranges consistently got smaller as age of bucks got older. Young mule deer (4.5 year old) had the largest ranges of approximately 10,000 acres, whereas our oldest cohort (8.5 year old) had reduced their home ranges by almost 30 percent (7,000 acres).

Behaviorally, this makes sense. For desert mule deer bucks, antlers generally don’t peak until 8.5 (and maybe 9.5) years old. They are capable of breeding much earlier, but they are dominant at a much older age than white-tailed deer. As they become more dominant, they are more successful in gathering and protecting their harem of does.

On the contrary, younger bucks are constantly being challenged and looking for breeding opportunities. They spend more time bouncing around and being chased off by more mature bucks. Thus, younger bucks covered more distances and subsequently had larger home ranges than more mature bucks.

**Seasons**—We defined seasons as spring (March-May), summer (June-August), fall (September-November) and winter (December-February). These are based on the biological needs of mule deer.

Mule deer bucks consistently change their home ranges with season, as illustrated in Figure 3. Home ranges were smallest in fall. In a typical year in the Trans-Pecos, natural forage resources are at their highest abundance, following the late summer monsoonal
rains. Ranges were greatest in the winter which coincides with the peak of rutting activity in the Trans-Pecos (peak rutting activity is from mid-December to mid-January). Bucks spend a disproportional amount of time during the winter months defending their territories, searching for does and ultimately breeding.

Come spring, bucks spend their time recovering from the rut and seeking forage resources, which are at an annual low. During summer, mule deer bucks become more sedentary. Their search for forage becomes easier as summer rains begin to re-flourish the landscape with nutritious foods.

In some instances, mature mule deer bucks completely abandoned their home range and moved to new habitats during the rut. In one instance, we monitored a mature mule deer buck move almost 18 miles away (and not adjacent to) his typical home range. The buck traveled through suitable habitat occupied by does and through habitat supplemented with food and water. Shortly after the

During the peak of the rut, mule deer antlers are hardened and are used to help protect their harem of does.
rut, the buck return to his old haunts. This may be considered an anomaly, but this type of behavior also helps explain some of the “disappearing acts” so many of us have seen of mature bucks. An 18-mile movement like this, would more often than not put a mule deer on a completely different property, making it seem like he left the county.

We also observed different mature bucks that abandoned his traditional range in the summer to take up residence in a creosote flat, which generally rates low as mule deer habitat. He did this two years in a row. On average, bucks may move five to six miles away from the center of their home range but are capable of moving over 20 miles in a 24-hour time period.

*Feed*—Protein supplementation has been a long standing practice in the white-tailed world, but is a fairly recent practice for mule deer. We wanted to determine if supplementing feed to mule deer would affect their home ranges. To do so, we compared home ranges of mule deer bucks from two ranches, one with supplemental feed and one without. The ranches adjoined each other in the same mountain range with the same habitats. The two ranches were separated by the apex of a mountain range. Of the 40-plus mule deer that we monitored, only two traveled back and forth across the divide (those were subsequently eliminated from data analysis).

Based on our study design (as noted in Figure 3), seasonal home ranges were consistently 10-30 percent smaller on fed ranches compared to unfed ranches. Again, this makes biological sense as mule deer using supplemental feed have to travel less to meet their nutritional needs. About 40 percent of the locations we gathered from mule deer bucks on a fed ranch were within 1/2-mile of the feeder during the winter months compared to only 25 percent during spring. For a breeding buck in winter, the feeders not only provided easy access to food resources for bucks, but they also concentrated the does.

The Borderlands Research Institute is in the process of collecting and analyzing data relevant to movements and behavior of mule deer bucks. The data provided above should be a good starting point for those seeking to better understand and manage mule deer in the Trans-Pecos.

We still have several critical questions we wish to address including: “If my neighbors feed, will they attract all my deer?” This question has tremendous demographic implications for all West Texas landowners and the resource agencies responsible for managing desert mule deer.

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*Figure 3. Home ranges (acres) of mule deer bucks from the Trans-Pecos vary by season, with the largest ranges occurring in the winter (rut) and smallest in the fall (when resources are most abundant).*