



# West Texas Mountain Lions

## *Crossing Landscapes and Staying Home*

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A GPS-collared mountain lion on the move, captured by one of the trail cameras monitored by the Borderlands Research Institute.

**K**nowledge regarding how animals move across the landscape provides important details that allow us to investigate questions such as: How far will animals travel? How much space does an individual need? How long does it take them to cross that space? Do they stay in one place for a long time or keep moving? Answers to these questions can help guide their management and the management of their habitat and can be used for land-use and corridor planning and for designing other studies to estimate the sizes of local populations.

For large carnivores such as mountain lions in West Texas, this type of information could be especially important for mitigating human-wildlife conflicts. Therefore, Borderlands Research Institute captured and GPS collared mountain lions in the region between 2011 and 2017 to study their movements and space use.

We monitored mountain lions in two areas, the Chisos Mountains in Big Bend National Park and the Davis Mountains, approximately 100 miles to the north of the park. These mountain ranges are considered sky islands, which are islands of forested habitat surrounded by seas of desert scrub and grassland savanna.

This natural fragmentation combined with the local mountain lions' preference for the mountainous and forested habitats means these two subpopulations and others in the region are somewhat isolated. For each subpopulation to persist, some individuals must successfully disperse among them and reproduce to sustain overall genetic health.

Of the collared mountain lions, 10 were subadults (1.5 –3 years old), all in the Davis Mountains. Several subadults took trips outside the general area where they were collared and



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then returned. Most of these trips were generally short in distance and duration.

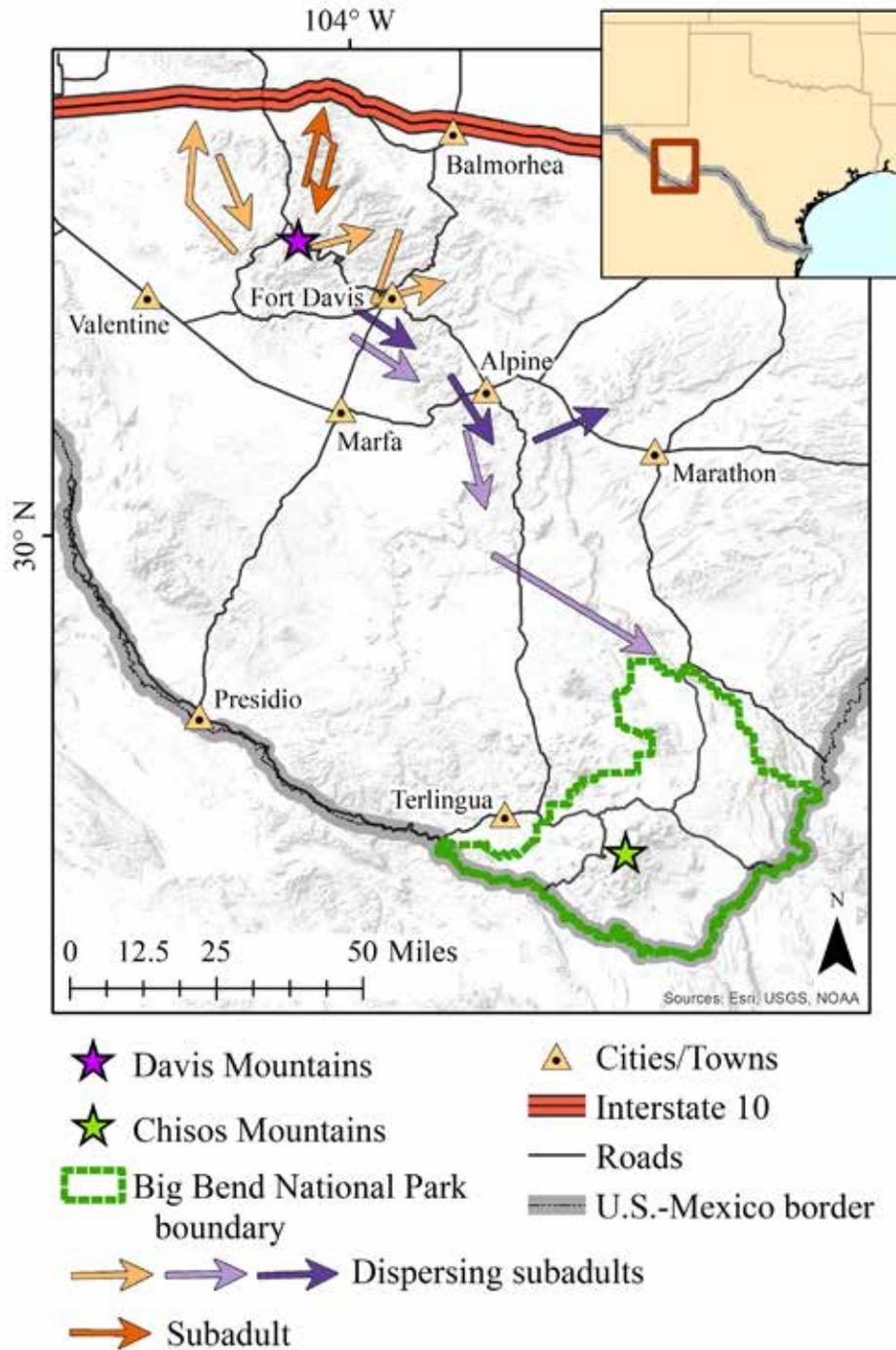
In one case, we knew that the subadult made at least one such trip with her mother, as both were collared at the same time. In other studies, similar trips with a mother have been attributed to the mother attempting to encourage her young to go off on their own. One subadult took a short trip up to the southern edge of Interstate 10, but she did not cross the interstate and instead returned to the Davis Mountains.

Three collared individuals (two females and one male) exhibited evidence of true dispersal. They were all from the Davis Mountains and were subadults, the typical age range for a dispersing mountain lion. For each of them, our data on their dispersal ended approximately one to two months after they left the Davis Mountains. The two female mountain lions were trapped and killed during dispersal. The male also exhibited traditional dispersal, but his GPS collar stopped communicating, and his fate was unknown. One disperser traveled north to Interstate 10 and, like the other subadult, she did not cross; she returned to the Davis Mountains briefly before leaving on her final trip.

In straight-line distances, each of the dispersers moved between approximately 25 and 85 miles roughly to the east or to the south from the start of their dispersal trip to the end. We would need more data to examine if Interstate 10 is acting as a barrier to mountain lion movements or to examine dispersal in the area in detail; however, our data reaffirms the high mortality risk faced by dispersing individuals.

The movements of adult mountain lions are also important to consider. As with all of Texas, much of the land in this region is privately owned and some of the largest ranches in Texas are in the area. Most of the previous research on mountain lions in Texas occurred on federal and state public lands, and little was known about mountain lion movements and ranges on private lands in West Texas.

We tracked 14 adult mountain lions (nine females, five males) in the Davis Mountains and Big Bend



Map of the long-distance movement and dispersal paths for collared mountain lions leaving the Davis Mountains. Note that the paths and ending points are approximate.

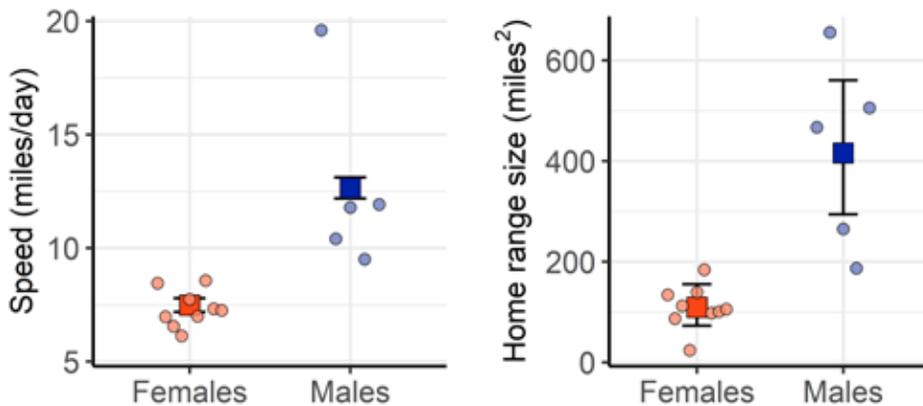
National Park, and all demonstrated resident behavior with established home ranges. As expected, females and males exhibited different movement and space-use patterns.

Females moved at slower rates and had smaller home ranges than males, a common theme among large carnivores. On average, females traveled

approximately 7.5 miles per day and had home ranges of 109 square miles and males moved over 12.4 miles per day and had home ranges of 416 square miles.

Females and males both crossed their home range in about a week and both tended to move in one general direction over the course of about an hour on average. This indicates that males covered





Overall estimates of daily distance traveled (speed) and home range size for both individual adult mountain lions (circles) and the average among females and males (squares) in both subpopulations. Error bars around the average indicate the 95 percent confidence interval, which is the range that the average is highly likely to fall within.

more space by moving faster than females but both crossed the landscape with similar patterns.

Females and males traveled less from the beginning of November through the end of February, the region's cold-dry

season, but they did not expand, contract or shift their home range or otherwise change their movement patterns among the seasons.

Based on these results, we know that mountain lions in the region can travel

a long way in a relatively short amount of time. One subadult female dispersed from the Davis Mountains to the edge of Big Bend National Park in less than one month.

Also, adults with home ranges cover large spaces in short times. The amount of land they need for their daily activities is generally larger than many of the private ranches in the area, and individuals do not stay in one place for long before moving on.

Resident mountain lions in this region tend to remain in the same home ranges throughout the seasons. This suggests that the mountain ranges provide adequate habitat with a rich and abundant prey base.

Altogether, the information from our study provides us with a clearer understanding of how these mountain lions are using the landscape. As with all scientific endeavors, it also leaves us with new questions, fitting for such an elusive feline. 🐾

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