

White-tailed Subspecies

The Borderlands Research Institute for Natural Resource Management, Sul Ross State University

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photos courtesy of Justin Foster

Some 30 subspecies of white-tailed deer have been described for North America. Distribution of white-tailed deer in Texas is made up almost entirely of *Odocoileus virginianus texanus* or the Texas subspecies. Even within this subspecies, individuals vary considerably. Rainfall, habitat, nutrition, genetics, and even latitude are factors that influence the weight, height, antler mass and shape, and general appearance of individual deer. The Texas form of white-tailed deer also occurs along the eastern edge of the Trans-Pecos.

Further into the heart of the Trans-Pecos, we find a lesser-known subspecies of white-tailed deer — the Del Carmen white-tailed deer. Few studies have been conducted on Carmen Mountain deer. Dr. Paul Krausman, former wildlife professor in Arizona and current holder of the Boone and Crockett Chair at University of Montana, conducted the most extensive study of Carmen Mountain white-tailed deer in Big Bend National Park in the early 1970s. A brief summary of his study is in the table.

However, with very little information on white-tailed deer in the desert, many questions still remain for landowners and hunters of west Texas:

- Where do Carmen deer occur? Are Carmen deer a unique species?
- Are they the same as the Coues deer?
- Are white-tailed deer expanding in west Texas?
- Are white-tailed deer hybridizing with mule deer?
- What affect does hybridization have?

Where do Carmen deer occur?

Carmen Mountain deer (*Odocoileus virginianus carminis*) occur in the Chihuahuan Desert of the Trans-Pecos



Carmen Mountain whitetail buck and doe – runty forms of whitetails usually found above 4,500 feet in west Texas mountains.

and portions of the Mexican states of Chihuahua and Coahuila. Mountain ranges in which Carmen deer occur include: the Vieja, Chinati, Del Norte, Rosillos, Christmas, and Chisos in Texas, and the Sierra del Carmen and Serranias del Burros in Mexico. Carmen whitetails derived their name from the Sierras del Carmens, which are directly southeast of Big Bend National Park in Mexico.

Are Carmen deer a Unique Species?

No. Carmen Mountain deer are a diminutive subspecies (i.e., they're runts) of white-tailed deer. Within the mountain ranges listed above, Carmen white-tailed deer typically occur at elevations greater than 4,500 feet, where the pine-oak woodlands typically begin. Like other white-tailed deer, the Carmen Mountains white-tailed deer are best adapted to woodland-

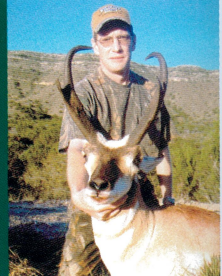
type habitats, whereas mule deer are better adapted to grassland and shrubland habitats.

Are they a unique *subspecies* is a more difficult question to answer. Carmen white-tailed deer were first described as a unique subspecies in 1940 by Goldman. Since that description, most have viewed Carmen whitetails as its own subspecies. In his book, *Deer of the Southwest*, Jim Heffelfinger, a game specialist with Arizona Game and Fish, does not consider them a subspecies because there is not enough "geographic separation." With the advent of genetic techniques, the distributions of many species and subspecies are being rewritten daily. Sponsored by the Boone and Crockett Club, Heffelfinger and his colleagues are in the process of redrawing many of those lines



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for mule deer and white-tailed deer. That project is still in progress and findings have not been made available to the public.

Are Coues and Carmen deer the same?

No. Coues deer are another subspecies of white-tailed deer restricted to the mountain ranges of southern Arizona, western New Mexico, and portions of Sonora, Mexico. Like Carmen Mountain white-tailed deer, they are a smaller subspecies, occur in higher elevations of the mountain ranges, prefer oak-woodland habitats, and typically form classic "basket racks."

Are white-tailed deer expanding in west Texas?

Yes. The consensus is that white-tailed deer are expanding their range westward. Their expansion has been attributed to several factors: ability to adapt to drier environments, ability to survive in expanding urban environments, expanding brush encroachment, and increase in supplemental water and feed in the desert. All these factors likely contribute to whitetail expansion, but landscape change is thought to have the most substantial role. Studies have demonstrated that when brush coverage is greater than 50 percent in traditional mule deer habitat, that habitat is more favorable for white-tailed deer than mule deer.

Are white-tailed deer hybridizing with mule deer?

Yes. White-tailed deer and mule deer have likely been hybridizing since the two species separated millions of years ago. Hybridization has been reported in Texas, Arizona, Kansas, Nebraska, Colorado, Washington, and into Canada. Hybrids have been reported going both ways: male muleys with female whitetails and white-tailed bucks siring mule deer does, which is the most common. In most species hybridization is minimized with behavioral, social, physical, and physiological barriers. In the case of white-tailed deer and muleys, most populations occur in unique habitats, which minimize interactions between the two species.

What affect does hybridization have?

Although it does occur, hybridization between white-tailed deer and mule deer is very rare (when you look at the big picture). Even if opportunity exists and hybridization occurs, the odds are stacked against hybrids for several reasons. First, fawn survival is very low. Even in captive facilities where hybrids have had unlimited food and water, survival is less



This doe's big ears and distinctive ropy, black-tipped tail identify it as a mule deer.

than 50 percent. Second, male hybrids are typically sterile (although females are usually fertile). Sterility in male hybrids will reduce their influence on subsequent generations. Third, behavioral studies on hybrids have shown that hybrids are generally confused when it comes to simple tasks like locomotion. This confusion on whether to run like a whitetail or stot like a mule deer when confronted with a predator does not favor their ability to survive and reproduce.

Conclusion

The Borderlands Research Institute is currently working with our constituents on several of these questions. We are stockpiling tissue samples of white-tailed deer harvested from the Trans-Pecos to assess the levels of hybridization and the distribution of hybrids. We are also in the process of evaluating long-term trends of white-tailed and mule deer relative to habitat change in the Trans-Pecos.

If genetic data supports the delineation of Carmen Mountain whitetails as a unique species, there is opportunity for landowners and hunters to capitalize on this rare resource. Texas can look no further than the Coues deer to see how that unique resource is valued and marketed as a prized big-game species in Arizona, New Mexico, and Sonora. Even if Carmen Mountain white-tailed deer do not emerge as a subspecies, they are a natural part of the Sky Island ecosystem.

If hybridization is becoming more common in west Texas to the detriment of mule deer, then resource managers must devise strategies to curtail the opportunity of hybridization. Habitat management and population control appear to be the most logical options. Whatever the outcome of these studies and others, the role and future of white-tailed deer in the Trans-Pecos of Texas is at the hands of landowners, managers, and hunters. 🦌

Summary of findings on Carmen Mountain Deer in Big Bend National Park.

Diet	35 percent browse, 28 percent succulents, 14 percent forbs, 3 percent grasses, and 20 percent unknown
Habitat	Upper mountains, above 4,500 feet, pine-oak woodlands
Group size	Two to three throughout year
Percent males	40 percent throughout year
Fawn:doe	40 percent
Antler growth	April-September
Rut	Late November-February (peak in early January)
Fawning season	July
Gestation	201 days
Predation	Primarily mountain lion (68 percent of known mortalities)