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An aoudad released after being captured and fit with a GPS collar.



Managing Aoudad on Shared Landscapes

Impacts of population management of aoudad with mule deer in West Texas

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Aoudad are a goat-like grazing mammal also known as Barbary sheep, native to the rocky landscapes of northern Africa along the Barbary Coast. They were introduced to the United States as a game species in the 1920s and were initially brought to Texas in the 1950s. Since then, aoudad populations have expanded rapidly across much of West Texas, especially in the Trans-Pecos region.

Aoudad hunting has gained nationwide attention, attracting hunters and revenue to local businesses and private landowners. However, rapidly growing aoudad populations raise concerns about their impacts on native species in the region. In the dry, rugged mountain ranges of the Trans-Pecos, aoudad thrive in part due to their high birth rates and adaptability. Their continued success creates challenges for native species, particularly desert bighorn sheep, and increasingly, mule deer.

Desert bighorn sheep and mule deer are native to Texas and rely on much of the same habitat that aoudad now occupy. All three species share many habitat needs, and while interactions among them are not well understood, competition for resources increases as populations grow.

Disease adds additional concern. Aoudad can carry *Mycoplasma ovipneumoniae (M. ovi)*, a respiratory bacterium that can cause large-scale population die-offs in desert



Aoudad captured and transported by the helicopter crew for data and sample collection. Both were fit with individual ear tags and GPS collars.

bighorn sheep. While aoudad appear resistant to the effects, it is often fatal for desert bighorn sheep. As aoudad densities increase, so does the risk of disease transmission, posing a major concern for desert bighorn sheep restoration. Understanding how these species interact, and how the disease spreads among them, may provide insight into how these species can survive and coexist in West Texas.

Managing aoudad populations requires balancing their ecological impacts with their importance to stakeholders in the region. Options include, but are not limited to, hunter harvest, corral trapping, and aerial gunning. Aerial gunning from helicopters is a common method in the Trans-Pecos, as it allows for rapid removal of large groups of aoudad across large areas. This is particularly helpful because large groups create concentrated grazing pressure and facilitate rapid disease transmission.

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This research examined how reducing aoudad populations affects the space use and social networks of aoudad and mule deer that share the same habitat. Using GPS-collar data from 80 aoudad and 80 mule deer across two Trans-Pecos mountain ranges, we tracked daily movement, monthly range sizes, and social structure for both species before, during, and after aoudad removal to determine if any changes occurred due to the removal efforts. In the Chinati Mountains, 74% of the aoudad population was removed in the summer of 2024.

We found no evidence that aoudad and mule deer changed how they used space in response to population reductions. Daily and monthly movement patterns remained consistent before, during, and following aerial gunning, showing aerial gunning did not push surviving aoudad or mule deer out of the areas they occupied. Similarly, the social connections among the collared individuals remained consistent, revealing aoudad removal had minimal impact on how surviving aoudad and mule deer interacted with each other.

These results are encouraging for both aoudad management and mitigating risks from *M. ovi*. Many landowners target ewes to slow population growth while keeping trophy rams on the landscape. Our results suggest that neither those rams, surviving ewes, nor mule deer leave the treated area in response to aerial gunning. Because aoudad did not spread out in response to management, this approach is unlikely to increase disease transmission.

That said, the transmission of *M. ovi* is highly complex. There is more work to do to fully understand how aoudad population control influences disease dynamics among aoudad and risk to desert bighorn sheep. However, our research findings provide valuable insight into managing aoudad while supporting native wildlife conservation in West Texas.

