

Desert Bighorn Sheep

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

article by Louis A. Harveson

photos courtesy of Justin Foster

Desert bighorn sheep restoration in Texas is a huge success. For the first time since the 1880s, Texas is home to more than 1,000 bighorns. Much of this success comes from the investment of time and money by volunteers, landowners and the Texas Parks and Wildlife Department (TPWD) to enhance bighorn sheep habitat with guzzlers. The Texas Bighorn Society (TBS) estimates they have invested more than \$1 million in guzzler projects across west Texas private and public lands.

But do bighorns use guzzlers?

Other than an occasional sighting or other anecdotal evidence, there has been no conclusive evidence desert bighorns have used guzzlers built over the last 50 years. In 2000, the wildlife research program at Sul Ross State University entered into contract with TPWD and TBS to evaluate bighorns use of guzzlers. Specifically, we set out to determine if and when desert bighorn sheep used guzzlers, which guzzlers they used, and if the growing populations of aoudads were using the guzzlers also.

After enlisting Justin Foster (presently Research Coordinator at TPWD's Kerr WMA) as a graduate student, we identified seven guzzlers at Black Gap Wildlife Management Area to monitor. We monitored them using wildlife trail cameras positioned 20 to 30 feet from the troughs. We checked the cameras weekly to assess time of day, seasonal use, and length of stay at guzzlers. All pictures were thoroughly evaluated for presence of desert bighorn sheep, aoudad, and other wildlife species photographed at the guzzler sites.

This is some of what we found:

Bighorn Use of Guzzlers

Bighorn sheep accounted for 15 percent of more than 1,400 photographs



A large bighorn ram watches over his harem of ewes as they take turns drinking from a guzzler trough at Black Gap WMA.

taken at the guzzlers. As expected, bighorn sheep use of guzzlers peaked during the hottest times of the day and the hottest times of the year. In fact, once temperatures were consistently over 100 degrees F., guzzler use by bighorns was more prominent. By comparing rainfall patterns, we were also able to demonstrate that guzzler use decreased after rainfall when more surface water was present, when water in vegetation was higher, and when temperatures were cooler.

As we compared the physical (habitat) characteristics of guzzlers used by bighorn sheep, we made a few discoveries. First, bighorn sheep were less likely to use guzzlers that had low visibility caused by brush. We propose that bighorns avoided guzzlers surrounded with brush because it compromised their ability to observe and flee from predators.

Second, guzzler use was also related to its location on the landscape (slope and

elevation). Intuitively, guzzlers were used more frequently if they were in better bighorn sheep habitat: ridges with high visibility on the upper two-thirds of a mountain.

Aoudad vs. Bighorn

Aoudads used guzzlers in a more generalized fashion than bighorns. Aoudads consistently used guzzlers year around and throughout the day, showing no preference in time of day or season. Also of interest was the length of time aoudads used guzzlers. More than 12 percent of aoudad use was considered to be extended. Aoudad appeared to loaf around troughs and were documented bedding at, taking mud baths, dust baths, and climbing in guzzler troughs. These types of behaviors were not recorded for bighorn sheep.

As aoudad use increased on a particular guzzler, bighorn use decreased. We believe the aoudad behaviors deterred big-



"Helping put sheep back on the mountain"

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horn sheep from using those specific guzzlers. This behavior is known as interference competition. Although interference competition is near impossible to document in wildlife studies, the evidence of aoudad competing with bighorn sheep is mounting.

Conclusions

First, if you want to restore bighorn sheep in Texas, you have to control aoudads. There's no gray area here; you can't have them both. Aoudads pose a threat to the desert bighorn sheep restoration program for many reasons. Aoudads have similar life history strategies as bighorns with similar habitat, food, space, and water requirements. Aoudads are also more adaptable and have a reproductive advantage over bighorns. Further, aoudads have been documented to carry seven diseases that can hurt bighorn sheep. Bighorn sheep are extremely susceptible to diseases and studies across North America have chronicled massive die-offs because of disease outbreaks.

Second, we recommend that guzzlers be placed in the upper two-thirds of a mountain, on slopes greater than 60 percent, spaced every two miles, and in areas devoid of heavy brush. Additionally, troughs should be designed so multiple sheep can drink at one time (elongated troughs). We documented on several occasions sheep waiting to water, increasing



An aoudad ram covered with mud he made with water splashed from the trough.

their susceptibility to predation. In addition to bighorn sheep and aoudads, we documented 11 additional species using guzzlers including deer, bears, small carnivores, and songbirds. As with any water improvement, care should be taken in planning and design to ensure all drinkers are wildlife-friendly.

For more than 50 years, TPWD, volunteers such as TBS, and private landowners of west Texas have worked to get the bighorn sheep restoration program where it is

today. During that time, we have learned much about restoring bighorn sheep to Texas. Guzzlers are and will continue to be one tool that we use to restore desert bighorn sheep to the mountains of west Texas.

For a detailed description of common wildlife development designs available, resource managers, please see "Harvesting Rainwater for Wildlife" by Dr. Jim Cathey and others, published by the Texas AgriLife Extension (<http://agrilifebookstore.org>; publication #B-6182). 🐾

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