Use of Artificial Water by Translocated Pronghorn in Trans-Pecos

Article, photos, and graphics by
DANIEL TIDWELL, *(Undergraduate McNair Fellow),* **JUSTIN HOFFMAN** *(Research Assistant),*
and **LOUIS A. HARVESON** *(Director and Professor), Borderlands Research Institute*

Three female pronghorn drinking from a cattle trough in the Marfa Plateau.

Pronghorn antelope populations in the Trans-Pecos region of Texas have declined to 2,700 individuals in 2012, since peaking in the late 1980s at 17,000. Like other wildlife species, pronghorn populations fluctuate with precipitation. Pronghorns are capable of consuming one gallon of water per day; but, when they are deprived of water, they will exhibit stress in both health and reproduction. Pronghorns can obtain water from three sources, including free, performed, and metabolic water. Metabolic and preformed water sources generally make up a small fraction of the water pronghorns use. In drought conditions, these two sources of water are almost nonexistent.

In 2011, the Borderlands Research Institute and the Texas Parks and Wildlife Department translocated 200 surplus pronghorns from the Texas Panhandle to the Trans-Pecos Region to supplement the declining populations. In so doing, we wanted to evaluate how translocated pronghorns utilize their new habitats. For this aspect of the study, our objectives were to (1) quantify artificial water utilization and (2) document spatial use around water sources. Accordingly, we evaluated pronghorn water utilization in relation to ambient temperature, diurnal versus nocturnal use, gender, and breeding and fawning seasons. We analyzed 15 (eight male, seven female) radio-collared pronghorns. We utilized GPS radio collars that recorded one location per hour. This allowed locations to be separated into different time frames to quantify how their water

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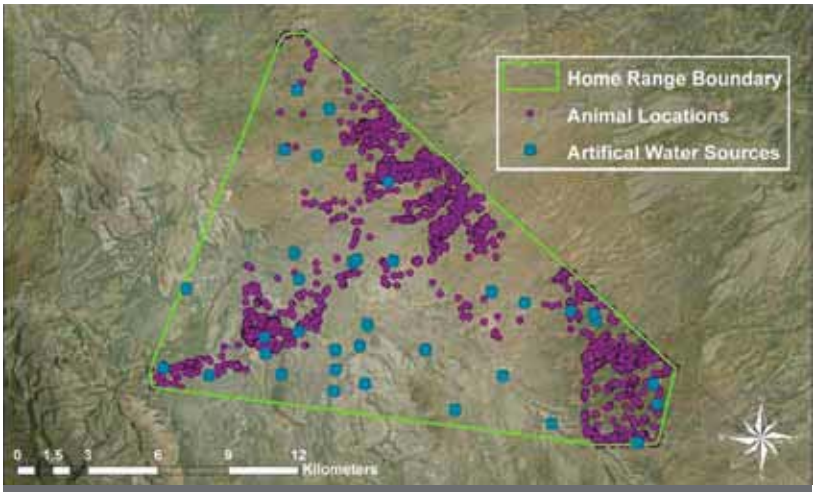
utilization evolved through time following initial release and to note influential factors that affected water utilization.

We recorded a high utilization during the first five weeks, which makes us believe the pronghorns kept a closer proximity to artificial water sources while they were familiarizing themselves to the new environment. Due to the dispersal of individuals, we saw a gradual trend of an increasing proximity to water sources after the first month. Proximity to artificial sources was not different relative to ambient temperature or between diurnal or nocturnal locations. We noted the difference between water use by bucks and does. Females during fawning were generally closer to water sources than males. Bucks were also further from water sources during breeding season than other seasons. Because of the nutritional demands of pregnancy and lactation, we believe that does stayed closer to water sources. Likewise, rutting bucks were less likely to be near water during rut as they tended to does and defended territories.



Using GIS, researchers with the Borderlands Research Institute are able to map and delineate pronghorn movements following their reintroduction to the Marfa Plateau. The graphic displays water sources (blue), individual pronghorn locations (magenta), and the home range polygon (green). In this example, the northern and eastern extent of the home range polygon are obstructed by Highway 90 and net-wire fences.

Most management guidelines throughout the western states suggest that water sources should be spaced at one-mile intervals. For our study, we found that 62 percent of pronghorn locations were within one mile of a water source. Based on the one-mile spacing recommendation for water, the Marfa Plateau had better than average water distribution but had room for improvement.

Establishing pronghorn-friendly fences for future translocations is imperative, due to the hindrance of pronghorn movements. A pronghorn-friendly fence is defined as a fence that has a minimum bottom wire height of 16 inches. Because pronghorns gravitate toward fence corners, immediate fence improvements should focus on corners. We strongly suggest that pronghorn-friendly fences and supplemental artificial water sources be key components to management schemes for pronghorn restoration. Supplementing artificial water sources and pronghorn-friendly fences will facilitate pronghorn movement across the ample habitat and improve pronghorn survival.