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Borderlands Research Institute

Conserving the Last Frontier

Trans-Pecos Rangelands Management: The Rangelands of Far West Texas

Trailing cows to their mountain winter pasture on the mesa. C.E. Miller Ranch working cattle, Valentine, Texas.

(Photo by Carolyn Nored Miller, Fort Davis, Texas)

Trans-Pecos Rangelands Management is an outreach publication supported through the partnership of Texas A&M AgriLife and the Borderlands Research Institute at Sul Ross State University. It is published three times a year, with the objective of illustrating straightforward information to landowners, managers, and the general public related to rangeland stewardship and management in the Trans-Pecos region of Texas.

Editorial Committee

The mission of the **Borderlands Research Institute** is to help conserve the natural resources of the Chihuahuan Desert Borderlands through research, education, and outreach.

Texas A&M AgriLife Extension Service works daily to make Texas better by providing innovative solutions at the intersection of agriculture, natural resources, youth, and health, thereby improving the well-being of individuals, families, businesses, and communities through education and service.

Editorial

Each edition of *Trans-Pecos Rangeland Management* includes an article with useful information about grazing management, primarily focused on the emblematic beef cattle production of West Texas. In this volume, we begin with a brief description of the Chihuahuan Desert and its forage resources, as well as its importance to the livestock industry.

These publications will describe in chronological order each one of the steps necessary for establishing a well-organized grazing management program applicable to the ranches of Far West Texas. Articles will include establishing the goals and objectives of the ranch, inventorying resources, and determining the correct stocking rate, livestock nutrition, grazing methods, and multiple uses of rangelands. Therefore, through the collection of these bulletins, landowners and people involved with rangeland stewardship will have step-by-step information needed for sustainable grazing management in the Trans-Pecos and surrounding areas.

In addition, the *Trans-Pecos Rangelands Management* bulletin will include a second article with relevant or updated information related to the management and conservation of natural resources. In this edition, we provide an analysis of current weather conditions as we are going through a severe drought, which is a major concern for livestock and wildlife management.

Finally, in each of the bulletins we will include one page dedicated to the description, distribution, and importance of native plants of the Chihuahuan Desert. We hope that, with time, our readers will compile valuable information about important plants of the Chihuahuan Desert and adjacent areas.

The Rangelands of Far West Texas

Eduardo A. Gonzalez-V.[1], Louis Harveson[2], Billy Tarrant[3], and Silverio Avila[4]

"Trans-Pecos" is a descriptive term for the region of Texas that is west of the Pecos River. It is bordered on the west and south by the Rio Grande and on the north by the New Mexico-Texas state line (Powell & Worthington, 2018). This area represents the northeastern portion of the Chihuahuan Desert Biotic Province, which is one of the most biologically diverse ecosystems in the world. Because of the transition areas among ecosystems, the western Edwards Plateau vegetation is also included (Fig. 1). Collectively, this land comprises over 44,756 square miles or 28,643,840 acres.

The topography varies greatly from undulating hills to rugged mountains, level grasslands, and shrublands. Elevations range from 900 to 8,750 feet. Major mountain ranges include the Bofecillos, Chinati, Chisos, Davis, Del Norte, Eagle, Franklin, Glass, Guadalupe, Hueco, Sierra Diablo, and Sierra Vieja (Harveson, 2016). As mentioned, two main rivers drain the Trans-Pecos: the Rio Grande and the Pecos. Creeks and springs are ephemeral. In general, soils are well-drained sand and loam. In the mountains, most of the soils are shallow.

Flatter areas of the eastern Trans-Pecos have deeper alkaline soils. Desert washes typically have deep sands, while gravel substrates occur in desert lowlands, and slopes and mountains are dominated by shallow rocky soils.

Climate

The Trans-Pecos is among the driest areas of Texas. The average annual precipitation varies widely, decreasing from east to west (Fort Stockton, 15 inches; El Paso, 9 inches) and increasing in the central mountains (Marfa, 15.8 inches; Alpine, 15 inches; Fort Davis, 16 inches). Most of the precipitation comes in the form of monsoonal rains during the summer and early fall. Winter rains and snow are moderate (Powell & Worthington, 2018).

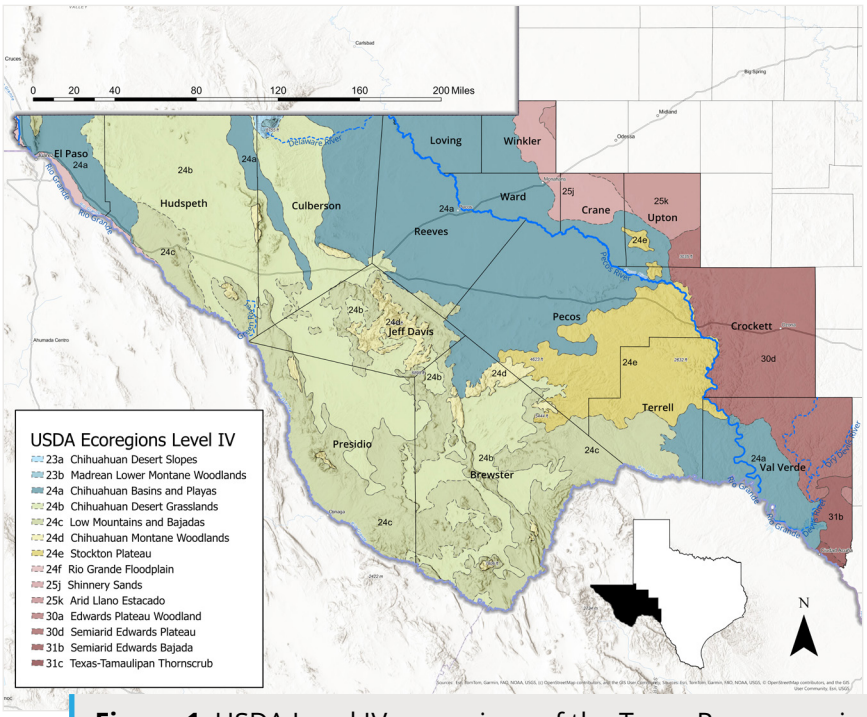

Figure 1: USDA Level IV ecoregions of the Trans-Pecos area in West Texas; area of focus is on AgriLife's District 6 boundary.
(Map created by Silverio Avila, 2024)

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Severe several-year drought conditions have long been part of the West Texas climate. Extreme high temperatures (up to 122 degrees Fahrenheit [F]) occur during the summer in areas of low elevation, such as Presidio. Among the most important multi-year droughts cited in connection with ranching were in 1908 to 1912, 1930 to 1935, 1951 to 1957, and the early 2000s (Keller, 2005). Shorter dry periods of 1 to 2 years have occurred between major droughts, interspaced with years of normal precipitation. The driest period in Texas was from August to September in 2010 to 2011. This extreme drought, coupled with record-low temperatures in February 2011, resulted in an unprecedented loss of trees in the Davis Mountains and a mass mortality of desert and mountain vegetation in the Big Bend.

Vegetation

The Trans-Pecos is part of the great Chihuahuan Desert Region (CDR), occurring mostly in Mexico, extending into West Texas and southern New Mexico. The Chihuahuan Desert is the second-largest desert ecoregion in North America, and it is the most biologically diverse arid region in the Western Hemisphere (Bell et al., 2014).

Desert Scrub

The word "scrub" refers to the vegetation dominated by shrubs. Chihuahuan Desert scrub is the most widespread vegetation type in the Trans-Pecos area and includes species such as creosote bush (*Larrea tridentata*), prickly pear (*Opuntia* spp.), chino grama (*Bouteloua ramosa*), and honey mesquite (*Prosopis glandulosa*).

Grasslands

Also called desert grasslands, these are grass-dominated communities occurring in valleys, basins, and plateaus skirting the mountains. Grass species include blue grama (*Bouteloua gracilis*), threeawn (*Aristida* spp.), plains bristlegrass (*Setaria leucopila*), and sideoats grama (*Bouteloua curtipendula*). There is moderate to dense shrub encroachment in degraded grasslands. Two additional kinds of grasslands are recognized, both present on flats and sloping basins: tobosa (*Hilaria mutica*), which often forms monospecific stands known as **tobosa grasslands**, and extensions of alkali sacaton (*Sporobolus airoides*) and big sacaton (*S. wrightii*), which form **sacaton grasslands** at the margin of salt areas.

Open grasslands or savannas in West Texas are grass-dominated communities. *(Photo by Eduardo A. Gonzalez)*

Montane Woodlands

This vegetation is found in the higher elevations of the Chisos, Davis, and Guadalupe mountains and is characterized by species of tall pine (*Pinus* spp.).

Oak-Juniper-Pinyon Woodlands

Oak-juniper-pinyon woodlands occur on slopes with elevations greater than 4,500 feet, with vegetation dominated by assorted oaks (*Quercus* spp.), pinyons (*Pinus* spp.), and junipers (*Juniperus* spp.).

Riparian Areas

Riparian areas are variable and occur adjacent to seasonal or permanent waterways such as creeks, rivers, and canyons. Some important browse species include cottonwood (*Populus* spp.), desert willow (*Chilopsis linearis*), and willows (*Salix* spp.). They provide important habitat for livestock and wildlife in the form of food, water, and cover. They also function as critical migration corridors for wildlife.

Land Use in West Texas

The history of livestock in West Texas is marked by the introduction of cattle by Spanish explorers, the cattle drives, and the development of the Texas Longhorn and Criollo cattle breeds. In the 16th century, Spanish explorers brought cattle to the area that is now Texas. The first cattle were landed in the Caribbean in 1493, and the Spanish moved them north into Mexico and then Texas. Cattle were first reported to have been brought to Mexico in 1521 by Gregorio Villalobos and Hernán Cortés, who brought 50 calves from Cuba or Jamaica to the Pánuco River (Rouse, 1977). In 1572, Mexican Criollo cattle were introduced to the state of Chihuahua. The best estimate of when Criollo genetics were introduced into New Mexico is 1598, when Juan de Oñate introduced between 2,500 and 7,000 head. This was the beginning of the rangeland's utilization of beef cattle in New Mexico and West Texas.

Unfortunately, many of the former productive grasslands or savannas (open grasslands dotted with trees or shrubs) have been replaced by less productive shrublands (Warnock & Loomis, 2002). When the early Spanish explorers and the early Anglo settlers came to the Trans-Pecos, they found an arid savanna dominated by short grasses. Pronghorn, mule deer, prairie dogs, and jackrabbits were the major herbivores that occupied this region. Bison also grazed these areas, though not in great numbers or with the massive migrations recorded in the plains (Warnock & Loomis, 2002).

Ranchers began bringing livestock as formal operations to the Trans-Pecos in 1871, with the first herd of cattle arriving from Wilson County, Texas, owned by J. D. Houston. The early stocking rates were very high as landowners were driving stock from East Texas and were familiar with ranching in that area. This stocking rate was possible due to the large expanses of grasslands then available in the Trans-Pecos. Grazing had always been light to moderate with little to no grazing during dry years (Downie, 1978). Today, much of the Trans-Pecos is a shrubland. The huge number of livestock minimized the standing crop of grasses, and the fires that kept brush in check did not spread as they had historically.

The beef cattle industry is an important and emblematic production system of West Texas. *(Photo by Eduardo A. Gonzalez)*

Today, ranching remains an important industry, but its prevalence is decreasing. The size of the properties has also decreased, and some ranches have been destocked due to more emphasis placed on wildlife management and recreational activities. However, livestock production will persist as the industry grows to meet an increasing demand for food for society. The symbolic beef cattle of West Texas will continue to be part of the grand views of this land.

We need to look to the future and decide what we want 10 years, 20 years, and 50 years from now and begin working toward that goal today. Grazing management is no doubt the first step to having healthy, diverse, and sustainable rangelands for a productive livestock industry in West Texas.

Understanding Grazing Management Principles

An understanding of forage plants' physiology and their response to grazing are essential to effective grazing plans. Plans need to match the conservation and improvement of the rangelands' sustainability and health within the livestock industry. Grazing plans must be based on the following fundamental principles.

- Plants are the basic food source for grazing animals.
- The formation of food is first dependent on the photosynthetic process in the leaves of the plants (leaves are the factories producing food).
- When the plants are overgrazed, food production capacity is reduced (Holechek et al., 2010). Therefore, the basic factors a grazing manager must regulate are the grazing intensity, timing, and frequency. Grazing intensity is of most importance because the amount of leaves remaining for photosynthesis will dictate further food production.

Those fundamental principles of plants, as well as basic grazing management factors, are constantly dictating grazing management.

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Far West Texas Drought: Healthy Rangelands Are Affected Last

Silverio Avila[1], Morgan Treadwell[2], and Robert Kinucan[3]

Drought, defined as less than 75 percent of average precipitation, is a prolonged absence or marked deficiency of moisture (Holechek et al., 2011). For a livestock operation, drought not only negatively impacts forage production but also challenges producers' management planning and disrupts wildlife populations. We concur with Frank Price's observation, "Healthy rangelands are not as severely affected by drought as those that are in degraded condition" (Goodwin et al., 2023). Forage production in any given year is influenced by the conditions of previous years, either through management or rainfall. It is up to the stewards of the land to determine how they prepare for and respond to drought.

Permanent water trough in a pasture during drought in Presidio County, Far West Texas. *(Photograph by Silverio Avila, 2024)*

Drought is a fact of nature; it comes and goes. At times, drought may be mild with reduced rainfall within the same season, or it may be intense with extended periods of limited rainfall for consecutive years (Carroll et al., 2021). Future climate models predict fewer but rather larger rainfall events in xeric ecosystems, while in mesic ecosystems, more variability is expected, creating the prospect of alternating wet and dry years (Knapp et al., 2008). This signals a trend toward hotter and drier conditions for the Trans-Pecos, with less frequent but larger rainfall events. As of April 2025, all 23 counties within the Trans-Pecos ecoregion District 6 (Texas A&M AgriLife district boundaries) are categorized as experiencing severe (D2) to exceptional (D4) drought (Fig. 2). These rainfall patterns and persistent dry conditions reveal just how deeply drought impacts the land, the people, and the livelihoods across Far West Texas.

This year's drought directly and indirectly impacts approximately 900,000 people across Far West Texas, affecting both rural and urban areas in multiple ways (United States Drought Monitor, 2025). Drought is a constant concern for landowners, and it widely affects the markets, economy, and livelihoods of rural to urban communities. Reduced water quality and availability, diminished forage production for livestock, increased food prices, declining wildlife populations, and heightened wildfire risks are just a few examples of the impacts on rangelands and the community. Among these challenges, the

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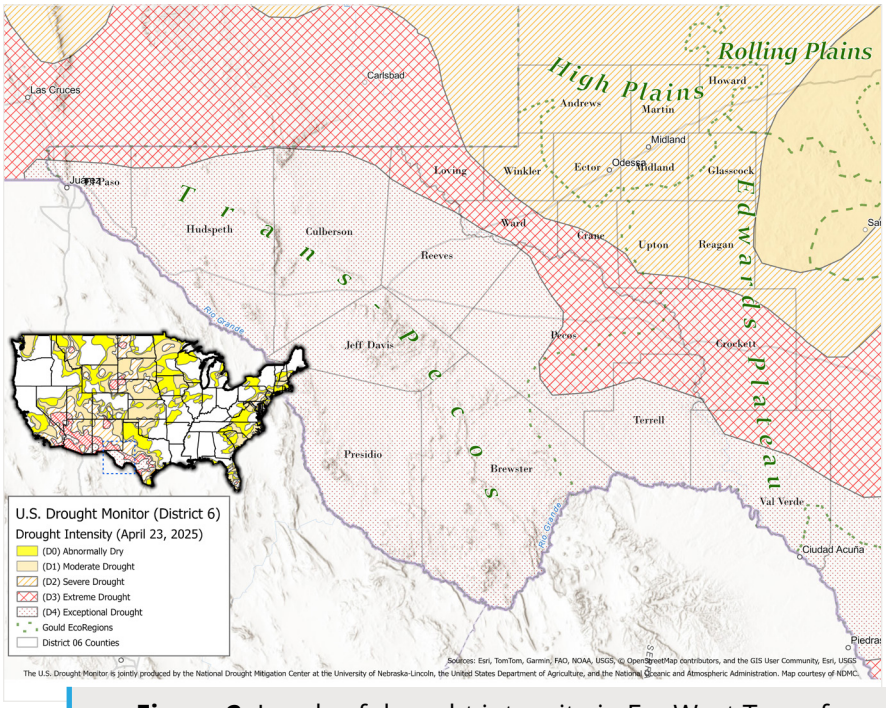

Figure 2: Levels of drought intensity in Far West Texas from the US Drought Monitor. Inset map shows the levels of drought intensity from the 48 contiguous states of the United States of America. Area of focus is AgriLife's District 6 boundary.
(Map created by Silverio Avila, 2025)

impacts on livestock operations and ecosystem services stand out as particularly significant, highlighting the importance of sustainable land management practices. For example, in livestock operations, insufficient rainfall limits forage production, thereby reducing the conversion of valuable forage resources into animal production from grazing. From an ecosystem services perspective, reduced vegetation cover from overgrazing and low rainfall means significant exposed bare ground with less water to infiltrate and recharge aquifers, which impacts water supply and quality for rural and urban communities (Podwojewski et al., 2011). While the drought as of 2024 is not as severe as the historic drought of the 1950s or early 2000s, its ripple effects highlight the persistent challenges posed by the Trans-Pecos' long history of arid conditions and its ever-changing climate. Therefore, maintaining healthy rangelands ensures the sustainability of rangeland resources and ecosystem services for all.

Drought Effects on Vegetation

Plants are adapted to their specific regions and will respond differently to either mild or intense droughts. In arid and semiarid rangelands of the Trans-Pecos, grass plants that endure periodic drought are already adapted to conditions with limited rainfall in a single season. However, limited water availability year after year, known as intense drought, can take a toll on current and future grass production by limiting vigorous growth and ability to reproduce. To understand how rangelands can be affected, we must understand plant physiology. In this article, we focus on forages predominantly grazed and preferred by cattle. Proper management is as important to grass production as is rainfall. Healthy roots are essential to plants for anchoring, nutrient absorption, and carbohydrate storage. Poor root health will limit the ability to obtain water and nutrients under demanding conditions such as drought or grazing. Utilization of more than 50 percent of aboveground forage over a prolonged period can reduce, and potentially halt, root production (Crider, 1955). Grass plants are adapted to defoliation; however, rest or deferment is necessary to allow recovery of the photosynthesizing leaf material. Plants recover through rest, defined as nonuse for a period of a year or more, or deferment, defined as nonuse for one growing season, to help promote vigorous growth and seedling establishment. In extreme scenarios, complete livestock destocking may be necessary to encourage vegetation recovery.

Unlike wildlife, cattle are confined to a property limit and are not able to traverse to greener pastures. During drought, most palatable forage for cattle will be dormant, senesced, or dead. On the contrary, many toxic range plants

adapted to dry conditions can remain green and appealing to livestock. Not all toxic plants are equally poisonous to cattle and sheep; some are harmful in small or large quantities, while others may be toxic to cattle but not to sheep, and vice versa. This highlights the need for a thorough understanding of the plants present on the range.

Drought Effects on Wildlife

Whether sourced from free-standing water, plants, or morning dew, all wildlife rely on water to endure the harsh dry periods characteristic of desert ecosystems. In West Texas, water is often the single most limiting factor influencing big game populations such as desert mule deer, pronghorn, bighorn sheep, and the nongame species elk. Drought decreases the availability of food for wildlife, and the lack of available surface water can limit distribution and potentially force concentration in areas with permanent water sources. Studies have shown that deer densities decrease where water sources are allowed to deteriorate, whereas they increase in areas where permanent water is available (Bone et al., 1992). Low water availability can also lead to low lamb survival and population declines in bighorn sheep, but this species tends to reestablish in areas where water is available (Bone et al., 1992). Pronghorn populations are similarly affected, but because their habitat often overlaps with livestock grazing areas, they may benefit from existing livestock water sources. Drought impacts each big game species in its own way, but it emphasizes the need for sustainable water management to help wildlife thrive in arid landscapes.

Financial Considerations for Drought

Drought increases the challenge of making sound management decisions. Not everyone is willing, or able, to destock when necessary. However, making tough but timely stocking decisions will benefit rangeland health in the long run, as well as reduce cattle losses, supplemental feed costs, and poor gain associated with reduced forage availability. It is helpful to know that the federal government, mainly through the United States Department of Agriculture (USDA), provides financial assistance programs to support farmers and ranchers during drought. Some of these programs include:

- Emergency Assistance for Livestock, Honeybees and Farm-Raised Fish (ELAP);
- Livestock Indemnity Program (LIP);
- Livestock Forage Disaster Program (LFP);
- Emergency Conservation Program (ECP); and
- Noninsured Crop Disaster Assistance Program (NAP).

Despite potential assistance, producers should be prepared and flexible to make the best of the challenges they face. As we noted earlier, "Healthy rangelands are not as severely affected by drought as those that are in degraded condition." As this statement implies, an ounce of prevention is worth a pound of cure, and restoration of degraded rangelands poses both ecological and financial challenges that can often be minimized or avoided through sound management. Conservationist Aldo Leopold stated, "Conservation will ultimately boil down to rewarding the private landowner who conserves the public interest." Though cost-share programs do not fully compensate for conservation, it is a significant financial incentive for landowners and producers to proactively implement conservation practices. Programs that support rangeland conservation, recovery, or degradation mitigation include:

- Environmental Quality Incentives Program (EQIP);
- Conservation Stewardship Program (CSP); and
- Regional Conservation Partnership Program (RCPP).

For more detailed information and eligibility for these programs, contact your local Farm Service Agency (FSA) or Natural Resources Conservation Service (NRCS) office.

Financial assistance can provide support during periods of environmental or economic adversity, and cost-share programs will help enhance rangeland health and productivity. However, these benefits depend on our willingness to adapt our management practices to changing times. It has been stated that change is the only thing that is constant, and we need to adjust to shifting

markets, changes in climate, and vegetation succession as needed.

Horseman on the ridge of a West Texas hill.
(Photo by Texas A&M AgriLife)

Through years of research and practice, we have a sound understanding of how grazing systems work and how much livestock consume. Ranchers now face a reality where the standing vegetation is not the same as 100, 50, or even 30 years ago. We are living in times when the climate is drier and hotter for longer periods; there is significant woody plant encroachment; we face increased challenges with ranch infrastructure, building, and maintenance; there is rapid land fragmentation; and production costs continue to increase (Nielson-Gammon, 2011; Archer et al., 2017; Holechek et al., 2020). Unfortunately, everyone has their own problems, and hopefully, their own solutions. The decisions we make now impact the future sustainability of the livestock operation, the land, and the community. Therefore, it is beneficial to talk to your neighbor, whether from next door or the next county, and connect with NRCS Grazing Management Specialists and County Extension Agents to share information to bolster the ranching community. Some approach has probably worked previously for others, and if a neighbor does not have a solution, they can likely point you to someone who does.

Pointers for Successful Rangeland Management Before, During, and After Drought

Correct Stocking Rates

Proper stocking rate selection is the most important decision we can make in livestock grazing with respect to vegetation health, livestock and wildlife performance, and economic return (Holechek et al., 2011). The Society for Range Management (1998) defines stocking rate as "the relationship between the number of animals and the grazing management unit utilized over a specified time period." It may be expressed as animal units per unit of land area (animal units over a described period per area of land). An animal unit is defined as one mature cow (1,000 pounds), either dry or with a calf up to 6 months old, and they are expected to consume between 20 to 26 pounds of forage daily. This will determine the amount of forage used throughout the season or in a specific pasture and gives you the ability to manage the remaining forage in your pastures for future regrowth and recovery.

Stocking rates will often vary from ranch to ranch because of landscape variability in ecological sites, past and current management, and unpredictable precipitation. A light stocking rate in East Texas has a different meaning than a light stocking rate in Far West Texas. Additional factors to be considered include the amount of precipitation, length of the growing season, type and nutritive content of forage, distance to water, and slope, among many others.

Control Grazing Distribution

More uniform distribution of grazing is vital to avoid selectivity and concentration by cattle in areas with preferred vegetation. Continuously grazed systems may be disadvantaged because cattle prefer more productive areas and reside

for longer periods on those sites. However, distribution of cattle grazing by alternating water sources and supplementation at strategic points within pastures may limit overgrazing in specific areas (Vallentine, 2001; Bailey et al., 2019). Rotational grazing systems may provide an alternative to continuous grazing by using fences (or, in some cases, virtual fencing). Rotational grazing provides rest to forages and allows the recovery of grass plants for future production. However, the latter system requires more management effort and resources to implement.

Setting Checkpoints or Trigger Dates

Trigger dates are specific days in the calendar year to analyze current pasture conditions and rainfall and make hard-set decisions to either partially or, in some cases, completely destock cattle from the operation (Fig. 3). Setting objectives in a livestock operation is important, and following strict guidelines will help you meet your goals and objectives (Haigh et al., 2019). As guidance, ranchers can follow the suggested progression of destocking decisions as drought advances.

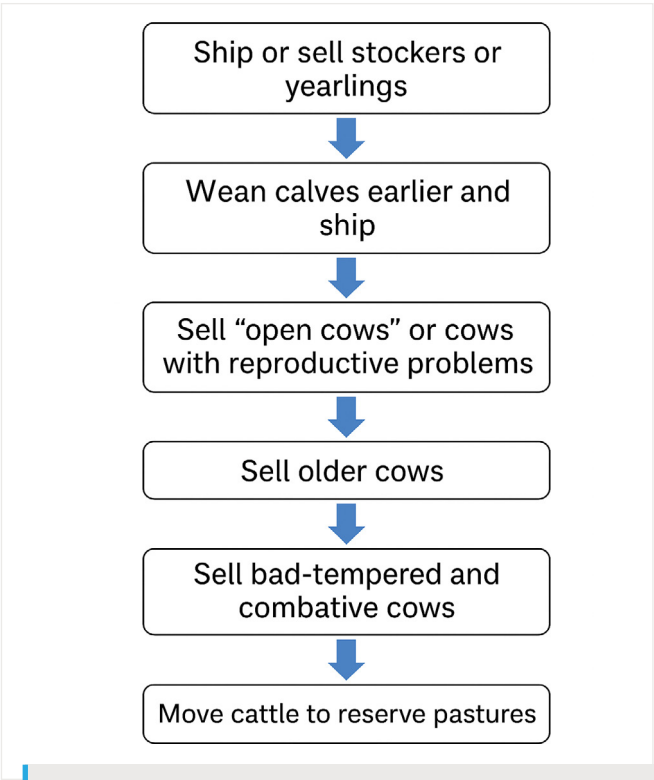

Figure 3: Suggested destocking procedure for drought management planning. *(Created by Silverio Avila)*

Appropriate Cattle Breeds

Cattle have experienced a long process of evolution and domestication. Certain cattle breeds are adapted to specific climates, regions, or topography that will impact their use of unique environments. Historical or heritage breeds such as Criollo, as opposed to Continental, British, or Mediterranean breeds, can be part of the solution to the harsh, dry, and rugged terrain of the Trans-Pecos (McIntosh et al., 2023).

Diversifying Revenue Streams

With drought affecting traditional livestock operations, diversifying income can be critical. Options like ecotourism, hunting leases, and wildlife conservation programs offer valuable alternatives that provide landowners with additional resilience against income loss during drought (Sayre et al., 2012).

Toxic Plant Management

Decrease grazing pressure or avoid grazing pastures infested by toxic plants. The downside of rotational or intensive grazing systems when stocking densities are high is that it does not allow livestock to actively select forage plants. On the contrary, in a low stocking rate continuous grazing system, cattle are free to select the most palatable and desired forage before selecting other less palatable forage or toxic plants. Prescribed burning or mechanical methods are usually not a recommended option to remove toxic plants during drought. Chemical individual plant treatment or broadcasting is recommended; however, livestock are more likely to consume recently treated plants, and a deferment period should be applied in some cases. For more information and suggestions for controlling toxic plants through chemical applications, refer to the publication *REPK-PU-010, Chemical Weed and Brush Control Suggestions for Rangeland* by the Texas A&M AgriLife Extension Service. For more helpful information on what toxic plants exist in Texas, their management, and symptoms and treatment suggestions for poisoned animals, refer to the publication *RWFM-PU-261, Toxic Plants of Texas*.

Soil Erosion Prevention

Maintaining proper stocking rate is essential to prevent overgrazing, which leaves bare ground vulnerable to wind and water erosion. Installing contour barriers, such as keylines and rock dams, can slow water flow during rainfall events and help trap sediments, reducing soil loss. Additionally, deferring livestock from riparian buffer zones during drought or other critical dry periods helps preserve these vital areas, ensuring they remain healthy and resilient (Clary & Kruse, 2004).

God bless Texas gate sign. *(Photo by Texas A&M AgriLife)*

Wildlife Considerations

As outdoor recreational values continue to increase in rangelands, maintaining wildlife populations is a strong consideration for rangeland managers. As mentioned previously, water is a limiting factor affecting big game populations. Providing permanent artificial water sources for wildlife throughout the year is proven to aid in increasing populations and distribution of wildlife (Bone et al., 1992). The implementation of rainwater catchment devices such as guzzlers and modifying existing livestock troughs for birds and small mammals are some of the recommended practices to increase water availability for wildlife. If a livestock rotational grazing system is implemented, it is recommended to keep water sources available for wildlife even when cattle are removed from deferred pastures.

Drought is an inevitable challenge for rangeland managers, but it is also a reminder of the importance of resilience and adaptability in our stewardship practices. A wide array of management approaches can be effective for producers depending on their circumstances and preferences. Actions taken with the purpose of avoiding rangeland degradation work best when implemented proactively. Healthy rangelands are our best defense against the uncertainties of drought. Preparing for drought can be daunting, but armed with the right information, ranchers can develop contingency plans to soften the blows nature might send their way.

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Important Plants of the Chihuahuan Desert

Ty Goodwin[1]

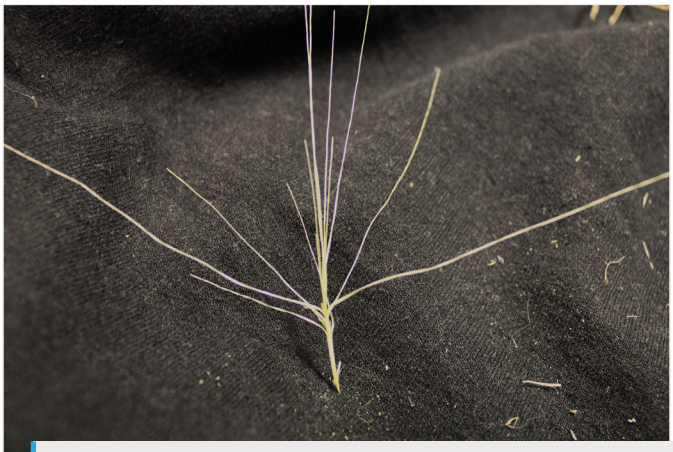
Burro Grass (*Scleropogon brevifolius*)

Description

Burro grass is a short desert grass species. It is found in about every county of the Trans-Pecos in arid alluvial soils or desert scrublands between 2,000 to 5,000 feet. The species grows from a perennial base, typically growing stems 10 to 30 centimeters tall, with shorter leaf blades around 2 to 8 centimeters long. Each plant will sparsely spread out using stolons (modified stems that trail along the ground, also called runners). The males of this species will have no bristles and often appear as a stacked chevron pattern.

Importance

This grass is not known to be of good forage value for livestock or wildlife due to the stiff awns that can cause mechanical injury, though it could serve as an emergency forage if needed. This grass can also be an indicator of declining rangeland health. However, burro grass is an excellent restoration species.



Burro grass inflorescence on a black background. *(Photo by Ty Goodwin)*

Burro grass is a very hardy perennial grass species that can handle drought conditions, poor soil conditions, and extreme high temperatures. Burro grass's large showy awns and low-growing pubescent leaf blades allow for the plant to collect dew efficiently from the air and funnel it into the soil. When this species combines its water-harvesting ability with its sparse growth habit that leaves open space, it can be an excellent nursery plant that helps to reestablish other native grasses.

Burro grass plant on the ground. *(Photo by Ty Goodwin)*

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