

Appendix D

Livestock Management Recommendations

Livestock management has a greater influence on wildlife habitat and wildlife populations in the Trans-Pecos than any other management practice (with the possible exception of fire). Livestock management practices can be beneficial or detrimental to wildlife, depending on the kind of livestock, stocking rate, duration of grazing, and grazing system.

Kind/Class of Livestock

Sheep and goats have diets similar to deer and often compete with them for available forage. There is considerable overlap in sheep and pronghorn diets, and competition for forage (especially forbs) can be significant. Goats can reduce the amount of low-growing woody plants which are required by many wildlife species for food and cover. Under light to moderate stocking rates, cattle grazing tends to be compatible with most wildlife species.

Stocking Rates (acres per animal unit)

Livestock and wildlife can do very well on the same range; however, when livestock numbers are excessive, they will compete with deer, pronghorns, and other wildlife for available forage and can severely impact reproductive and escape cover. **Stocking rates have a greater impact on wildlife habitat than any other factor of grazing management.** Maintaining light to moderate stocking rates will help to maintain or improve wildlife habitat. Deer and pronghorns are usually at a disadvantage on overgrazed ranges because livestock normally receive supplemental feed when forage is limited. On overgrazed rangelands, reducing livestock numbers is preferable to supplemental feeding of wildlife and the only way of allowing the habitat to recover. Land managers should not rely on traditional or historic stocking rates. Stocking rates should initially be based on the Natural Resources Conservation Service (NRCS) recommended rate and then adjusted as needed to balance forage production with animal numbers. To ensure proper use of forage, recommended stocking rates should be calculated by pasture because of differences in range sites, vegetation communities, and forage production.

Grazing Management Plan

Planning and flexibility are the keys to proper range management. For example, the manager that plans ahead can temporarily limit grazing in pastures traditionally used as fawning grounds by deer or pronghorns. Also, a flexible grazing system is essential to insure proper use of forage, the production of which is highly variable in the Trans-Pecos. Not only is it economically important to the rancher but necessary for maintaining quality wildlife habitat. A flexible grazing plan will allow managers to adjust stocking rates when necessary and to use kinds and classes of livestock that are

compatible with wildlife species of interest.

The Grazing Management Plan should include:

Kind of Livestock: Brangus cattle, Horses, Angora goats, Rambouillet sheep, etc.

Class of Livestock: Cow/calf, Steers, etc.

Stocking rate: Acres per animal unit

Type of Grazing System: 2 Pasture- 1 Herd, 4 Pasture- 3 Herd , HILF, etc.

Grazing Systems

A well-planned grazing system is one which allows adequate rest periods for plants to recover after grazing. Most domestic livestock are selective grazers and consume the most nutritious and palatable plants first. Whenever a plant is eaten, not only is there a reduction in top growth but also a reduction in root growth. A stunted root system directly affects the plant's ability to regrow following defoliation. Herbaceous plants need at least 30 to 60 days of rest to recover from grazing, depending on the growth stage, severity of defoliation, moisture conditions, and temperature. Woody plants need as long as 4 to 6 months of rest to allow for regrowth.

The grazing system that is least compatible with wildlife habitat management is continuous, year-long grazing. This type of grazing usually results in overuse and elimination of the most palatable and nutritious plants and increases undesirable, less palatable plants. Continuous grazing generally results in a gradual decline in range condition, reducing long-term carrying capacity for livestock and habitat quality for most wildlife species. Continuous grazing should not be used as a grazing method if the land manager's desire is to improve habitat for wildlife.

Most North American rangelands (including west Texas) evolved under grazing by nomadic animals such as bison, elk, and pronghorn, whose herd movements resulted in a crude form of seasonal grazing deferment. Rangelands respond best to grazing systems that closely mimic the behavior of these nomadic herds. A deferred-rotation grazing system that incorporates rest and graze periods to regulate the intensity and duration of forage plant use helps to promote plant vigor, seed production, and seedling establishment.

The absence of livestock grazing (or fire) over long periods of time can be as detrimental to range condition and wildlife habitat as overgrazing. Total protection of rangelands in western Texas from livestock generally fails to restore degraded vegetation communities because these plants evolved under a natural system of periodic fires and grazing. Several livestock grazing systems have been developed which provide adequate periods of rest and allow plants to recover from grazing. Each ranch manager should implement the system that best fits their particular situation. Some commonly used deferred-rotation grazing systems are: two pasture/one herd, three pasture/one herd, four pasture/one herd, high intensity/low frequency (HILF), short duration grazing, and four pasture/three herd. Regardless of the type of grazing system

used, their success primarily depends upon stocking rate, kind of livestock, rainfall during the rest period, and the time of year in which the pasture is rested and grazed. Grazing schedules and livestock stocking rates for pastures within a grazing system need to be flexible and continually reevaluated based on rainfall patterns, seasons of the year, and on-site conditions (i.e., range sites, vegetation type, forage production). Determining the appropriate graze and rest periods for each pasture is as much of an art as a science and depends more on local range conditions than on the calendar.

Below are brief descriptions of various deferred-rotation grazing systems. There are many variations of each system and land managers can modify the grazing schedules to fit their situation. For example, ranches that are grazed only a portion of the year (eg., stocker operations) can modify grazing schedules to match the number of months of grazing (the grazing schedules described below assume year-long grazing). The grazing systems described are easier to operate and often more efficient in forage use when pastures are of **similar grazing capacity** (combination of pasture size and soil productivity). When pastures are not of similar grazing capacity, one option is to base stocking rates on the pasture with the least grazing capacity (to prevent overgrazing of smaller or less productive pastures). Another alternative is to base the stocking rate on the total grazing capacity of all pastures and modify the grazing schedule of a rotational system to match the grazing capacity of individual pastures. However, it is critical to maintain a “rotating” rest period – each deferred rotation system was designed to rotate the rest period for each pasture among different times of the year (naturally, it follows that the pastures are grazed during different seasons or months). This continual variation in **timing** of the rest period is the key to improving plant health and species composition.

Two pasture/one herd rotation - All livestock are confined to one pasture, which is grazed for 3 months. The herd is then moved to the second pasture for 6 months. The herd is then moved back to the first pasture for 6 months, then back to the second for 3 months, and so on, continuing with the 3 month/6 month cycle.

Three pasture/one herd rotation - A single herd of livestock is rotated from one pasture to another every 3 months. This allows each pasture to receive 6 months of rest before being grazed again. Over time, the pastures are grazed during different seasons of the year, with a 3 year interval occurring before an individual pasture is grazed during the same season again.

Four pasture/one herd rotation - A single herd of livestock is rotated from one pasture to another every 2 months. Each pasture receives 6 months of rest before being grazed again, with a 2-year interval occurring before an individual pasture is grazed during the same time period.

High intensity/low frequency (HILF) - The number of pastures in this system is variable, but it typically incorporates a minimum of 6 to 8 pastures. The livestock are kept in one herd, and each pasture is grazed for approximately 1 to 1 1/2 months (high intensity), followed by a long period of rest (low frequency). Listed below are the calculations for

determining how long each pasture should be grazed under a HILF system, using a system with 7 pastures as an example:

- 1.) add 1 to the number of pastures in the system ($7+1=8$)
- 2.) divide the number of days in a year by the answer from step 1 to determine how many days each pasture should be grazed (365 days divided by 8 = 46 days of grazing per pasture).
- 3.) It would take 322 days (7 pastures X 46 days each = 322 days) to complete the grazing cycle, and each pasture would receive 276 days of rest between grazing periods.

Short duration grazing - This system requires that a ranch be divided into numerous pastures, typically 12 to 20 (no fewer than 8). The livestock are kept in one herd and the herd is rotated through the pastures. Each pasture is grazed for a short period of time (a few days), followed by 1 to 4 months of rest. The length of the grazing cycle is based on the rate of forage regrowth. For example, a 30 to 45-day cycle may be used during the peak of the growing season when plants recover more rapidly after being grazed. In a system with 12 pastures or paddocks, each pasture could be grazed for 3 days, resulting in a 36-day grazing cycle and 33 days of rest per pasture. As the growth rate of forage begins to slow, the rest period can be increased by slowing to a 6-day graze period (72-day cycle). The cycle could be further lengthened during winter dormancy (eg., 10-day graze period and 120-day cycle) when warm-season plants can withstand heavier grazing pressure without damage.

Four pasture/three herd rotation - Livestock are divided into 3 herds and stocked in 3 of the 4 pastures. On a rotating basis, one herd is moved to a vacant pasture every 4 months. Each pasture is grazed for 1 year and rested for 4 months. This allows each pasture to be rested from grazing during each month of the year (three 4-month periods) upon completion of a 4-year cycle. The four pasture/three herd system is the least preferred rotational grazing method for improving plant species composition because of the long period of time that livestock remain in each pasture.

A deferred-rotation grazing system will fail to produce the desired results of maintaining a healthy and diverse plant community if the range is overstocked with animals, both domestic and wild. Appropriate stocking rates vary by pasture and by range sites within pastures, but they can also vary from year to year and seasonally within a year, depending on environmental factors. The impact of grazing animals should be closely monitored, and the number of livestock on a ranch may need to be adjusted periodically in response to changes in a ranch's grazing capacity. The combined total of all animals on the range, including all classes of livestock as well as deer and exotics, must be considered when determining stocking rates. The following equivalent values of animal unit standards can be used to make stocking rate decisions:

<u>Cattle</u>	<u>Animal Units</u>
weaned calves to yearlings	0.6
steers and heifers (1 to 2 years)	1.0
mature cows, with or without unweaned	1.0

calves at side	
bulls (2 years and over)	1.3

Sheep

5 weaned lambs to yearlings	0.6
5 mutton or ewes (1 to 2 years)	1.0
5 mature ewes, with or without unweaned lambs at side	1.0
5 rams	1.3

Goats

6 weaned kids to yearlings	0.6
6 nannies or wethers (1 to 2 years)	1.0
6 nannies, with or without unweaned kids at side	1.0
6 billies or wethers over 2 years	1.3

<u>Horses</u>	1.0-1.5
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Deer

5 deer (large bodied mule deer)	1.0
6 deer (whitetails or relatively small mule deer)	1.0

Exotics (depends on the species; use animal unit standard for similar size domestic animal)

Water Distribution

Since livestock are confined to individual pastures in a deferred-rotation grazing system, each pasture needs to have at least one source of water available when livestock are in that pasture (when livestock have vacated a pasture, these water sources can be extremely important to wildlife if left "on"). Creeks and draws that provide seasonal water are beneficial to livestock as well as wildlife but are of little value during extended dry periods. Earthen stock tanks and/or water piped to troughs from a well will provide better, more reliable sources of water. One watering facility can serve several pastures if properly located, provided the pastures are relatively small. For example, a water trough could serve two pastures if straddled by a cross-fence. Similarly, a trough in a separately fenced "waterlot" constructed at the juncture of several cross-fences could serve numerous pastures. For larger pastures that exist on many west Texas ranches, several watering sites per pasture may be required. Although not necessary, a watering site per 2,500 acres would be ideal because animals would always be within a mile of water. The better the water distribution in large pastures, the better the grazing distribution and livestock performance (increased forage availability and decreased energy expenditure). Additionally, if these watering facilities are "user-friendly" for local wildlife species, improved water distribution can, in effect, increase useable habitat on the ranch. For water sources designed specifically for wildlife, see Appendix V (Wildlife

Watering Facilities).

Grazing Lease

When leasing grazing rights, a written lease agreement can help the landowner to maintain his rangeland and wildlife habitat in good condition by specifying the type of grazing system, kind of livestock, and the maximum/minimum stocking rate. Grazing schedules (length of graze and rest periods for each pasture) and stocking rates should be flexible and continually reevaluated as dictated by rainfall patterns, season of the year, and local range conditions. The landowner should retain the right to require the lessee to reduce and, in rare instances, increase the number of livestock to ensure the appropriate degree of use and rest for range plants.