

# A Basis for a Conservation Lease of Rangeland on the Edwards Plateau of Texas

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The Edwards Plateau of Texas is an important ranching province of the state, leading in wool and mohair production. On most ranches, cattle, sheep and goats are stocked in combination at an average rate of 32 animal units per section on range which in 1868 was reported to support 300 cows per section (Bentley, 1898). Restoration of the range to its potential grazing capacity requires the solution of many problems, one of which is the proper utilization of leased land.

Approximately one-third of the ranching and farming units of the Edwards Plateau are leased and practically all leased lands are improperly managed (Motheral, 1944). The inadequacy of existing lease agreements contributes to this situation and in some cases discourages conservation practices. The major faults are: short-term duration of leases (usually one year), lack of renewal clause, omission of specified time for notice of termination, lack of arbitration clause, absence of provision for conservation practices and adequate livestock facilities.

Lands in the ranching province are currently sold at highly inflated values. Adequate returns for land investments are therefore not in accord with the productive ability of the land.

This paper is intended to present the problem and to propose a solution in the form of conservation lease agreements. Of course, the only stable solution is a better understanding of proper land use of both lessee and lessor but, in the meantime, some conservation lease agreement should be employed.

## Review of Literature

Campbell and Wood (1951) developed a rental system used by the Canadian Government which is based on price of beef, grazing capacity and annual beef production. The formula for this system is:

$$\frac{1}{10} \times \frac{250 \times P}{G. C.} = \text{Rental and taxes per acre}$$

where  $\frac{1}{10}$  is royalty retained by the government, 250 is the calculated annual gain in pounds of beef per steer on grass, P is price of beef and G. C. is grazing capacity expressed in acres per head.

This system does not appear to be adequate for the Edwards Plateau because it fails to compensate for expected increase in livestock gains with good management. McCorkle and Heerwagen (1951) have shown that good condition range marketed 14.3 pounds of beef per acre, fair con-

dition marketed 11.2 pounds and poor condition marketed 8.9 pounds.

In Kerr County, good and excellent ranges have consistently produced more gains per cow, sheep and goat than poor and fair condition ranges. Also, the percent offspring was higher.

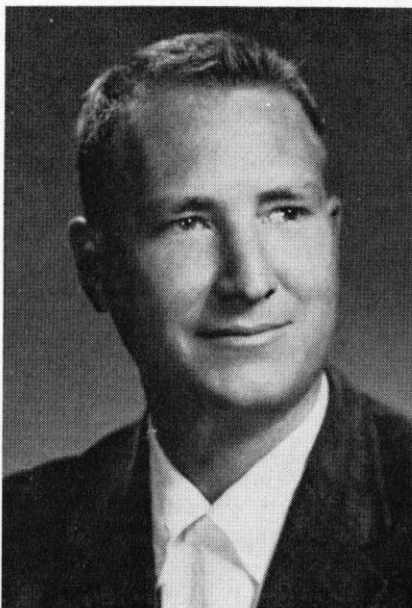
Booker (1950) has proposed a system based on grazing capacity and gross returns per acre. The formula creates a base lease price which is then modified according to the grazing capacity. The base lease price is reduced by one cent per acre for each acre over twenty acres that is required to carry one animal unit. The base is increased by five cents for each acre under twenty. The formula for establishing the base lease price is as follows:

$$\frac{1}{10} \times \frac{\text{Gross per A. U.} \times \text{Total A. U.} - \text{Base lease per acre} \times \text{Total acres}}{\text{Total acres}} = \text{per acre}$$

Booker's formula is based on gross return which makes the entire system inadequate even though the fundamentals will be followed to a large extent in the system proposed here. Gross return depends not only on forage available but also on the managing ability of the lessee. If the lessee is a poor livestock manager, the gross return will be low in comparison to what a good manager could do on the same land. Poor livestock management is not a fault of the land and the lessor should not be penalized but should be protected. Also, the twenty-acre limit established by Booker may be adequate for the more humid portion of the Edwards Plateau but is too low for the xeric portion.

## Proposed System

Establishing a system for determining lease price based on range conservation is a task with many obstacles. The greatest obstacle is that of convincing the lessee and lessor that range conservation pays in monetary gains as well as



conservation of soil and water. The practice of raising sheep, goats and cattle in combination presents another problem in that ranchers often change types of livestock within a year, depending upon prevailing prices. Since goats, sheep and cattle have different values as an animal-unit, it is difficult to predetermine the value of animals to be grazed if a change in livestock type occurs throughout the year.

The obstacle of "cold-blooded business" must be overcome. Land is inflated and the landowner feels that he must receive an adequate interest on his investment. If approached with the fact that his inflated land has an actual low value as to grazing capacity, the landowner is apt to hesitate to any agreement that gives him low returns on his investment. On the other hand, the lessee will harvest all the existing forage in order to cope with high lease prices. It is common for the lessee to have a "get while getting is good" attitude.

The "trot-line" lessee, as recognized by Phillips (1951), presents another obstacle. This man leases several ranches and interchanges livestock from one ranch to another, often using one ranch as winter pasture and another as summer pasture. If this type of lessee pastures a ranch only during the growing season, he could theoretically graze at the proper number of animal-units yearlong, yet create forage deterioration.

Still another obstacle is that the system must be simple. Informality is common among ranchers of the Edwards Plateau. Formal complicated documents often frighten them even though based on sound principles. The system of conservation lease agreements as presented here is an attempt to cope with all of these obstacles and at the same time correct the faults of existing agreements.

#### Basis for Lease Agreement

A base lease per acre is calculated from carrying capacity as determined by range condition

and site classification. Dyksterhuis (1949) defines range condition as, "The state of health or productivity of both soil and forage of a given range, in terms of what it could or should be under the best practical management." A site is separated only when a measurable difference in potential forage production is sufficient to justify different stocking rates. These two measurements of rangeland are the best at hand to determine carrying capacity and should be an indirect measurement of livestock production. A trained range technician should be employed to determine these factors for a given ranch. An average for a county or area should not be considered because each ranch unit has its own individual problems which necessitate examination by ranches.

The price factor is based on the value of producing animals or mother animals such as a cow, doe or ewe. These are chosen because this style of ranching is common on the Edwards Plateau. The lessor is given a share based on one-fourth of the potential production. This value can be altered if necessary.

#### Proposed Lease Formula

The proposed formula for the base lease is as follows:

$$\begin{array}{lcl} \text{Base lease} & \text{Total carrying} & \\ \text{per acre} & = \text{capacity} & \times \\ & \text{in A. U.} & \\ \\ \text{Producing} & & \text{Total} \\ \text{animal} & \times \frac{1}{4} \div & \text{number} \\ \text{value} & & \text{acres} \end{array}$$

The problem may be explained by use of an example. Assume that a 1,000 acre ranch has a recommended stocking rate of one A. U. per 20 acres or a total carrying capacity of 50 animal units. The value of one animal unit of sheep, goats and cows is as follows: Sheep, \$60; goat, \$45; and cow \$120. The average of these three classes of livestock is \$75 which is considered as the producing animal value. Applying the formula, the base lease price becomes:

$$50.0 \times 75.0 \times \frac{1}{4} \div 1,000 = 0.9375 \text{ or } 94 \text{ cents per acre}$$

The prevailing price of producing animals should be determined at the time of the lease agreement. If this should occur in an "off period," the expected price should be agreed upon. For long-term leases, both parties should agree to redetermine the price value at specified times. To cope with changing numbers of livestock types, the values of all three classes are figured in the average which introduces some difficulties. If the lessee should decide to graze goats only, the lease is high for a low valued animal unit. On the other hand, a lessee could graze a small ratio of sheep and goats and a large ratio of cattle and be obtaining a cheap lease for an animal unit with a higher value. The landowner is given the advantage with a stipulation that if the highest valued animal unit exceeds 50 percent of the grazing ratio, the lease will be raised  $\frac{1}{1000}$  of that value per acre and if the highest valued livestock type is grazed alone, the base lease will be calculated on its value. Otherwise, the base lease will be calculated from an average of all three.

In the previous problem, if the lessee should decide to graze 30 animal units of cattle of the recommended 50, the base lease would be raised 12 cents. If the lessee agrees to a ratio low in the high value livestock type and changes at a later date, the lessor should be compensated.

#### Lease Adjustments

Booker's (1950) system of compensating the lessor for rangelands with high carrying capacity and penalizing him for rangelands with low carrying capacity is also suggested here. In the humid portion of the Edwards Plateau, an average of one animal unit per 20 acres is suggested. The lessor should be compensated five cents per acre for each acre under 20 and should be penalized one cent per acre for each acre over 20. In the xeric portion, 25 acres

per animal unit are suggested as the average, but the lessor should be compensated three cents for each acre under and penalized one cent for each acre over.

This method of adjusting the base lease price is desirable because it encourages range conservation to the lessor and also allows a means for the lessee to pay for the extra available feed. For instance, if a range located in the humid section is in excellent condition and has an average grazing capacity of one animal unit per 12 acres, which is 8 acres beneath the specified 20, the lessee compensates the lessor an additional 40 cents per acre. Actually, he is paying \$4.80 for each animal unit which is approximately what he would pay in feed bills on poor condition rangeland. He should not have to feed on excellent range except during extreme prolonged drouths and, even with this, the feeding should be less.

The carrying capacity should be stated in animal-unit-months by seasons to cope with the "trot-line" lessee. Also, if the range is in good or excellent condition, the practice of harvesting excess grass during the winter months by increasing the over-all stocking rate with dry lambs, goats or steers can be employed without violation of the agreed stocking rate. If grass is sufficient for this practice to be employed, the lessor should be compensated. One-fourth of the gains in weight and yield of by-products such as wool

and mohair is considered fair compensation.

The lease should preferably be long-term. If conditions are such that a long-term lease is impossible, the lessor should be penalized an additional one-half cent per acre over the average. This is necessary only for extremely poor condition rangeland and is suggested because the lessee is not allowed to reap the benefit of the improvement created by his light stocking and monetary sacrifice. In all cases, a renewal clause should be included.

Dryland farming is hardly marginal in this area, but if cropland is present on the land unit, a value should be agreed upon and this value included in the total lease price. Hunting rights are often leased to out-of-town hunters for extremely high prices. The lessee should receive a portion of this lease because the wildlife are consuming forage paid for by the lessee. One-fourth of the hunting lease is a suggested compensation. The payment of conservation improvements, such as brush control, should be partially paid by the lessee of long-term leases. In all leases, agreement should be made on arbitration rights and inspection rights should be agreed upon. The inspections should be conducted by disinterested but properly trained parties.

### Summary

Leased lands constitute one-third of the land units of the Ed-

wards Plateau and leased lands are usually over-utilized. The faults of existing lease agreements contribute to this situation. A better understanding of proper land use by the lessee and lessor is the only stable manner in which this situation can be corrected. Until that time, lease agreements which will lead to proper range use should be employed. A system is proposed which is based on carrying capacity as determined by range condition and site classification. Other problems which should be considered in the formulation of a lease agreement are discussed.

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