

Determining Equitable Grazing Fees for Washington Department of Natural Resources Land

GRANT A. HARRIS AND WALLACE R. HOFFMAN

Associate Professor of Range Management, Washington State University, Pullman, Washington, and Supervisor, Division of Lands, Washington Department of Natural Resources, Olympia, Washington.

State Land Agencies Reorganized

A new concept in the pricing of range grazing fees has been put into use on the state lands of Washington whereby a public agency is directly sharing in the income of the livestock industry. This "new look" in grazing fees reflects a profound change in the entire philosophy of state land

management. Now the lands are administered impartially, following principles of sound management.

This was all made possible as the result of an extensive reorganization of land managing agencies by the Washington State Legislature. In 1957, six different departments and twelve commissions responsible

for state land management were combined into the Department of Natural Resources. Under the new law, the policies of the department are established by a five-man board, consisting of two political members (The Governor of Washington and the Commissioner of Public Lands) and three nonpolitical members (the Superintendent of Public Instruction, the Dean of the College of Forestry, University of Washington and the Director of the Institute of Agricultural Sciences, Washington State University) (Anonymous, 1957). The Commissioner of Public Lands is the designated administrator of the department. All employees, including the supervisor, are career people, insulated, more or less, from political pressures on the board, whose

policies they enforce. With the reorganization has come a healthy decentralization of authority, allowing the consideration of local problems on the ground where they have arisen.

The Problem

Washington is a land grant state. Upon obtaining statehood, she received federal grants for the support of schools and other governmental activities. Much of this land is in scattered ownership because Sections 16 and 36 in each township were reserved as school lands. However, it has been possible to block together some lands, making practical their operation as sustained yield units and permit ranges. At the present time, the Department manages approximately three million acres. Since all these lands were granted specifically for the support of certain institutions, the Department has a dual responsibility as manager:

1. Protecting and maintaining their value and productivity in the long term.

2. Obtaining the maximum cash income.

Therefore, these lands cannot be treated as public lands in the same sense that federal lands are public lands. By law, uses which provide immediate income take precedence over uses which may be important to the public but do not yield cash returns.

The state land ownership pattern has developed two distinct land management procedures, (a) where ownership is sufficiently "blocked-up," a grazing permit system patterned after that currently followed by the U. S. Forest Service has been implemented, and (b) the scattered parcels of land mentioned above are leased individually through auction bids by state administrators with somewhat less direct control of grazing management than on permit ranges. This paper describes the way the department establishes grazing fees

on the permit ranges described under (a) above.

Today, there are approximately 10,000 permitted cattle on the state permit ranges. Approximately 90 percent of these are cows and calves; the remainder yearling steers. In addition, the grazing of several bands of sheep is also permitted.

The lands under discussion are located on the east slope of the Cascade Mountains (Figure 1.) and support varying amounts of commercial timber — primarily ponderosa pine (*Pinus ponderosa*) Laws, Douglas fir (*Pseudotsuga menziesii*) (Mirb.) France, and lodgepole pine (*Pinus contorta*) Dougl. (Figure 2.) Consequently, logging also is an important supplementary use of these lands. Their grazing capacity averages about 15 acres per animal unit month.

The majority of the present permit ranges were National Forest lands prior to 1923. At that time they were transferred to the State of Washington in lieu of occupied state grants occurring within the National Forest boundaries. The state assumed the management of the transferred acreage and recognized the preferences held by the former forest service permittees.

Grazing fees were arbitrarily set at a flat rate of 50 cents per AUM (animal unit month). However, no written understanding, in the form of grazing regulations, existed between the state and the permittees until 1959, when the presently described regulations were formulated. The need for stabilizing regulations was recognized by both state administrators and permittees.

New Approach Tried

Examination of grazing regulations, including grazing fees, currently held in effect by the U. S. Forest Service, Bureau of Land Management, and other land managing agencies revealed that none was adaptable to the unique situation found on these permit ranges. Steps were taken, therefore, to establish a new body of regulations, including grazing fees, to define in writing the relationship between landlord and tenant.

The department decided to take the problem to the users of the land and ask their cooperation in writing the new regulations. With this objective in mind, it was proposed to the Washington Cattlemen's Association and the Washington Wool-

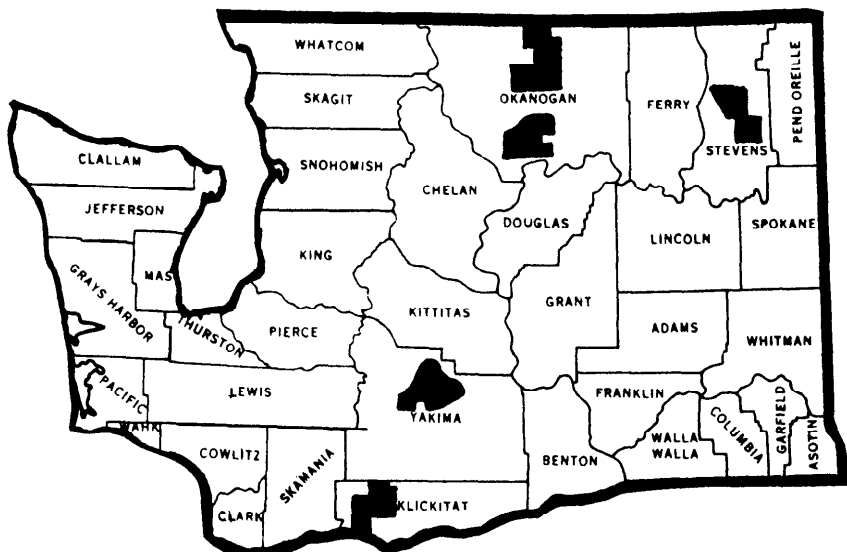


FIGURE 1. Location of Washington State Department of Natural Resources permit ranges.



FIGURE 2. The Department's ranges are comprised mostly of open timber types, where bluebunch wheatgrass (*Agropyron spicatum*) and Idaho fescue (*Festuca idahoensis*) provide the bulk of forage.

growers' Association that they work with the department toward this end.

Two committees were constituted early in the fall of 1958. The first of these was an "Advisory Committee," given the responsibility of advising the Board of Natural Resources directly on all matters concerning grazing regulations. Membership was by invitation of the Commissioner of Public Lands to key organizations having an interest in the management of these lands. Representation on the 11-man committee included five members from the Washington Cattlemen's Association, and

one member each from the Washington Woolgrowers' Association, Washington State Sportman's Council, Allied School Council, Forest Industry, Washington State University, and the Department of Natural Resources. While the stockmen were given a controlling majority of one vote, representatives of groups interested in the multiple-use aspects of the lands were also given a voice. This committee was composed of practical men, and it was expected that they would test the practical features of proposed regulations.

The second committee, titled

the "Technical Range Policy Committee," was given the responsibility of reviewing the technical features of the proposed regulations and providing technical guidance to both the Department and the Advisory Committee. Membership, again, was by invitation of the Commissioner. Each of the following agencies provided one member: U. S. Forest Service, Soil Conservation Service, State Department of Game, State Association of Soil Conservation Districts, Washington State University, and the Department of Natural Resources. The chairman of this group (the Washington State University representative) was also a member of the Advisory Committee, providing liaison between the two committees.

The Advisory Committee approach is given major credit for the success of the program. It provided an opportunity for free exchange of ideas between the administrators and the users. It was so successful in bringing administration and users' views together that it produced a situation wherein the users suggested to the administration a means of increasing grazing fees. In the history of range management, many technically sound grazing regulations have had to be abandoned or diluted because users have refused to accept them.

In action, the committees considered proposed regulations originating in the Department. The Technical Range Policy Committee screened these for technical soundness, and in some cases, completely revised portions of them. The Advisory Committee then considered the regulations both from the point of view of applicability on the range, and for the protection of the rights of sportsmen, timber producers, water users, etc. Several meetings of both committees, continuing through the winter of 1958-59, were required to complete the assignment. In the

meantime, the stockmen members had taken the proposed regulations home to their local livestock associations for debate and final approval. The completed regulations were transmitted to the State Board of Natural Resources from the Advisory Committee in the spring of 1959, with recommendations for adoption. They were adopted by unanimous vote of the board and placed in effect for the 1959 and subsequent grazing seasons.

Except for the grazing fee calculation procedures, these regulations resemble those of the U. S. Forest Service in general outline. The regulations:

1. Provide for long-term (ten-year) preference permits,
2. Protect the rights of prior users through the establishment of preferences,
3. Set upper limits on livestock numbers permitted for any one individual or organization,
4. Require commensurability,
5. Outline conditions for transfer of preferences, and
6. Provide for cancellation of preferences in the best interests of the state or for failure to comply with grazing regulations.

Management Objectives

Range management objectives of the department are defined in the beginning paragraphs of the regulations; because they prescribe the spirit of the entire document, they are reproduced here:

The general objective of the Department of Natural Resources in its management of state-owned range lands is to provide for the maximum utilization of the range resource consistent with the principles of multiple use and proper land conservation measures.

Coincident with this general objective, the Department will seek to:

1. Secure the highest possible return to the state under good management practices.

2. Perpetuate the organic resources on both the state lands and related lands through wise use, protection, and development.
3. Provide the best practical, social, and economic correlation in the use of state lands with adjacent lands.
4. Stabilize that part of the livestock industry which makes use of state land through administrative policies and management practices which conform to the requirements of practical operation.
5. Cooperate with range and other users through a decentralized administration on a district level, organized and authorized to settle local problems in accordance with local conditions.

First Proposals

The problem of establishing grazing fees provided the most lively discussion of all the topics. A rather thorough study was made of the various possibilities before the matter was finally resolved. The U. S. Forest Service (Sampson, 1952) and the Prov-

ince of Alberta, Canada (Campbell and Wood, 1951) use fees having some features thought desirable by the committee, but not entirely adaptable.

A flat fee, unchanging with varying economic conditions, did not appeal to either the Advisory Committee or departmental representatives. Both groups wanted to include a flexibility in pricing which would reflect ability to pay.

Everyone agreed that perhaps an open auction bid system would most nearly arrive at the true market value of the permits. However, the stockmen feared this method of price-setting and opposed it. They felt that, in individual situations, at least, the bid price might be completely out of line and result in serious hardship. It was recognized also that the uncertainty inherent in auction bidding would affect the stability of the established livestock operators and, in the long run, would likely be contrary to the interests of the Department of Natural Resources as well as to the local communities and the state as a whole.



FIGURE 3. In the spring, cattle are moved from private holdings in the valleys onto state permit ranges for a four-month summer grazing season.

A More Equitable Fee

A common means of establishing land rental prices is the capitalization of land values. A grazing fee could be established by calculating the income expected on the capital value of the amount of land required to furnish feed for an animal unit month. On farm lands or other single-use lands, this leads to a fairly straightforward conclusion. But where many other values are derived from the same acres as the range forage, it is unrealistic to expect the grazing fees to pay the entire capitalization value. For example, the lands in question produce timber of greater monetary value than the forage. How much of the capitalization value should be charged to timber, and how much to forage? Information which would allow such an apportionment was not available. Furthermore, land capitalization values are often seriously distorted upward in periods of economic prosperity by factors not directly attributable to the productive capacity of the land. Grazing fees based upon capitalization of inflated land prices would usually result in fees higher than the productivity of the land could justify.

Most products of the land are sold on the basis of the quantity actually harvested, as measured by units of weight or volume. Forage could thus be sold directly to the rancher by the pound. He could be charged for what was used, rather than for the number of acres where the stock spend the grazing season. This approach has some commendable features but fails for the lack of accurate and economical methods of evaluating the production and use of native forage plants. Also, there is no established price for native forage by the pound, nor standards for "grading" different kinds of forage according to their true or apparent value. On a theoretical

basis, it would be necessary, when using this method, to provide penalties for poor management, such as removing too much forage from "key" or "primary" areas within the range, or even for leaving useable forage on remote or secondary areas. Both would represent economic loss to the landlord.

The Formula For Cattle

In the ranching business, the one product which is carefully weighed and sold at an established price is the beef animal. If the landlord could receive a fair share of the beef or mutton produced on his range, he would be participating directly in the productivity of his land. This approach appealed to those working on the problem. But what could be considered a "fair share" of the product? The answer to this question comprised the work of the committees through several meetings. This is the formula which evolved.

$$\text{A.U.M. Fee} = \frac{L \times G \times S \times P}{M}$$

Where:

L=Proportion of the average stockman's investment assigned to land.

G=Average pounds of gain in livestock weight for permitted grazing season.

S=Landlord's fair share of gross land income.

P=Average selling price of cattle over the past year.

M=Number of months in permitted grazing season.

Consider factor "L" first. It was reasoned that the annual production of the total ranch unit, including private and state-owned lands involved, could be divided among the investment factors (cattle, improvements and land) on the basis of percent investment provided by each. In other words, if 50 percent of a rancher's capital is invested in land, then the land should be credited with 50 percent of the gross income from the ranch.

While this approach may be debatable on the basis of strict production management economics principles, in the opinion of those working with the problem it is sound; and it does provide a useful solution. The proportion of total ranch investment assigned to land varies greatly from region to region and to a lesser extent between ranches within regions. Stoddart and Smith (1943) compiled data which showed that the investment in land varied from about 30 to 60 percent between regions of the western United States. Based on this information and some local investigations, it was arbitrarily agreed that factor "L" would be set as a constant at 40 percent. This is somewhat below the estimated actual proportion and was purposely reduced for two reasons. First, state grazing lands lacked improvements and were less valuable, in general, than lands owned by the ranchers. Second, an effort was made to keep the estimate on the conservative side. (After five years of investment by the state in range improvements, it now appears that this percentage could justifiably be increased).

Calf gains over a four-month summer range season (Factor "G") were estimated at 200 pounds. Sample weighings during 1959 and 1960 seasons confirmed the estimate (Table 1). This is also considered as a constant in the formula.

Table 1. Cattle gains on Department of Natural Resources' mountain summer ranges, 1959 and 1960.

Range Unit	AVERAGE GAINS	
	Cows/ 4 mo. Season	Calves/ Month
	— — (Pounds) — —	
Cecil Creek	75	52
Salmon Meadows	37	49
Funk Mountain	67	50
Aneas	25	60

Next, consider factor "S". Not all of the 80 pounds of gain assigned to land (40 percent of 200

Table 2. Average annual price per cwt. of beef cattle in Washington (1951-61) and calculated and actual grazing fees (1952-63), Washington Department of Natural Resources.

Year	Beef Prices/cwt.	Calculated Grazing Fee/AUM	Actual-Fees Charged
1951	\$29.30	—	\$0.50
1952	24.20	\$1.75	0.50
1953	15.90	1.45	0.50
1954	15.60	0.95	0.50
1955	15.60	0.94	0.50
1956	14.10	0.91	0.50
1957	16.80	0.85	0.50
1958	20.90	1.01	0.50
1959	21.90	1.25	0.75
1960	19.30	1.31	0.88
1961	19.00	1.16	0.98
1962	20.00	1.14	1.06
1963	(Not available until February 1964)	1.20	1.20

pounds) can reasonably be claimed by the landlord. Expenses must be deducted from the gross gain or income. The ranch operator must maintain the brood cow through the unproductive part of the year; stand the risk of loss from poisonous plants, predators, disease, etc.; provide labor and management skill; handle the cattle on the range, provide bulls, pay veterinary fees; and meet other miscellaneous expenses. On the basis of other agricultural share-crop agreements in which the department participates, the landlord's share in this case was set at 30 percent by agreement within the Advisory Committee.

The price (Factor "P") used to calculate the value of the landlord's share is the average price of all beef cattle sold in Washington, as calculated and published annually by the U.S.D.A. (serial). It was recognized that the average price of all beef cattle would usually be slightly lower than that of feeder or stocker calves, the usual product of the summer ranges, but again it seemed desirable to be on the conservative side.

If the foregoing factors of the numerator are multiplied, $L \times G \times S \times P$ as indicated by the formula, the grazing fee for the permitted period will be the result. The monthly fee can be had by

dividing this product by the number of months (Factor "M") in the permitted season.

The foregoing discussion has emphasized the point that all factors, except livestock prices and length of grazing season, are arbitrarily defined as constants. This has been done with a definite purpose in mind. Calculation of individual factors for each ranch operation might at first consideration appear to be the best approach, but such a procedure would be a tedious and expensive job. On the other hand, the use of averages as constant factors has the advantage of stimulating good management by giving the efficient operator a bonus for any production above

average. Further, the state's income is insured against losses resulting from poor management by careless operators.

The previously described formula applies to an animal unit composed of a mature cow and her calf. Other age classes are charged on the basis of the equivalents agreed upon by the committee.

Animal Equivalents

Cow and Calf=1 A.U.M.

Bull=1 A.U.M.

Dry two-year old and older=1 A.U.M.

Yearling steer or heifer=

0.66 A.U.M.

Sheep.....Not convertible. Again, it was recognized that animals in the first three age classes listed above do not consume equal amounts of forage. However, the differences are small, the total numbers of bulls and dry cows are small, and it is not considered worth the trouble administratively to keep separate accounts.

Sheep Fees

Early in the discussion of the problem, it was thought that sheep fees could be derived simply by dividing the cattle animal unit month fee by a factor of five, using the common conversion of one cow to five sheep. This procedure was reasonable on the basis of forage consumed,

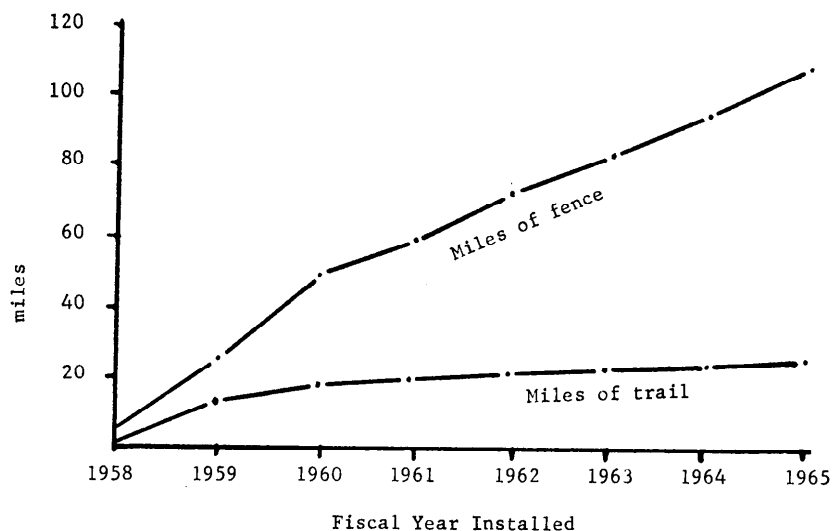


FIGURE 4. Installation of fences and trails since 1958 has led to improved management.

but did not meet the objectives of giving the landlord a fair share of the income, nor did it adjust the sheep grazing fee according to the operator's income from the sheep. This was borne out in the first year of operation when it was noted that, (1) lamb prices are almost never the same as beef prices, (2) lamb prices have their own cyclic variations somewhat independent of cattle prices, and (3) lamb gains on summer range per month per five ewes is usually somewhat greater than calf gains per month per cow. This last point is brought out by the Utah Agricultural Experiment Station Annual Report (1959) which presents data to indicate that with the usual 60 percent of twins, five ewes would produce eight lambs. These gained an average of 50 pounds each over a four-month summer grazing season. Thus, on the average, five ewes produced four hundred pounds of lamb in the same four months' grazing period that one cow produced a 200-pound calf gain. However, Washington sheep operators felt that eighty pounds of gain per ewe per four-month grazing season was too high, and would result in a grazing fee coming from the formula which would be out of line with established public and private land grazing fees. Through arbitration a compromise rate-of-gain of forty-eight pounds per four sheep months was agreed upon, this being slightly higher than calf gains in the equivalent cattle fee formula.

A formula specific to sheep was therefore developed by modifying factors "G" and "P" of the cattle formula, substituting sheep gains and prices. A sheep month fee is now calculated using average lamb gains of forty-eight pounds per ewe per four-month season, and employing the average annual sheep price published by the U.S.D.A. Agricultural Marketing Service, (serial) as for cattle.

Prior to use of the formula an unvariable fee of ten cents per sheep month was charged. In 1963, the first year of full fee under the new formula, twenty-five cents per sheep month will be charged. This is just one cent more than one-fifth of the 1963 cow month fee, but may vary greatly from this ratio. No differential is recognized for yearling wethers or ewes as for yearling steers and heifers, because there is so little demand for forage by these classes.

Transition Fees

By state law, grazing fees are payable in advance. Since there is no way of predicting what the average annual price of livestock will be before a given year has ended, a further adjustment became necessary. It was agreed that the previous year's average beef (or sheep) price would be used in determining the current year's grazing fees. This procedure had an additional advantage in that following a year of favorable prices, stockmen would be in a reasonably good economic position to pay higher grazing fees in advance, and vice versa.

We can test the new cattle grazing fee by applying the formula to average beef cattle prices of past years and inspecting the resulting grazing fees to see if they are reasonable. Table 2 shows that the calculated grazing fees for cattle would have varied from a high of \$1.75 in 1952 (following the peak 1951 cattle prices) to a low of 85 cents in 1957. During this same period, it is estimated that irrigated summer pasture in the valleys of central Washington was priced at \$2.50 to \$3.50 per AUM, and auction bids on range land were averaging between \$1.50 and \$2.00 per AUM on ranges with somewhat better improvements for handling livestock than found on state lands. It appears then that the formula provides an equitable grazing fee, with provision for adjustment to changes

in the livestock operator's income.

The adjustment from 50 cents per AUM under the old grazing fee schedule in 1958 to \$1.25 per AUM under the new formula (1959, the year of adjustment) would have placed a hardship on many operators if it had been made in a single year. It was agreed to make the adjustment over a five-year period in the following manner. The first year, one-fifth of the difference between the 50-cent fee and the calculated fee would be added to the 50-cent fee. The second, third, and fourth years, one-fourth, one-third, and one-half, respectively, of the difference between the adjusted fee and the calculated fee would be added. In the fifth year, the full calculated fee would be in force. Fees for the years prior to and during the new program are shown in Column 4 of Table 2.

These fee formulas are not static, but rather may be revised on future recommendation of the Advisory Committee to the Board of Natural Resources, or by action initiated in the Department or in the Board itself. Such revisions might reasonably result from such things as the reporting of new economic studies of factors in the formulas, or from changes in the relative values of state permit grazing lands due to the construction of improvements on these lands.

The department has recognized the need for range improvements and has been contributing to their construction since the new grazing fee formula was adopted. Before 1959, no state contributions had been made for improvements. Since this date, the department has diverted from 35 to 50 percent of the total grazing fees into improvements in an attempt to bring the range improvement program up-to-date (Figure 4). The department has initiated a policy of sharing costs of improvements with permittees on a 50-50 basis. Usually the de-

partment furnishes materials and the operator furnishes the labor.

Results Of New Regulations

Following four grazing seasons of experience with the new regulations and grazing fees, it is possible to make a preliminary evaluation of the success of the program. Both the department and the stockmen have expressed satisfaction. Some of the by-products of the program are:

1. Cooperation between department representatives and stockmen has improved. This has been reflected in the attitudes of individuals and in livestock association meetings. Existing complaints have been fully aired and most of them amicably settled by discussion.
2. The income to the dependent trusts has increased by 112 percent and may go higher, depending on future livestock prices.
3. The capital value of the range lands has increased by an estimated 150 percent.
4. Stockmen report better gains on livestock, presumably as a result of improved distribution, reduced competition from trespass stock, etc.
5. All cattle are marked for easy identification upon entering their specified allotments. This has resulted in better control of numbers entering and control of trespass stock.
6. Time of the stockmen has been saved in livestock handling.
7. No reduction in permitted stock numbers has been necessary in spite of the generally poor condition of the key range areas when the depart-

ment assumed administration in 1957. Surveys show that most of these key areas are now improving.

8. Several long-standing feuds between neighboring associations and permittees have been settled.
9. Respect of cooperating state and federal agencies, as well as stockmen, for departmental grazing programs has increased tremendously as a direct result of the successful implementation of these new policies.

Summary

In 1957, the Washington State Legislature reorganized the land management functions of the state government by adopting legislation which combined the activities of numerous boards and departments into a Department of Natural Resources. Personnel of this department have successfully established, through cooperation with livestock and agency groups, a workable set of grazing regulations and grazing fees.

The grazing regulations are patterned in large measure after those presently followed by the U.S. Forest Service.

The grazing fees follow a new concept: the state shares directly in the stockman's income from his operation. The monetary value of a constant percentage of the livestock gains made while grazing on state lands is reserved as a grazing fee. This method has changed grazing fees from a flat rate of fifty cents per AUM and five cents per sheep month to a variable fee which follows the price of the livestock. Grazing fees for 1963, the first year of full

fees following the five-year transitional period, will be \$1.20 per AUM for cattle, and twenty-five cents per sheep month. It is estimated that the cattle fee will likely fall between seventy-five cents and \$2.00 within the foreseeable future.

The newly adopted regulations and grazing fees have provided a satisfactory basis for stockman-department relationships through the first four years of their use. Fruits of the program include improved cooperation between department and stockmen, increased income to dependent trusts, increased capital value of state permit range lands, increased livestock gains, reduced trespass grazing, time saved in handling stock, improved ranges without reduction in numbers of permitted stock, promotion of improved relations between neighboring permittees, and increased prestige of the departmental program.

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