TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

TN - RANGE-38

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SUPPLEMENTAL ESTIMATES OF INITIAL STOCKING RATES

(applicable to Livestock and Big Game)

Information in this TN and the National Range Handbook supercedes Range TN-2 (Rev.), dated March 1960.

I. Introduction

We are assisting many rangeland users, with livestock and big game interests, who have little or no actual grazing experience records of their range resources--yet their job is to manage this resource. These people want stocking rate data. Many times they want it for other than direct management purposes. Past grazing history may not be available to these people. In these cases, the supplementary estimates are the primary tool available for developing a Guide to Initial Stocking Rates. This Technical Note gives guidance concerning the Supplemental Estimates of Initial Stocking Rates. And remember, they will not be needed if you already have access to good actual use records. Supplemental estimates of initial stocking rates may not be the best answer, but sometimes the only tool available. Know and understand when and where it's needed; and its limitations.

(1) Supplemental Estimates of Initial Stock Rates Considers The Forage Need - Forage Availability Relationship. To calculate this we need to know productivity of the range and what part of that productivity will be utilized by the animal during seasonal management periods. We also need to know forage requirements of the animal during seasonal management periods. They can be obtained by estimates made for individual range sites in different range condition classes (or different states of health for California's annual range). Extended over a period of years, such data indicate the approximate stocking rate and the variations that may be expected in favorable or unfavorable years.

II. Step by Step Method of Figuring

A. Forage Needed

In the "Glossary of Terms" used in Range Management, "Animal

Unit" (A.U.) is defined as follows: one mature cow with calf or their equivalent. The "Glossary" defines Animal Unit Month (A.U.M.) as follows: the amount of feed or forage required by an animal unit for one month. Stoddard and Smith lists the Animal Unit as a 1,000 pound animal. An animal unit (1,000 pound base) requires 800 pounds of dry forage for one month (includes minimum levels of digestible protein, T.D.N., minerals, vitamins, net energy, etc.). The rangeland user, however, is not specifically interested in this unit, he's interested in his unit, which may or may not be 1,000 pound equivalents. Generally, breeding programs on most ranching operations result in larger animals, particularly the brood cow. The brood cow with calf can easily average over 1,500 pounds. Therefore, if a rancher has cow/calf units averaging 1,500 pounds, it seems reasonable his unit would require approximately 1,200 pounds of dry forage for one month.

As SCS conservationists, we also have opportunities to assist with developing initial stocking rates for big game.

Using the standard base of 1,000 pounds/A.U., a mule deer is .10 of this unit (See Section 7.0 - National Handbook for Range and Related Grazing Lands). On this basis a 100 pound deer unit needs about 75 pounds of dry forage for one month.

Factors causing variations in the forage requirement include (applicable to livestock or big game):

1. Time of year grazing occurs (especially important with wildlife uses) migratory deer herds where critical winter ranges are involved).
2. Kind, size, sex, health of animals.
3. Weather or climatic conditions.
4. Grazing preferences (especially important with wildlife uses).
5. Plant composition (quality).
6. Condition or health of rangeland and energy units available for the animal.
7. Topography of the grazing area.
8. Distance to water.
9. Birthdate of calves and fawns (or young).
10. Inter-relationships of the seasonal-management periods.

When working with the rangeland user concerning initial stocking rate, be sure you and the decision maker understand which Animal Unit you are working with and the forage preference--requirement situation by seasonal-management periods.

B. Forage Available

Considering the cow/calf operation, the breeding herd should be kept below the average stocking rate of the previous five-years or longer if records are available. How much below the average will depend on how much production has deviated from the average. On California annual ranges, if total forage production is 2,000 pounds/acre, leaving 800 pounds of the current year's growth as residue in the key area leaves 1,200 pounds/acre usable forage. On California continental climate ranges, you identify with the decisionmaker, the key forage grass. At least 50% of the current annual production of the key species will be left at the end of the grazing season within the Key Area. However the objective is upward trend, not a specified degree of use.

Considering the mule deer in the "*browse seasonal-management period", at least 40% of the current leader or twig growth (key forage browse species) will be left at the end of the grazing season. Many times, other animals are in competition with deer for the other 60%. If production of the browse plant community is 1,000 pounds/acre, air dry, current year's growth, and the key browse species in the key area is one half of the total plant composition (or 50% of the 1,000 pounds), 300 pounds of forage material is available for use.

C. The Rate

Following is an illustration of the arithmetic relationships between Forage Needed and Forage Available. In every situation it must be considered hypothetical. It can never be considered categorical due to the variables.

ASSUME: (For Cattle)

$$\frac{\text{1,200 pounds A.U.M. (needed)}}{\text{1,200 pounds/acre (available)}} = \text{1 acre/A.U.M.}$$

ASSUME: For 100 pound Mule Deer)

$$\frac{\text{75 pound/deer/month (needed)}}{\text{300 pound/acre (available)}} = \text{.25 acre/deer/month}$$

or

4.00 deer month/acre

or

120 deer days/acre

* That season of year the deer use browse. Initial stocking rates for any animal must be developed by "seasonal management periods", since animals eat different forage in different periods of the year.

It must be explained to the rangeland user that these supplemental estimations in developing their guides to initial stocking rates figures may not consider the following factors (applicable to both livestock and big game):

1. Extent of the distribution problem (key area identification will help develop this). Also refer to California Technical Note Range-10.

2. Seasonal variation (the pounds per acre available should be the 5-year average).

3. Regrowth characteristics.

4. Co-existence relationships with wildlife, cattle, sheep, rodents, and other animals.

5. Time of year grazing occurs and energy unit requirement.

6. Adjacent or intermingled ownership pattern.

7. Adjacent or intermingled range sites, land types, uses, exposures, etc.

8. Managerial ability and management objective.

9. Past grazing history.

10. Seasonal-management period relationships.

It must be further understood by the landusers that initial stocking rate is a Guideline Figure only. It is only a tool to help establish a "lost" grazing history to more quickly effect Proper Grazing Use. The key to Proper Grazing Use is "ask the forage plant"! In other words, periodically check the conservation treatment unit against the Proper Grazing Use standards and specifications. The job is to teach the decisionmaker to do this on his own!

JAMES E. PRESTON
state range conservationist

WENDELL MILLER
state biologist

GLOSSARY

(1) Initial Stocking Rates - something to start from. The decision on the number of animals to start with is based largely on judgement and experience with similar sites over a period of years. But it's specific for a certain time period only. It can be adjusted with no harm if it's done promptly when needed. The selection of an initial stocking rate for a given pasture is a planning decision. This decision is based on interpreting the range resource inventory, alternatives available and objectives of the decisionmaker. These rates consider proper use of the range.

(2) Guides to Initial Stocking Rates - the assembly of actual use records and supplementary estimates of initial stocking rates from which "guides" can be developed. It is part of the basic range resource inventory interpretation. These rates are essentially approximations of the average (must be flexible for "poor and good" years, etc.) to support grazing animals at the inception of a resource development and management program. The "Guide" is most meaningful when "actual use records" were the primary factor in its development. These "guides" should be in a constant state of development and improved in quality as "actual use records" unfold.

Use of these "Guides" may include data on the intensity of grazing that is consistent with judicious resource management, planning balanced forage and feed needs for each seasonal management, or determining relative values of plant communities to assist the rangeland user in a land use management decision. In many planning situations, the deer are already a part of the range. What is the competition relationship between the livestock and big game? Are the deer using different forage at different times of the year or at the same times of the year?

(3) Actual Use Records - the grazing history of individual range sites. The experienced rancher may not have this written down and he may use different termingology. These records represent his decision in range management and often determines the long-range success or failure of his operation.

(4) Judicious Resource Management - the successful operation of a system of range management requires a good deal of knowledge about the specific range resources involved.

a. Must be able to recognize the important forage plants at any season of the year.

b. Must know how early the range can be safely grazed.

Glossary - Cont'd

c. Must know how the different range sites respond to grazing.

d. Effect of different intensities of use - which plants tend to increase or decrease with intensity of use.

e. How closely the range can be grazed without damage, and what it looks like when this point is reached.

f. Also need to know what condition the range is in now and recognize whether it is improving or going downhill.

(5) Seasonal Management Period - Forage Systems within the year. An example is the annual grass of California for cattle. (Green-February-May; Dry-June-September; and Critical-October-January). These periods can be changed through management, but are always the basic considerations for the management decisions.

(6)* Carrying Capacity - in its true sense, the maximum number of individual animals that can survive the greatest period of stress each year on a given land area. It does not refer to sustained production. In range management, the term has become erroneously synonymous with grazing capacity. See grazing capacity.

(7)* Grazing Capacity - the maximum stocking rate possible without inducing damage to vegetation or related resources.

(8)* Stocking Rate - actual number of animals, expressed in either animal units or animal unit months, on a specific area at a specific time. Also, a measure of a seeded stand. Syn., grazing rate.

* A Glossary of Terms Used in Range Management - 1964
Compiled and edited by "Range Term Glossary Committee" Donald L. Huss, Chairman

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