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Big Game Range Management

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RANGE management has been generally considered in the past as the administration of domestic livestock grazing land. Only in recent years have big game species come definitely into the range management picture. On some areas they are now the main consideration in the plan of proper range management. Proper management of livestock range has to do essentially with maintaining a proper balance between forage and livestock so that the range will be kept at its maximum permanent production. This is also true of big game range management.

Managing game is more difficult and control measures are sometimes complicated. The same basic principles, however, are involved. Big game management, therefore, is essentially range management. The number of grazing animals, wild or domestic, that a range can support on a sustained yield basis depends upon the available forage resources and the proper use of the important forage plants.

In the management of big game range, three fundamental things must be determined: (1) what plants do game eat, and which ones are the principle or key species; (2) what constitutes proper use of these species; and (3) how can degree of use be measured as a guide to proper balance between game and forage.

In determining the plants which game eat, a comparatively few highly palatable ones will stand out as the more important forage plants upon which utilization of the range should be based. These are key species. If the area is so grazed that these plants are permitted to maintain themselves and reproduce, the range as a whole will be kept at its maximum permanent carrying capacity. Management of a range cannot be based upon the use of all species present or upon general

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types. Under such practice there is danger of the highly palatable plants gradually being killed out—unnoticed until serious deterioration is under way. The decrease in palatable plants is accompanied by a decrease in carrying capacity of the range, and accelerated overgrazing results. Such has frequently been the case on overstocked game ranges. Over-protection may prove and often has proven the opposite to conservation.

The proper use of key species on the critical areas of a game range will serve as a practical and efficient guide to proper stocking of big game ranges. Key species can usually be determined readily by studies of palatability, utilization, and growth on the open range, within enclosures, and on properly grazed areas; also by making seasonal stomach content analyses.

The determination of what constitutes proper use of the key species involves detailed studies under different intensities of grazing over a considerable period of time. Detailed studies on representative plants grazed naturally, supplemented by artificial clippings, and closely correlated with growing conditions, are believed by the author to give reliable results.

The study of proper use of key species under natural browsing can be done by careful measurements of annual growth and utilizations, and increase or decrease in size of plants on (1) well distributed permanent utilization plots on the open range which would receive a wide variation of use; (2) plots within takedown enclosures where use can be controlled to the desired degree; and (3) on totally protected check plots. Sufficient plots should be established to provide for several plots falling in each utilization class. A comparison of forage production, growth, and reproduction of plants under different intensities of grazing over a period of years will serve as a basis for arriving at the proper use which key species should receive on the range. Proper degree of use may vary greatly with the different species. It may also vary with the same species on different areas because of variation in site conditions but a general average can be determined by proper distribution of study plots.

Perhaps the most difficult thing of all in efficient management of game or livestock range is the determination of annual utilization at the close of the grazing season. Ocular estimates are likely to vary greatly in any year even among
expert range men. A yard stick for measuring range utilization is needed. The author offers the following as a possible solution.

To begin with it is necessary to know the amount of growth produced before the amount eaten by grazing animals can be determined. Annual production may vary greatly from year to year with differences in climatic conditions. This brings out the necessity of careful correlation between utilization of a range and growing conditions. A range may be heavily grazed during poor years and lightly grazed during good growing years with the same number of animals using the area. Growth measurements of key species taken before heavy graz-

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ing occurs give not only a basis for determining utilization but also serve as the best indicator of growing conditions. This relative measurement of annual forage production and growing conditions permits proper interpretation of existing range use during any year in relation to the permissible use that the range should receive.

A relative index to annual forage production may be obtained by detailed measurement of the annual growth of key species on a few well-distributed, representative plots on the critical areas of the range. Different species lend themselves to different methods of study. On small plants the entire annual growth may be measured. Representative twigs may be tagged for studying shrubs because of the excessive amount of work involved in measuring growth on the entire plant.

At the close of the grazing season the remaining annual growth of the key species on the selected plot may be measured and the utilization on these plots determined accurately. These utilization measurements should be correlated with general range conditions. After measuring utilization on several plots, ocular estimates can then be made with some degree of accuracy over the range is general. This provides a reliable measurement of current utilization, and when interpreted in the light of existing growing conditions, furnishes a reliable index to the proper stocking of a range.

Big game counts are useful and a relative number is often necessary for a working basis. Counts are seldom sufficiently accurate, however, to be used as a basis for stocking a range. The proper utilization of key plants is the ultimate criterion as to the optimum or maximum big game population which should be maintained on a range. By correlating the use of key species with growing conditions, any appreciable fluctuation in big game population may be detected without undue delay and adjustments made accordingly.