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Range Allotment Analysis *and Management Planning*

The Story of Range Survey on the
National Forests and National Grasslands
and Planning for Management

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MAY 12 1969

U.S. FOREST SERVICE
WASHINGTON, D.C.



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About 20,000 ranchers and farmers graze livestock under permit on the National Forests and National Grasslands. These livestock owners work with the U.S. Forest Service in finding the best way to graze the land.

Areas called grazing allotments—more than 11,000—are assigned to individual permittees or groups of permittees.

Continuing analysis of this range helps to point the way to best grazing use of the forage while considering protection, development, and use of other resources of the land.



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Issued July 1964

This two-part booklet presents the essential elements of range analysis. Each part parallels the Forest Service motion picture *Range Allotment Analysis*, which shows the work in

greater detail. No attempt is made in the booklet or the motion picture to show all the acceptable methods for collection and handling of analysis data.

Part 1

RANGE ANALYSIS

Range analysis is the systematic collection and evaluation by allotment of data on—

- Vegetation types.
- Suitability for livestock.
- Range condition and trend.
- Tentative grazing capacity and forage use.
- Range improvements.

These data provide the basis for management plans and decisions.



PRIME

OBJECTIVE

A prime objective of analysis is to provide the basis for optimum range use in coordination with wildlife, watershed, timber, and recreation.

ANALYSIS BEGINS

The District Ranger, his Assistant, and the permittee work together in beginning the analysis.

Cooperation of grazing permittees is needed in planning for systems of management that will be effective when applied.

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Vegetation Types Are Mapped

The value of land for grazing varies by kind or type of vegetation. The different vegetation types are found and later examined.

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Preliminary mapping of vegetation types is done from a vantage point. The technician plots type boundaries on an aerial photograph using a stereoscope.

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RANGE

SUITABILITY

IS DETERMINED

Much of the land is suitable for livestock. It is accessible, produces forage, and can be grazed without damaging watershed or other resource values. Suitable areas are located and marked on aerial photographs.



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Suitable Range

PRIMARY

Areas like that in the foreground that are readily accessible and have water—areas that cattle naturally prefer—are called primary range.

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SECONDARY

Suitable areas that are grazed less than their proper degree or are unused when the primary range is used enough, are called secondary range. Improvement of management sometimes changes secondary range to primary.

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Unsuitable

Range

Areas that cannot be grazed without damage or that have little or no value for grazing are classified as unsuitable. Among the factors considered in making this classification are inherent ability to produce forage, soil stability, and topography.

Unsuitable range is mapped out during range analysis.





RANGE CONDITION AND APPARENT TREND

An important part of range analysis is getting an index of the condition—the health—and apparent trend in condition of the vegetation and the soil stability. Measurements and observations are taken on each area.

One procedure is the pace transect. The pace transect provides data on—

- Plant cover.
- Plant composition.
- Vigor.
- Soil stability.
- Related items.

A three-quarter inch loop is used at one hundred places on an area. “Hits” on vegetation or soil cover are recorded. These data provide the basis for classifying the sampled area as to condition and apparent trend in condition.

This insert is a “hit” on moss.

Plant Vigor and Soil Stability Are Rated

Vigor of plants sometimes is useful in rating condition and trend. Length of seedstalks is one index to plant vigor. These measurements are compared to a standard made on a similar area where the plants are known to be vigorous.

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Amount of current erosion and susceptibility of the soil to erosion are determined. From this a rating of soil stability is made.

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Condition and Apparent Trend Data Are Summarized



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The amount and kind of plant cover, its vigor, and the stability of the soil are determined from the data.

Other items are evaluated, including shape, size, and age of browse plants, and wildlife use.

These data are compared to a standard that defines different condition levels for the kind of range sampled—a score card. The end product is an estimate of the condition and apparent trend in range condition.

Range allotment analysis is not yet complete. There are more field tasks to do, data to be summarized and evaluated, maps to be drafted, a plan of management to be made.

These operations are presented in Part 2 of this booklet.



The elements of range analysis apply to National Forest ranges in the South. On this well-managed forest land, cattle are fed supplements while grazing wiregrass forage. F-501692



Part 2

Part 1 of this booklet presented—

- Planning the job.
- Mapping vegetation types.
- Suitability classification.
- Condition and apparent trend analysis.

In Part 2 the job is completed. A plan of management is prepared and put into action.

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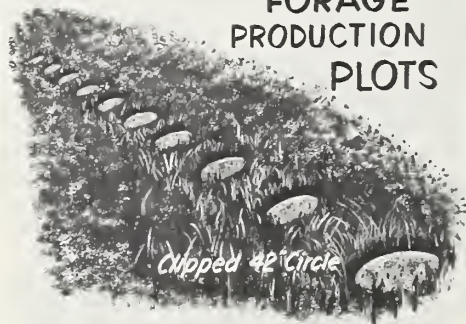
GRAZING CAPACITY IS ESTIMATED

The rate at which the range can be stocked is determined. This can be done in several ways—

- Comparison with a similar area of known stocking.
- Actual use over a long time as related to trend in condition.
- Forage production available for use.

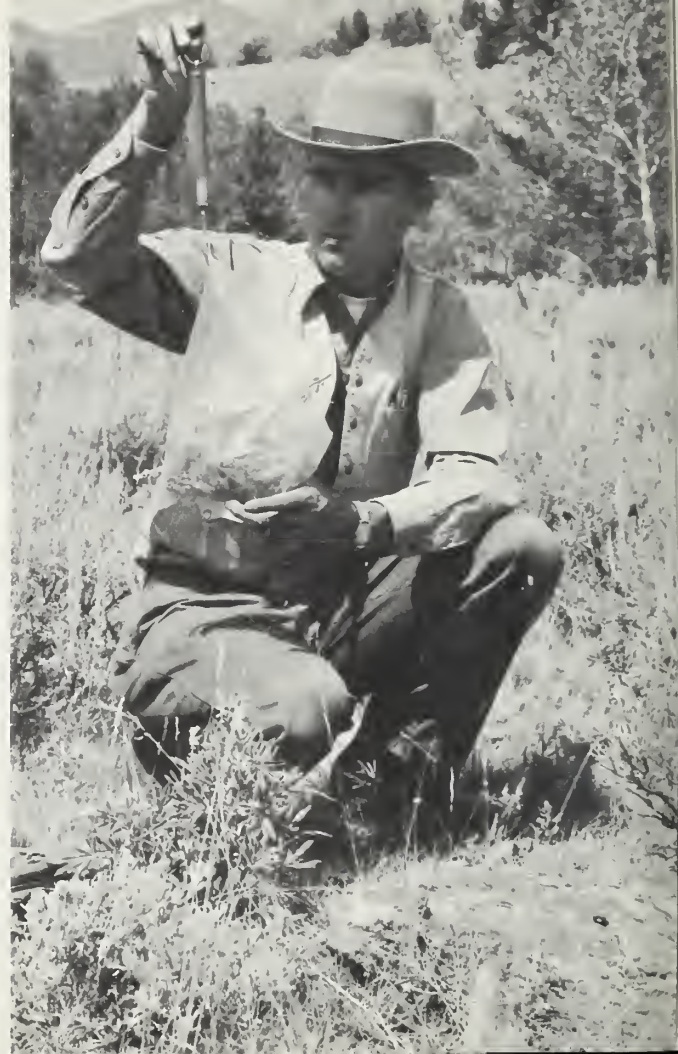
Each method can provide a reasonable estimate. However, *all must recognize that grazing capacity changes—it varies from year to year, and even from season to season.* Initial estimates of capacity are confirmed or adjusted by observations and measurements over the years.

FORAGE PRODUCTION PLOTS



Forage production can be estimated by clipping and weighing vegetation from a number of plots. Green weights are converted to air-dry weight. From these data can be obtained an index to grazing capacity.

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SOILS ARE EXAMINED

Information on soils is used to define site and decide on management opportunities. Texture and structure are determined for various depths in the soil profile. These and other data on soils indicate the productivity of the site.



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BIG GAME PRESSURE IS ESTIMATED

Big game and livestock often use the same areas. Estimates of big game use are made so that the total grazing pressure is known. This information is used in determining equitable distribution of forage between the two kinds of animal use. In addition, food, cover, and water requirements of other wildlife and fish also are considered in analysis.

Number of deer or elk pellet groups (lower right), and form and age class of the important browse plants are indexes to big game use. The mature bitterbrush plants (upper right) have little or no hedging.

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**DEVELOPMENT
POSSIBILITIES ARE
CONSIDERED**

The permittee and the District Ranger consider the needs and opportunities for getting better management through salting, fences, water developments, and other improvements.

UTILIZATION CHECK AREAS ARE ESTABLISHED

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A series of paired plots is used to check forage utilization. One plot of each pair is caged; the other is left open to grazing. Near the end of the grazing season, both plots will be clipped. The difference in the weights

of the clipped plant foliage is an index to how much forage was used on the site. It also is helpful in determining when the range has been grazed enough for the season.

LONG-TERM TREND PLOTS ARE ESTABLISHED



An index to condition and apparent trend in condition is obtained from pace transects or closely related procedures during analysis. A long-time index to range trend is obtained by the Three-Step Method. Permanently located plots are established; data are taken from them periodically. The three steps are—

1. Measurement and observation of vegetation and soil stability on transects and the plots they sample.
2. Field summarization of the data and classification of condition and trend.
3. General and closeup photographs from permanent photopoints.

Plots are located on representative use areas away from concentration areas, but on primary range.

Sampling the Trend Plot

A tape is stretched between fixed stakes. Using a "loop," records are made of the kind of vegetation or soil cover at each 1-foot point along the tape. Supplemental information is taken from the transect plot. Three-step trend plots are periodically remeasured. The transect data, general observations, and photographs provide an index to trend in range condition on the sampled area.

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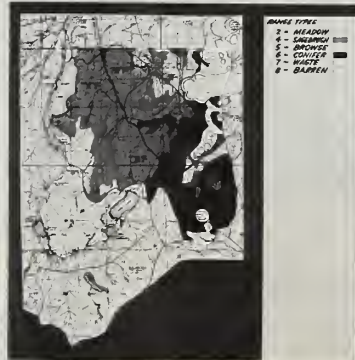
FIELD DATA ARE COMPILED AND EVALUATED

The findings are summarized; vegetation type, suitability, and condition-trend data are transferred from aerial photographs to planimetric maps (left). Completed maps and overlays show this and other management information.

The permittee discusses the data with the District Ranger and his Assistant and helps to develop a practical system of management.

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X BAR ALLOTMENT, RANGE ALLOTMENT ANALYSIS, VEGETATION TYPES



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A MANAGEMENT PLAN IS WRITTEN

The plan is a guide and working tool for both the District Ranger and the permittee, who work together in its development. A good plan establishes long-term, feasible management goals and shows how to reach them. It considers past history of the allotment and correlates range use by livestock with other resource uses. The plan is frequently reviewed and updated when changing management needs are required.

Each year an annual plan is prepared from the management plan to serve the permittee as a practical guide for grazing his livestock.

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MANAGEMENT IN ACTION

Good range use depends upon application of sound and practical methods outlined in the Management Plan. The basis for management in action is information obtained in Range Allotment Analysis and Management Planning.

Deteriorated but productive sites (left) are seeded to grass. Better forage plants are released (center) by spraying the undesirables. Salt is placed (right) to draw livestock to lightly used areas.

Stock-water ponds (left) are developed. Water is hauled (center) to dry ranges. Cattle are moved (right) to fresh feed



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Cattle are moved (right) to fresh feed when the range is grazed enough.

All these things are geared to full and productive use of the range resource in keeping with the needs and requirements of other resource uses and values of the Federal lands administered as National Forests and National Grasslands.



NOTES

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