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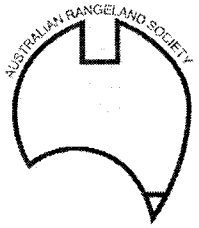

The Australian Rangeland Society

RANGELAND ASSESSMENT IN N.S.W.

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INTRODUCTION

Rangeland monitoring in its various forms is recognised as being important to the understanding of rangelands and to the successful development of rangeland management systems.

Management options in rangelands are largely limited to the manipulation of the intensity and duration of grazing pressure and the infrequent use of prescribed burning.

The understanding of range systems depends greatly on the knowledge of the spatial distribution of like types of country (range types) and on an understanding of the reactions of those range types to applied stimuli. Therefore any Range Assessment Program needs to take account of the dual strands of Range Inventory and Range Monitoring.

Range Inventory

Within NSW, Conservation and Land Management (CaLM formerly Soil Conservation Service) has had a long involvement in the mapping of the semi-arid rangelands. The initial inventory map of the semi-arid rangelands of N.S.W. was produced for the S.C.S. by Beadle (1948). In more recent years CaLM has carried out two levels of land inventory mapping; Land System Maps - for a regional base and Property Plans (PP) - on a property level. The land system maps were developed for the broader use of the land researcher/administrator so that regional planning can be done on a resource related basis. The details of PPs are appropriate for the determination of individual property management and are particularly useful in determining range assessment site locations.

Range Monitoring

In rangelands the outcome of a particular land use or management strategy cannot be predicted with any degree of certainty. Rainfall is variable, episodic climatic events have a disproportionate impact on the country and interactions between vegetation, grazing and fire are complex. This spatial and temporal variation dictates that the most appropriate knowledge gathering exercise in the rangelands is through the monitoring of the response of the rangeland to climate and management over time.

The Present Monitoring System

From trials and analyses of various techniques, the present monitoring system has been developed for N.S.W.

a) Site Location - Major range types have been identified from land system maps with sites being located on representative areas.

b) Site Characteristics - Each site is selected on the basis of parameters such as distance from permanent water (1.5-3.0 km), ease of access, representativeness etc. The sites are located on areas of uniform country and are 500 m x 500 m. Within this, a central area of 300 m x 300 m is measured.

c) Measurements

   1. Chenopod Shrubs: measured, where significant numbers are present, using belt transects to obtain density readings.

   2. Woody Shrubs and Trees : Percentage canopy cover of shrubs and trees by step-point sampling is used. Seedlings and juveniles are recorded on pasture quadrats.

3. Ground Species - Pastures: the modified Dry Weight Rank (DWR) and Comparative Yield (CY) methods (Friedel and Bastin 1988) are used to measure composition, biomass and species frequency.

4. Soil Surface Characteristics: The soil surface within each quadrat is assessed for both soil erosion status and soil surface stability.

5. In addition to the soil-vegetation measurements, general recording of other parameters is made. These include:
   - A photograph of the site.
   - Landholders stocking figures for the paddock
   - Nearest rainfall recording
   - General observations as to seasonal conditions, fire history, pasture utilisation levels, evidence of feral animal activity etc.

d) Analysis - All site information is entered into a central database for analysis. Direct entry via electronic recording is operational.

Additional Range Sites

The above details the main Range Assessment Program that is being implemented by CaLM in semi-arid Western N.S.W. Additional information on range condition and trend will also be obtained from related programs.

a) Research and Special Sites - If suitable for the requirements and aims of a research or investigation program, the methodology for the range monitoring site program is to be applied to that particular investigation. This may be used for vegetation studies in association with land rehabilitation techniques, exclosures, grazing trials etc.

b) Grazier Pasture Assessment Sites - This program has been implemented for several years and is based on the premise that the best people to assess the rangelands are the managers themselves.

The information gained from these studies will be used to complement the general information acquired under the Range Assessment Program.

OVERALL VIEW

Within the Western Region of N.S.W., CaLM has a considerable amount of data relating to land resources and to land management. The Range Assessment Program is aimed at linking these together and increasing the amount of available land management data.

The Range Assessment Program also has a specific aim to involve the direct land managers, ie the landholders, in the assessment process. The program depends on the land manager for a significant input of data and in discussions of changes in the rangeland over time. The value of this interaction between the Range Manager and the Range Advisor cannot be over emphasised.

There has been considerable discussion on the frequency of measurement. At this stage annual measurement of the monitoring sites is carried out. This may be modified in the future to allow more sites to be measured, but at wider intervals. Analysis of data collected over the first five years of the program will help clarify both the appropriate time interval between measurments and the degree of detail required in the measurement process.

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Beadle, N.C.W. 1948. The Vegetation and Pastures of Western NSW. Soil Cons. Serv. of NSW.

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