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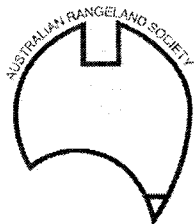
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# LAND RESOURCE SURVEY AND LAND CAPABILITY ASSESSMENT AS A PROPERTY MANAGEMENT TOOL IN THE ALICE SPRINGS REGION

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## ABSTRACT

*The land resources of pastoral properties representative of the Alice Springs region of the Northern Territory are being mapped and management strategies for the different land types are being formulated. This work has been undertaken to provide pastoralists with management information specific to their properties in a form which is easy to understand and use. A detailed map (at the scale of 1:100,000) displaying land units, station tracks, waterpoints, fences and other infrastructure is produced, accompanied by written management information for each land type. This information allows pastoralists to identify areas susceptible to grazing and erosion and to plan for spelling and woody weed control by providing an overall view of the property's resources in relation to infrastructure.*

## INTRODUCTION

The Alice Springs region, which encompasses the southern third of the Northern Territory, is arid, with a mean annual rainfall of approximately 260 mm, and any one rainfall event being highly unpredictable. Land use therefore consists predominantly of extensive cattle leases. As with other pastoral regions of Australia where rainfall is unreliable, the large scale of properties and variability of the vegetation and landscape, often over small areas, make stock control and sustainable land management difficult.

Therefore, for the pastoral industry to practice better management, pastoralists require, in a readily useable format, property management and planning information which can be used to identify problem areas and offer beneficial solutions. Pastoral management information has been available to NT landholders for quite some time, through the Department of Lands, Planning and Environment's (DLPE) Resource Management Division (formerly the Land Conservation Unit of the NT Conservation Commission), the Commonwealth Scientific and Industrial Research Organisation and the NT Department of Primary Industries and Fisheries. Property management has greatly improved in recent years, especially since a program of stock control was implemented during the early 1970s to combat tuberculosis and brucellosis in cattle. However, there is still room for improvement in the areas of road, fence and water point placement and pasture utilization and a need to constantly review the capability of the land to sustain new management options for alternate land uses.

Most of these management problems are not unique to central Australia and have varying importance in other areas. Some Australian States are therefore attempting to match pastoral land use with the capability of land to sustain pastoral production based on land capability planning, a process also recommended by the Australian Conservation Foundation (policy no. 47: Arid Lands Policy) and Northern Territory Landcare (Landcare NT 1992).

## THE NT APPROACH TO PASTORAL PROPERTY MAPPING

The Alice Springs region has been mapped into land systems at a scale of 1:1,000,000 by Perry *et al.* (1962). Descriptions at this scale are suitable for the definition of pastoral land but have proven too broad for property management and planning because a land system contains a mosaic of several vegetation types of differing overall palatability (Pickup and Chewings 1988). The inherent variability of land system maps limits their value for deciding, for instance, the optimum water point location to maximise productivity but avoid impacts on sensitive areas.

As a more practical alternative to land system mapping, the Resource Management Division of DLPE is currently using 1:50,000 aerial photography to map pastoral properties into land units at a level of detail consistent with the scale of management. This approach is unique in Australia's rangelands. Land units are separated on their pastoral characteristics, which allows management implications to be formulated for each land type. Landholders are supplied with a property report containing a colour land unit map at a scale of 1:100,000, generated by the DLPE Geographical Information System (GIS). The map includes accurately positioned roads, fences and other infrastructure, located using a Global Positioning System. Other information provided includes a detailed description of the landforms, geology, soils and vegetation of each land unit. This information can be manipulated on request to produce theme maps. These might highlight, for example, areas which respond best to spelling or areas where woody weeds or erosion might be a problem or show the consequences of shifting fences, tracks and bores.

These reports are being used in conjunction with extension support in areas such as soil conservation, the development of monitoring systems and other aspects of property management planning provided by DLPE and other agencies.

## **CONCLUSIONS**

Currently 13 pastoral properties in the Alice Springs district (Alice Springs and Barkly Tableland regions) have been completed, with requests from pastoralists for land resource information currently exceeding supply. The demand for mapping by pastoralists can be attributed to a number of factors. Firstly, the accuracy and detail of the land unit maps mean that pastoralists are provided with an accurate view of their property's resources at an appropriate scale for every-day property planning. Secondly, GIS allows a range of theme maps showing different management issues to be tailored to meet the specific needs of individual managers. Finally, the accompanying report provides a guide to management problems and solutions for each land type.

In the future, with the growing use of GIS and GIS-generated products by government and private sector organisations, it is feasible that at least some of the pastoral industry will acquire GIS (e.g. ARC VIEW) and use it to enhance their property management through the manipulation of land resource, rainfall and stock data. Already in the Barkly region some of the larger pastoral companies have expressed interest in acquiring GIS systems.

It is proposed that a greater amount of pastoral management information will be generated by DLPE in the future and this will include such products as computer generated recommendations for the placement of waterpoints to achieve the greatest uniformity in grazing pressure and a greater variety of management theme maps.

## **ACKNOWLEDGEMENTS**

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## **REFERENCES**

- Landcare NT. (1992). Northern Territory Decade of Landcare Plan. Government Printer of the NT.
- Perry, R.A., Mabutt, J.A., Litchfield, W.H., Quilan, T., Lazarides, M., Jones, N.O., Slatyer, R.O., Stewart, G.A., Bateman, W. and Ryan, G.R. (1962). General report on lands of the Alice Springs area, Northern Territory 1956-57. Land Res. Ser. No. 6, CSIRO Melbourne.
- Pickup, G. and Chewings, V.H. (1988). Estimating the distribution of grazing and patterns of cattle movement in a large arid zone paddock - an approach using animal distribution models and landsat imagery. *Int. J. Remote Sensing* 9: 1469-1490.