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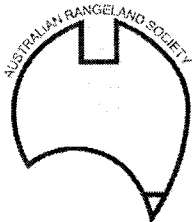
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DEVELOPMENT OF COMMUNITY BASED LAND MANAGEMENT STRATEGIES IN THE SEMI-ARID RANGELANDS

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INTRODUCTION

When you consider the state of land management in the semi-arid rangelands over the time of European settlement, it is fair to say that we have actually been managed by the land itself. The introduction of plants and animals, changes to fire regimes, provision of farm water supply, control of dingoes in the sheep rangelands - has resulted directly and indirectly in massive changes to the soil and the structure of the vegetation communities. We have reacted to changes but have been poor managers of this change.

If the negative trends of woody weeds increase, pasture decline and soil erosion caused by uncontrolled grazing are to be reversed then a significant and sustained effort is required.

One part of the reversal process lies in co-operation between individuals, groups and agencies. Collaborative projects provide an effective means of gaining a better understanding of natural processes, developing appropriate technology and strategies aimed at managing the pastoral environment in a positive direction.

An additional part of the reversal process is the required changes to the structure and functioning of institutions and government to ensure they remain sensitive and supportive to community needs. This can be achieved by aiming at the creation of an "environment for planning" for land managers rather than the traditional emphasis on "production of plans" by the institutions themselves (Tatnell 1992).

The following paper describes the evolution of land management concepts, programs and strategies in the Broken Hill district over the past six years.

TECHNOLOGY DEVELOPMENT AND EXTENSION

Traditional "extension" creates the image of the agency expert (full of knowledge from the laboratory) convincing the landholder (the empty but receptive vessel) to adopt something new. This perceived linear flow of information has become ingrained in institutions (Ison 1990) and unfortunately still exists in the minds of some landholders who expect us to have all the answers.

Traditionally, the process of developing new knowledge from research and extending that research to landholders has been expensive and slow. Institutions which have developed new technology have often had problems in extending this technology to adoption stage.

The development and ready acceptance of "state of the art" technology in the Broken Hill district has been notable over the past six years in the areas of scald reclamation (Tatnell 1990), rangeland rabbit control (Tatnell and March 1991) and woody weed control. With the value of hindsight, from an institutional perspective, this is probably the result of an ability to:

- Recognise landholder needs and demands for technology
- Understand the nature of the resource to be managed
- Work with landholders to develop the technology
- Ensure that landholders have a stake in the technology
- Continually investigate, evaluate, modify and adapt the technology
- Ensure there is vertical integration of associated technologies
- Ensure there is vertical integration of post application management
- Promote successes to the broader community
- Optimise broader community inputs
- Privatise the ownership of the technology
- Continue to develop associated technologies

GROUP FORMATION

The first two landholder groups, Pine Creek and Topar, formed in the Broken Hill District before federal funding became widely available for landcare. Formation resulted from the recognised need to pool resources, to assist in the efficient running of heavy machinery in remote areas, and to facilitate the exchange of management information. Other benefits of landholder groups were acknowledged from experience in Western Australia and the United States.

LANDCARE

On formation, the Pine Creek Group had decided to concentrate on rabbits while the Topar Group focused on woody weeds. When federal landcare funding became available these two existing groups were in a prime position to expand their program (Pine Creek and Topar Landcare Achievements 1990 to 1991).

Landcare funding stimulated other groups to form. During this period there was active discouragement of the formation of small isolated groups in the district. Fire Brigade boundaries (which mesh together) were used as a recognised community area. Each landholder within the boundary is given an equal opportunity to participate. Total participation of all properties within the boundary has not been required but is actively encouraged. The average size of each group is 1 million hectares.

Regardless of the original motives for the formation of groups, a growing understanding of the benefits of involvement in land management programs has occurred.

RANGECARE GROUPS - BROKEN HILL DISTRICT

Nine Rangecare Groups now cover 7 million hectares, approximately 70% of the Broken Hill District (Figure 1). Issues addressed include: rabbit control; woody weed management; pasture and tree regeneration; goat control; pig control; kangaroo management.

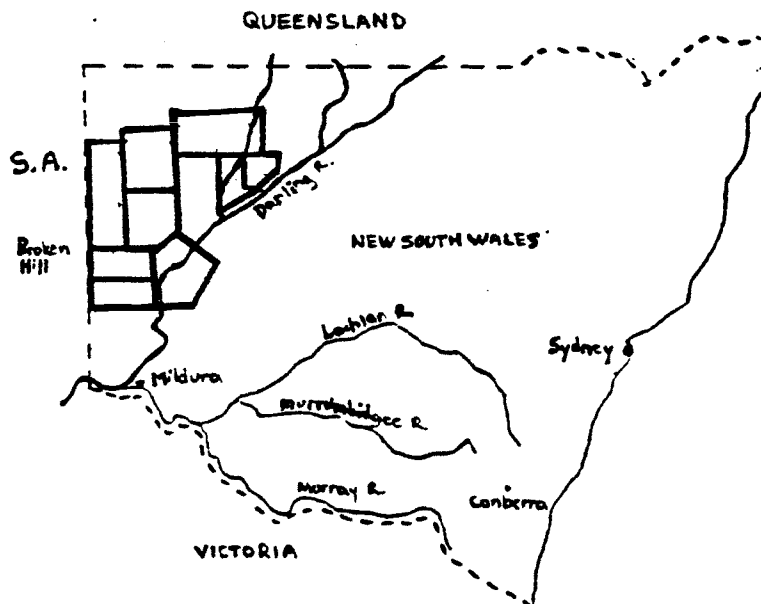


Figure 1. Rangecare Groups Broken Hill District

The Pine Creek and later the Topar Rabbit Control Demonstration Projects focused on the implementation of broadscale rabbit ripping methodology developed during the 1987 Pilot Rabbit Ripping Scheme by the SCS and the Rural Lands Protection Board. (Tatnell, 1987)

Some major turning points resulting from these projects included:

- the gross underestimation by all involved of the large numbers of rabbit warrens
- recognition of the ability of heavy machinery (D5) to operate efficiently in extensive rangelands
- the need to integrate poisoning and predator control into rabbit control programs
- recognition of the link of land type to rabbit warren density
- recognition of the potential interactions between woody weeds and rabbits
- identification of the need to investigate particular aspects of rabbit control technology to fill knowledge gaps

STRATEGY PLANS AND DEMONSTRATIONS

All groups in the district have shown a strong interest in strategy planning to maximise the effectiveness of their land management programs. Strategy plans have been completed for two group areas covering 2 million hectares (Tatnell and March 1991) with a target for total coverage by 1995.

The interactions between various existing land degradation components are often complex and subtle. Strategy plans have assisted in the demonstration of important interactions (eg. rabbits and woody weed infestation) and will assist in management within the lands capability through recognition by landholders of current and historical land degradation problems and their relationship to land type.

The concept of farm planning is not new. There are numerous methodologies available to support a wide variety of management decisions.

In the past however, farm plans have often been viewed as a "product" and not a "process". The overall objective of strategy planning is to involve resource managers in often complex "process" of land management.

The main aim of the strategy planning techniques is to:

- 1 assist land managers to recognise the inter-relationships between the vegetation, the soils, property improvements and management decisions
- 2 ensure that technological and managerial decisions are made with full knowledge of likely costs and outcomes
- 3 share the ownership of land management problems with land managers and assist in the production of group strategy plans

The strategy plan method was developed for the following reasons:

- relatively low cost (in dollars and hours) to produce (approximately \$800 per property all inclusive)
- maximise landholder input and therefore problem ownership
- dynamic documents which can be changed in response to finance, technology and knowledge
- "layers" of information can be added as required
- provides a data base for group activities eg. identifying the extent and location of group problems
- provides a basis for development of group strategies eg. feral goat and rabbit control strategies

Information on the extent and location of major land degradation problems is essential for effective planning.

It has been recognised that the production of accurate and meaningful strategy plans relies on landholder knowledge of both the problem itself and the variety of management tools available. Therefore demonstration of rangeland technology is an integral part of the strategy plan process. Demonstrations need to be seen as a process which will require additional monitoring and inputs over extended time periods.

A firm basis for a Group strategy plan can be produced by combining data from demonstrations with property strategy plans.

RECOGNISING ECOLOGICAL INTERACTIONS

As a direct result of combining demonstrations of rabbit control and woody weed management with property strategy planning, the interactions of land type with rabbit warren density and woody weed density have become more apparent (Tatnell and March 1991).

There are also relationships between rabbits and woody weed infestations (Table 1). The broader environmental implications of these types of interactions deserve far greater consideration at both management and research levels.

Table 1. Historical interaction between rabbits, land degradation and woody weed infestation in western New South Wales

| | | |
|----------------------|---|---|
| Pre-European | * | Vigorous perennial grass pasture |
| | * | Grass fires caused by lightning and patch burning |
| | * | Isolated stands of woody weeds adjacent to lakes, swamps, creeks, and on the tops of unstable dunes |
| 1870-1950's | * | Perennial grasses overgrazed and destroyed |
| by Rabbit plagues | | rabbits digging for moisture in roots |
| Livestock introduced | * | Wind erosion/dust storms disperse woody weed seeds across the landscape |
| Kangaroo increase | * | Woods weeds increase rapidly with few perennial grasses to compete with woody weed seedlings or to produce fire |
| Other feral animals | * | Feed shortages during droughts forced rabbits to ringbark mature woody weeds and dig out seedlings |
| | * | Livestock are forced to heavily graze areas not eaten out by rabbits further weakening pasture and encouraging the spread of woody weeds following the next good summer rains |
| 1960-1970's | * | Survival of woody weeds ensured with the reduction of rabbit numbers. Good summer rains assist in the further rapid growth and spread of woody weeds |
| Myxomatosis active | * | Perennial grasses begin to recover but landholders put out any fires, thereby preventing natural control of woody weeds |
| 1980's | * | Another period of perennial grass decline increasing rabbit numbers as a result of resistance to, and decline in the virulence of myxomatosis |
| Rabbits increasing | | |
| 1990 to the future? | * | Rabbit control programs utilising biological, mechanical and chemical control |
| | * | Perennial grass recovery allowing natural and controlled burning to reduce cover of woody weeds |

This is one example of complex ecological interaction which is now gaining recognition, moving groups away from trying to find single one off technological solutions to solve their problems.

There are benefits in evaluating each land system (land type) individually and developing a rabbit control and woody weed management programs to suit the situation. This also applies to other land degradation and management issues.

COMMUNITY BASED INVESTIGATIONS

It is evident from the results of the group formation, and demonstration - strategy planning, that the general understanding of land management interactions has increased among all parties involved in the process.

For many years land managers in the Western Division of NSW have relied on extension advice much of which has been extrapolated from other high rainfall areas or information which is based on a poor understanding of management interactions.

The grazing community and agencies are now recognising these information gaps and are formulating plans to undertake community based investigation.

Some of the current projects titles on the community group drawing board (and in progress) are:

- * Investigation of Bait Type and Rates For Rabbit Control in Semi-Arid Rangelands
- * Motorcycle Mounted Bait Layer For Control of Rabbits In Difficult Country
- * Rabbit Control Strategies For The Soft Mulga Country
- * The Use Of Satellite Location Device For Increasing Efficiency In Extensive Rabbit Ripping Programs
- * Group Feral Goat Control Pilot Projects
- * The Effect Of Kangaroo Proof Troughs On Home Range, Behaviour and Welfare
- * Kangaroo Alert System - What are the mobile mobs up to?
- * The Effect Of Selective Exclusion Of Rabbits, Roos, Goats and Livestock On Regeneration Of Natural and Direct Seeded Native Vegetation
- * The Development Of A Mechanical Grubber To Control Scattered Woody Weeds

RECENT RANGE CARE INITIATIVES

Since March 1992, coinciding with the prolonged drought and recession, there have been two combined meetings of the Broken Hill Rangecare groups. The first meeting was to discuss the development of community based drought strategies (West Darling Rangecare Groups Report, March 1992) and the second to assess the broader financial and administrative policy effects on the management of arid pastoral environments (West Darling Rangecare Groups Report, July 1992).

The involvement of Rangecare Groups in the broader issues influencing the ability of landholders to respond to their environment is an important reaction to a crisis situation. The expected outcome of this involvement is the formation of small landholder working/discussion groups to research various aspects of the pastoral environment. This research will cover topics including: wool marketing; property amalgamation; kangaroo management systems; feral goat control; landholder resource monitoring. It is envisaged that the working groups will report back to the combined groups on a regular basis to increase the whole communities knowledge, ownership and action into key areas.

These activities provide a positive signal to the community, institutions and government that there is the need to change traditional ways of managing economic, social and environmental issues. Governments perhaps need to be more responsive to the community and evaluate the effects of policy in regional context; Institutions must learn to work with and support communities, have greater structural flexibility and be able to recognise and respond to community learning and development needs; the community needs to develop communication, learning and action networks internally and externally.

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